

# Environmental Concerns among Tertiary Business School Students

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## Stories from Practice



### Abstract

This study evaluated the current level of environmental concern amongst business school students, and attempted to determine if the personal characteristics of respondents (namely, their nationality, gender and age) were reliable predictors of scores. Two hundred students in three nations (Australia, France and Singapore) were surveyed, using a modified version of the *Environmental Concern Scale* originally developed by Weigel and Weigel (1978).

It was found that, in general, students displayed a relatively high level of environmental concern. However, whilst substantial differences in mean scores were not found between all three nationalities, the results did show that statistically significant differences exist between at least two countries – the Australian and Singaporean samples.

There was no statistically significant link between gender and environmental concern. However, the results did indicate a significant correlation with age, with older students displaying higher levels of environmental concern than their younger counterparts.

### Introduction

In recent years a number of tertiary institutions have begun to incorporate environmental education into the courses offered by undergraduate and postgraduate business schools. Increasingly, 'green' issues have become part of the business curriculum, although the trend is a recent one, and only a small number of universities currently offer courses on business-environmental subjects (World Resources Institute 1999).

Concurrent with this trend has been the separate issue of the continuing internationalisation of business school courses and student bodies around the world. Whilst North American and Western European business schools have traditionally been quite cosmopolitan in their student intake, in recent years there has been a substantial growth in internationalisation by universities from Australia, New Zealand and other nations. As a result of these changes, universities face increasing

pressure to understand and deal with cultural differences in the diverse student body they manage.

In terms of environmental business education, these two trends mean that universities must now begin to understand whether cultural differences also equate to differences in environmental concerns and interest, and whether this will impact on the business-environment courses they teach.

Accordingly, the purposes of this study were:

1. To measure the overall level of environmental concern amongst tertiary business students, using a reliable, cross-national quantitative measurement tool;
2. To determine if any statistically significant differences existed in the scores recorded amongst different nationalities; and
3. To determine if other personal characteristics of students, such as their age or gender, are reliable indicators of the likely level of environmental concern.

### Concern for the environment

The meaning of the term 'environmental concern' can hold quite different connotations to various observers. Generally speaking, it refers to a view or belief that an individual holds about environmental issues in general, or about particular environmental events. Berkowitz (1975) suggested that the best definition was also the simplest one, and that 'concern' simply means the way people feel about something. Dohmen, Doll and Feger (1989) took the term to mean the individual dispositions, beliefs and behavioural tendencies connected with a particular object. Gifford refers to environmental attitudes as 'an individual's concern for the physical environment as something that is worthy of protection, understanding or enhancement' (1997, p. 47).

An attitude is very much an indication of a personal set of preferences and views. Indeed, over the years, the terms 'concerns,' 'attitude,' 'belief,' 'intentions,' 'values' and 'views' have become the source of some semantic arguments. Certain researchers (such as Azjen & Fishbein 1980, Cooper & Croyle

1984) have preferred to assign highly specific meanings to each of these words, whilst other writers have preferred to treat the terms as largely interchangeable (Newhouse 1990, Gifford 1997). Given the lack of clear consensus in the academic community about how each of these terms might be separately defined, for the purposes of the current study the latter approach has been adopted.

### Predictors of environmental concern

The factors giving rise to environmental concern are many and varied, and different researchers have argued that attitudes are due to a number of different causes. Whilst many of these are external factors, Gifford (1997) has suggested that there are also a number of predictor variables drawn from personal characteristics which remain fairly constant over time, or which change only in a relatively slow and predictable manner. These can often be used to predict a predisposition towards strong environmental attitudes in certain groups of individuals. Three common possible predictor variables are cultural differences, age based differences, and gender based differences.

#### (i) Socio-cultural differences

The impact of an individual's culture on their environmental perceptions is a significant but relatively unresearched aspect of environmental studies (Berberoglu & Tosunoglu 1995). It has been suggested that different cultures often possess markedly different perspectives on environmental issues, and that some cultures may generally possess a higher degree of environmental concern than others (Holahan 1982). These differences can arise because environmental concerns and values are often formed through socialisation, peer group activity, and vicarious learning (Bandura 1969). As a result, members of particular cultural groups can sometimes be found to have similar environmental attitudes, which are significantly different to other groups (Cave 1998). Cramer (1998), for example, has suggested that cultural norms about the desirability or otherwise of environmental protection may be a significant factor in shaping individual responses.

This gives rise to the following hypothesis:

$H_0$ : There is no difference between the mean environmental concern scores of different nationalities.

$H_A$ : There is a difference between the mean environmental concern scores of different nationalities.

#### (ii) Gender

It is often claimed that women appear to be more concerned about environmental issues than men (Gutteling & Weigman 1993), and this assertion has been supported by the results of other studies (Lothian 1994, Schahn & Holzer 1990, Lothian 1994).

Interestingly, there is also another, often unremarked, sex-based difference in environmental matters: women frequently

claim that they are more concerned about environmental issues, but appear to actually do less, and to know less about such matters, than male respondents (Gifford, Hay and Boros 1983).

This gives rise to the following hypothesis:

$H_0$ : There is no relationship between a student's gender and his/her environmental attitudes.

$H_A$ : Female students are more likely to display a positive environmental attitude.

#### (iii) Age

Age appears to be one of the most easily identifiable factors correlated to environmental attitudes and responsiveness amongst the general community (Honnold 1984). Indeed, Klineberg, McKeerer and Rothenbach (1998) have suggested that age is one of the most consistently reliable indicators of environmental attitudes, with younger respondents frequently being correlated with high levels of environmental concern.

Gifford (1997) has argued that this phenomenon usually occurs as a result of what has been termed the *true age effect*, in which individuals generally become more conservative as they get older. However, in some communities the link between age, environmental attitudes and environmental behaviour may also be due to a *cohort effect*, in which a particular age set has been exposed in the past to an event or events which has had a profound and substantial impact on all of the individuals of a certain age; as a result, that cohort's views are skewed either for or against environmental concerns (Cave 1998).

This gives rise to the following hypothesis:

$H_0$ : There is no relationship between a student's age and his/her level of environmental concern.

$H_A$ : Older students have a higher level of environmental concern.

### Measuring environmental concern

The measurement of environmental concerns can be a somewhat difficult proposition, given the many different dimensions of environmental issues and the cultural context of different societies (Ray and Hall 1995). The first problem has been in terms of *what* to measure. Most public measures of environmental attitudes have used very simplistic or limited tools to measure people's views. The Australian Bureau of Statistics (1998, 1999), for example, has used only two or three questions in its surveys of the Australian public. Most other surveys conducted in Australia over the last thirty years have also tended to focus on one or two issues, rather than a comprehensive suite of topics (for a detailed analysis of such survey work, see Lothian 1994). Although Stanton (1972) has shown that single question measures can have a relatively high degree of validity and reliability, most researchers have argued that multi-item scales are generally preferable

(Maloney, Ward & Braucht 1975, Ray & Hall 1995). This is because attitudes towards environmentally related issues are not homogeneous. There are many different aspects to being 'green,' and it is entirely possible for an individual to have quite strong environmental views in one area, whilst being antipathetic on other issues (Kuhn & Jackson 1989).

The second difficulty has been whether the same measuring tool can be used with equal validity in different cultures and nations. Most tools developed have been strongly grounded in a specific cultural context, and therefore their generalisability has been limited. This is because each culture and each nation has its own set of environmental problems, opportunities and heritage, and this has made it difficult to extend such instruments beyond the country of origin. As Table 1 below shows, many researchers have devised questionnaires to measure environmental concern, although few of them have been extensively used or cross validated in different countries. As a result, there is still a need for further research to determine which scales can be meaningfully applied internationally.

**Table 1: Some Recent Environmental Attitude Measuring Scales**

Author(s)	Year	Country	Instrument and Structure
Maloney and Ward	1973	USA	Ecological Attitude Scale 128 questions; true/false answers and multiple choice
Maloney, Ward Braucht	1975	USA	Revision of Maloney and Ward scale 45 questions; true/false answers and multiple choice
Ray	1975	Australia	Australian Environmental Attitude Scale 20 questions; 5-point Likert scale
Weigel and Weigel	1978	USA	Environmental Concern Scale 16 questions; 5-point Likert scale
Antil and Bennett	1979	USA	Socially Responsible Consumption Behavior Scale 40 questions; 7-point Likert scale
Nelissen, Perenboom, Peters and Peters	1987	Netherlands	Revision of Maloney and Ward scale 20 questions; 4-point Likert scale
Schahn and Holzer	1990	West Germany	40 questions; 7-point Likert scale
Berheglu and Tosunoglu	1995	Turkey	Environmental Attitude Scale 47 questions; 5-point Likert scale
Ray and Hall	1995	Australia	Re-application of Ray scale
Kuhtemeier, Van Den Bergh and Lagerweij	1999	Netherlands	20 questions; 4-point Likert scale
Pornpitakpan	2000	Thailand	Re-application of Antil and Bennett scale

## Methodology

Data for this study was collected from students studying at business schools in three different nations – Singapore, France and Australia. To reduce the number of extraneous variables likely to affect the outcome of the study, respondents were drawn from similar streams of study in each institution. All students were undertaking degree-level courses (broadly equivalent to the third year of an undergraduate degree program in Australia), and studying similar topics (in this case, entrepreneurship and small business) in the English language. The selection of students was broadly based on a convenience sample, based upon the willingness of institutions to provide access to their students. Data was collected in the classroom, at the commencement of lectures.

Environmental concerns were measured using an adapted

version of the questionnaire first used by Weigel & Weigel (1978) (a copy of the form is included in the Appendix). This consisted of sixteen questions using a five-point Likert scale, which included some reverse order questions. The maximum theoretical result was 80 and the minimum 16.

Cultural differences were measured by using respondent nationality as a broad proxy measure. Although an individual's nationality does not always equate to one's cultural background, such an approach is widely used in cross-cultural studies (Smith & Bond (1993).

## Results and analysis

A total of 201 responses was collected, comprising 48 students from Singapore (23.9%), 51 from France (25.4%), and 38 from Australia (18.9). The diverse international composition of each business school is reflected in the fact that the remaining 61 students (30.3% of all respondents) were citizens of other countries. Three respondents (1.5%) failed to provide a nationality. The data set included 79 males and 119 females. The mean score of the total data set was 58.33, with a median score of 59.00 and a standard deviation of 7.32.

A summary of the pertinent descriptive statistics is detailed in Table Two below.

**Table 2: Summary of Descriptive Statistics**

	Singaporean	French	Australian	All respondents
n	48	51	38	201
Env. Concern—mean score	57.34	59.14	60.74	58.33
Env. Concern—median score	56.00	60.00	60.00	59.00
Env. Concern—std. deviation	6.98	7.14	7.69	7.32
Env. Concern—skewness	0.210	0.034	-0.277	0.144
Age—mean score	28.04	22.33	24.03	24.38
Age—median score	27.00	22.00	20.00	22.00
Age—std. deviation	5.38	1.09	8.05	5.86
Gender—number of females	41	27	19	119
Gender—number of males	7	22	19	79

Reliability was tested using one of the standard measures of interitem consistency for multipointed-scaled items, Cronbach's alpha. The resultant score of 0.7636 was well within the range of acceptability (Sekaran 2000). For all tests, a confidence limit (alpha) of 10% was employed.

### Hypothesis #1 - nationality-concern linkage:

$H_0$ : There is no difference between the mean environmental concern scores of different nationalities.

$H_A$ : There is a difference between the mean environmental concern scores of different nationalities.

This hypothesis was tested by conducting a one way analysis of variance (ANOVA) between the three nationalities; respondents from other countries were excluded from this test. The result ( $F = 2.340$  and  $p = 0.100$ ) indicates that there is no significant difference in the mean scores between the groups, and the null hypothesis cannot be rejected.

However, the very closeness of the  $p$  result does indicate that some substantial differences may exist between different individual groups (Hair, Anderson, Tatham, and Black 1998). In order to understand exactly what those differences might be, a post-hoc test using Tukey's honesty significant difference measure was performed.

Table 3: Results of Tukey Test

(I) Nationality (J) Nationality	Mean Difference (I-J)	$p$
Singapore France	-1.78	0.439
Australia	-3.38	0.080*
France Singapore	1.78	0.439
Australia	-1.60	0.557
Australia Singapore	3.38	0.080*
France	1.60	0.557

\* significant at the 0.10 level

The test revealed that the only significant difference in environmental concern lay between the Singaporean and Australian groups of students. The Australian students, with the highest mean concern scores, differ substantially from the Singaporeans (who generated the lowest scores of any country, with a mean below the 'all respondents' average), whilst the French students appear to have provided a 'compromise' result that fits neatly between the two other nationalities.

### Hypothesis #2 - gender-attitude linkage:

$H_0$ : There is no relationship between a student's gender and his/her environmental attitudes.

$H_A$ : Female students are more likely to display a positive environmental attitude.

This was tested using a one-way Spearman correlation between the variable gender (which was recoded as a dummy variable) and the respondents' aggregate concern score. The results of this procedure were:

N	Spearman correlation	Significance	Decision
198	0.013	0.428	Reject

It is not possible to reject the null hypothesis, and it can be concluded that there appears to be no significant link between environmental concern and gender. This contradicts the findings of Schahn and Holzer (1990), who found a tentative relationship between gender and environmental concern, but supports the arguments of the Australian Bureau of Statistics (1998, p. 12) that 'there is no great difference between the sexes' in regards to environmental attitudes.

### Hypothesis #3 - age-attitude linkage:

$H_0$ : There is no relationship between a student's age and his/her level of environmental concern.

$H_A$ : Older students have a higher level of environmental concern.

This issue was examined by conducting a correlation between the variables of respondent age and the aggregated total score.

Since both data sets consisted of interval data, a Pearson correlation was employed; a one-tailed test was used. Results of the test were as follows:

N	Pearson correlation	Significance	Decision
200	0.166	0.009	Accept

In this case a significant statistical relationship does exist between the two variables. It can be concluded that there is a moderately strong link between the age of respondents and the strength of their environmental ('green') attitudes. This supports the earlier contentions of Klineberg *et al.* (1998).

However, the positive correlation indicates that the older the student, the higher their environmental concerns. This is in direct contrast to the inverse correlation usually found in most studies, whereby younger individuals display stronger concerns than their older counterparts.

### Conclusion

The results of this study would appear to indicate that most university business students seem to have a relatively high level of environmental concern. However, whilst substantial differences in mean scores were not found between all three nationalities, the study does show that significant differences exist between at least two countries – the Australian and Singaporean samples. These results may indicate that there is an underlying cultural difference (say, for example, between Anglo-American cultures and South East Asian societies), but more research is needed in this area before any meaningful conclusions can be reached in this regard.

Nevertheless, it would be advisable for educators to be aware of these potential differences, and attempt to take account of them when developing their environmental teaching materials and pedagogical approaches. These issues will be especially important for Australian universities with high numbers of international students drawn from South East Asia.

On the other hand, educators also need to bear in mind that age may perhaps be a better overall indicator of likely environmental concerns than nationality. When developing class intakes and group-based activities, it would be desirable to include a range of difference ages in each group, so as to ensure that a wide diversity of environmental views are likely to be found in each team.

Finally, a caveat: whatever the level of a student's environmental concern, such scores do not automatically translate into environmentally friendly behaviour. Environmental concerns are a possible indicator of likely behaviour, but not an all-encompassing guide to what people actually do. There is a large body of research which indicates that people do not always act in a manner that is consistent with their professed attitudes (Triandis 1971, Fishbein 1967, Cave 1998, Manzo & Weinstein 1987), and students are



unlikely to be any different.

The existence of a 'gap' or discrepancy between individual concerns and practices is not new. Research in many different disciplines has shown that a substantial gap often exists between attitudes and practices. Indeed, Freire (quoted in Hunter, Bailey & Taylor 1999, pp. 102-3) has claimed that 'one of the major struggles in every individual is to diminish the difference between what one says and does, between the discourse and the practice'. The goal of effective environmental education in business, then, may be to give students the tools they need to readily convert those concerns into meaningful change in their own world. ☺

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#### Appendix: Environmental Concern Scale

Age (in years):	
Gender:	
Nationality:	
1. The Government will have to introduce harsh measures to halt pollution, since few people will regulate themselves.	
2. We should not worry about killing too many game animals because in the long run things will balance out.	
3. I'd be willing to make personal sacrifices for the sake of slowing down pollution even though the immediate results may not seem significant.	
4. Pollution is <i>not</i> personally affecting my life.	
5. The benefits of modern consumer products are more important than the pollution that results from their production and use.	
6. We must prevent any type of animal from becoming extinct, even if it means sacrificing some things for ourselves.	
7. Courses focusing on the conservation of natural resources should be taught in all schools.	
8. Although there is continual contamination of our lakes, streams and air, nature's purifying processes soon return them to normal.	
9. Because the government has such good agencies, it's very unlikely that pollution due to energy production will become excessive.	
10. The government should provide each citizen with a list of agencies and organizations to which citizens could report environmental problems.	
11. Predators, such as (crows and foxes which prey on farmers' grain crops and poultry should be eliminated.	
12. The currently active antipollution organizations are really more interested in disrupting society than they are in fighting pollution.	
13. Even if public transportation were more efficient than it is, I would prefer to drive my car to work.	
14. Industry is trying its best to develop effective pollution technology.	
15. If asked, I would contribute time, money or both to an organization like Greenpeace that works to improve the quality of the environment.	
16. I would be willing to accept an increase in my expenses of \$100 next year to promote the wise use of natural resources.	

Note: Questions 2, 4, 5, 8, 9, 11, 12, 13 and 14 are scored in reverse order.