
Environmental Consciousness

*A Study in Six Victorian
Secondary Schools*

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Introduction

Daily we are confronted in our neighbourhoods and in the media by signs of environmental degradation. And there is evidence from many sources that Australians are concerned about it and expect to be increasingly so. However, there is also evidence that the concern is not always backed by much knowledge. Environmentally responsible behaviour is increasing, but the changes are modest. Generally, there has been a lack of political will to put the country on a sustainable footing. In such a circumstance, it is not surprising that many teachers have sought to ensure that the next generation will live with greater regard for the environment.

Anecdotal evidence indicates that there is widespread environmental educational activity in schools. Primary teachers are reported to be sensitising their students to the need for conservation; at the secondary level, Environmental Studies is holding its own at a time when the number of students studying social sciences and humanities generally in senior classes is decreasing. The Victorian Environmental Education Association is active and there is some satisfaction among environmentally concerned teachers with the extent of representation of environmental education in the Curriculum Standards Framework (Board of Studies, 1995).

Nevertheless, schooling can only effect change in the direction of ecological sustainability if there is a thorough knowledge of the factors predisposing young people to be concerned about the environment and committed to its preservation.

There have been a couple of retrospective studies of environmentally committed adults (Palmer, 1993; Tanner, 1980) showing that early exposure to wilderness was formative as was the presence in the family of environmentally concerned siblings or adults. More common have been studies of adolescent attitudes, knowledge and to a lesser extent, behaviour in relation to the environment. Generally, these showed that girls are more environmentally concerned than boys and tend to display more environmentally responsible behaviour but that boys have more 'environmental' knowledge. A shortcoming of much of the work reported in the environmental education research literature to date is that it has been directed towards the shaping of individual behaviour to the neglect of social, historical and political constraints on such behaviour (Robottom and Hart 1995).

The study reported here, while acknowledging the need to address these wider questions, seeks to examine the role that home, school, and social life have in leading some fifteen year-old students to become concerned about deteriorating local and world

environments and others to express less concern. In particular, the research literature (1) suggested the following were worthy of exploration: the role of outdoors experiences; parental educational levels, environmental behaviour and political orientations; the impact of the media and community groups; and finally, the influence of school curricula.

The main finding of our research, as discussed in some detail in the articles listed above, is that, of the demographic variables, gender and level of parental education have a major influence on the patterns of environmental concern, knowledge and behaviour. This indicates that environmental degradation and amelioration are of central not marginal theoretical concern. Given that the causes of environmental destruction and the potential for reversing it are intimately related to our population growth, levels of affluence and use of technology and resources, they need to be analysed with the very conceptual tools we use to understand patterns of identification, division, and mobilisation of society in general. Fortunately, developers of school frameworks such as the Curriculum Standards Framework or CSF (Board of Studies, 1995) adapted in Victoria from the national frameworks, show that they are beginning to see them as being of such central importance to the study of society by their decision to insert environmental concepts into a variety of the learning areas in the CSF.

1. The research literature on the subject covered by this paper is extensive and so only a small sample of it will be acknowledged here. For a survey of previous research, the reader is directed particularly to the articles by Hampel, Holdsworth and Boldero (1995, 1996) listed.

The meaning of environmental consciousness

When we talk about adolescent environmental consciousness we know that there is no better measure of environmental responsibility than direct observation of young people, over a significant period, who are minimising their environmental impact, reducing consumption and reusing and recycling materials. Nevertheless, there are other indicators that young people may be on the path to sustainability. These include:

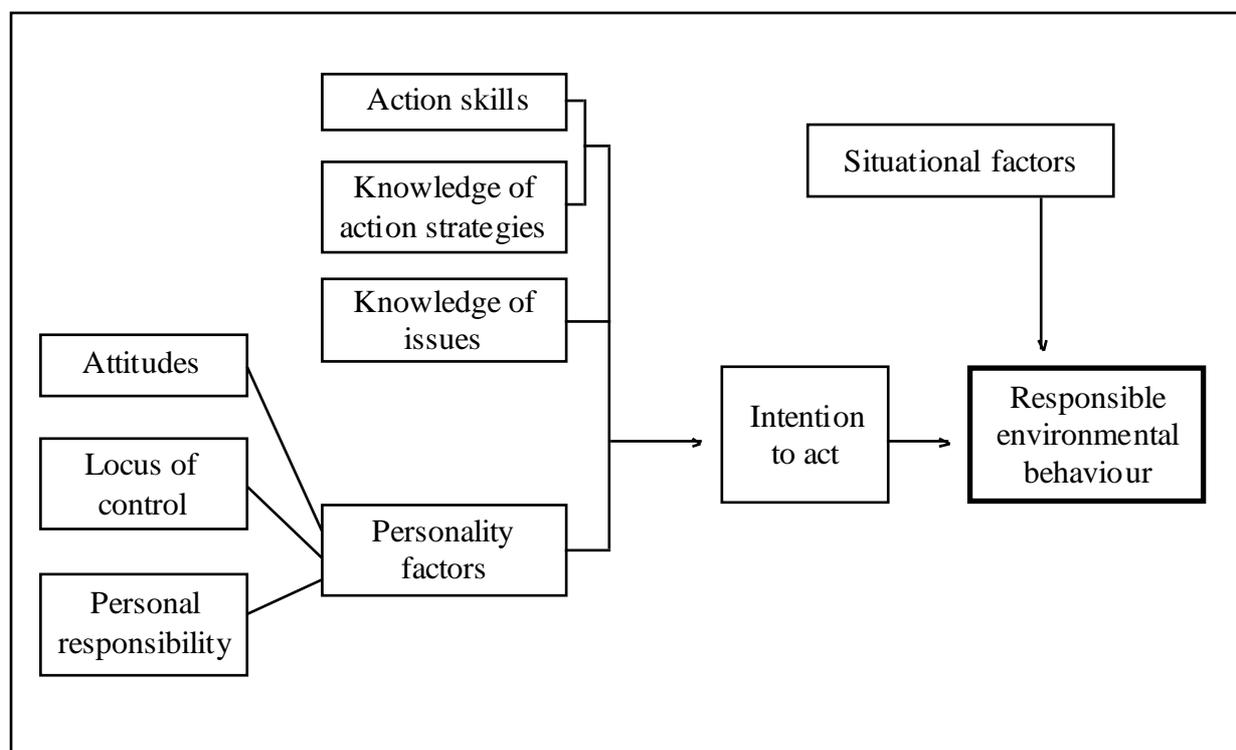
- their own reports of comparable behaviour out of school;
- their expressed willingness to adopt measures like energy saving or to allocate resources for conservation;
- the position they place the environment in any list of adolescent concerns or values;
- their expressed willingness to forego consumption and accept government regulation for environmental preservation; and finally,
- the extent to which they show concern for all life and not simply that of humans.

The latter includes the desire to protect flora and fauna, a willingness to scrutinize the consequences of economic activity and a willingness to combine long-term with short-term planning

While the “environment” has an “out there” quality about it, it is also a human construction. For Local Government councillors the environment can be nature strips, flower beds curbs and guttering, vacant lots and city parks. For the opportunistic politician it is an inexhaustible supplier of minerals, energy, food and fibre. To the health specialist, the environment is something of a medicine cabinet of tropical plants ready to fight sickness and disease. Romantics and ordinary citizens may see in the environment a refuge from stress and worry. Finally, to the Christian the environment is testimony to the wonder of God. Broadly, these views range from the acquisitive and exploitative to the reverential; from the human centred to the nature centred. In the western world humans are becoming increasingly aware of their dependence upon the “environment” or natural world and the need to minimise their impact on it for their survival. But regrettably they are doing so far too slowly.

What influences environmental concern?

Writers such as Hines, Hungerford and Tomera (1987) have attempted to construct models of the factors that research suggests are related to environmental concern. Such models make a distinction between *cognitive variables* or the levels of understanding of environmental issues and how to take action; *psycho-social variables* that include attitude towards environmental issues; locus of control or feelings of efficacy - capacity to bring about change; and sense of responsibility to do something to reduce environmental degradation; and finally, *demographic variables* such as gender and level of educational attainment. Hines and her colleagues concluded that psycho-social variables generally have stronger associations with responsible behaviour than do demographic variables. Of particular relevance to the study reported here is their finding that in the studies surveyed, "there appears to be no relationship between gender and responsible environmental **behaviour**" (our emphasis). A consistent finding of recent research is that females show more environmental **concern** than males. Hines *et al* also argued that situational factors such as economic circumstances (relevant to both family income of rural and urban residents alike) may either reinforce or weaken the effects of psycho-social variables. They conceptualised the relationship between variables as follows (Hines *et al*, 1987, 7)



The Proposed Model of Responsible Environmental Behaviour
(after Hines, Hungerford and Tomera, 1987)

While Hines and colleagues were concerned with adult behaviour and not that of adolescents, it could be inferred that academic ability will enhance capacity to acquire knowledge of environmental issues, skills and strategies. We know that academic ability of children, is associated with parental level of education (see Toomey, 1989 for example) and so one way in which the association between level of parental education and adolescent environmental concern might be realised is through cognitive skill. It has to be remembered, as Hines *et al* themselves acknowledge, that both pictorial models of causation and the use of various statistical techniques give the impression that variables are discrete. It is easy to forget that such phenomena are overlapping and interactive.

Gender

Regardless of the primary contribution of psycho-social variables to environmentally responsible behaviour, the reasons for putting gender at the centre of the study are not hard to find. First, there is women's relatively greater prominence in environmental rather than mainstream politics. In the post-war era they have been the strength world-wide in environmental and anti-war demonstrations. In the Australian federal Senate and Tasmanian State parliaments, female green leadership has been noteworthy, as has their prominence in several peak environmental bodies such as Greening Australia, the Australian Conservation Foundation and Environment Victoria.

Second, there has been a slight but consistent demonstration in recent research that women are more environmentally concerned than men (e.g. Brown and Switzer, 1991; Gifford, Hay and Boros, 1982).

While support for, and action upon the environment typically increases with level of education, this is particularly so with tertiary education in the humanities and social sciences in which, until recently, women have been largely located. The most environmentally conscious women and men tend to be liberally minded, tertiary educated welfare and service professionals employed in the public service.

As indicated, boys are less environmentally concerned than girls, possibly because they have in the past defined themselves more in terms of being prospective paid workers than girls.

It has been hypothesized that women's greater involvement in child-rearing and education, cooking, cleaning and shopping encourages concern about the effects of contamination of air, soil and water on humans. The extension of women's greater nurturant role into the labour market, where they predominate in the human service industries such as teaching, social work, nursing, secretarial and sales work, away from direct control over production (in jobs such as manufacturing, management and finance), could be said to promote a caring ethic that ecofeminist writers claim is central to an environmentally responsible consciousness.

Finally, ecofeminist theory draws upon the evidence of men's economic and political power and women's domestic responsibilities, that they see reinforced in academic literature and popular culture, to explain women's allegedly lesser interest in power and status, and greater sense of connectedness with, and concern about, other things.

Socio-economic factors

Superficially, it might be expected that lower SES people would be more sensitised to environmental problems and more concerned about them than those in more socially advantaged circumstances. They have the most dangerous and dirty jobs and more often live in the blighted urban areas near busy roads, toxic waste sites, polluting factories, power lines and contaminated water. For a variety of reasons, particularly among men, there is not the concern that this situational evidence might suggest.

Environmental concern is higher among higher income middle classes, but as indicated, this is not characteristic of all in that social stratum. There is, overall, little relationship between income itself and environmental concern but level of education, particularly in the social sciences, humanities and creative arts, is moderately to strongly related to concern. As indicated earlier, the problem with statistical analysis of quantitative research is that of necessity it separates variables such as early value orientation, level and type of education and nature of employment, when in reality they act upon one another.

The arguments for exploring the relationship between environmental concern and socio-economic characteristics are briefly summarised below. (For an elaboration of the arguments, the reader is referred to Hampel, Holdsworth and Boldero, 1996).

- The 'value-laden' nature of much professional middle-class work as contrasted with the 'low value relevance' of lower SES work engenders greater sensitivity to the value aspects of environmental issues .
- Professional workers operate at some distance from production and exchange, are less constrained by the profit motive, and may be more frequently obliged to attend to the physical and psychological impact of production. Lower SES workers may seek compensation for lack of capacity to amass economic power by behaving in an environmentally insensitive manner.
- The more stressful employment and greater economic insecurity that lower SES workers endure is likely to lead to their attributing control of their lives to external forces - an attribute believed to be inimical to environmental responsibility.
- While economic politics are often necessarily the concern of lower SES workers, middle-SES people are more likely to be involved in social and cultural politics as well, and this different and higher level of political engagement is hypothesized to lead to greater environmental concern.

-
- Working-class children, especially boys, are under frequent threat of violence. A pre-occupation with attack and defence leaves little space for concern about ‘the other’, a characteristic ecofeminists see as fundamental for environmental concern (Walker, 1994).
 - Research indicates that access to, and responsibility for, a complex garden in the schoolground is related to environmental concern. Not only do more socially advantaged groups have more access to public gardens, they are likely to own more private land and to find gardening a recreational relief from paid work.
 - There are several likely links between extended parental education and adolescent environmental concern.
 - a) Educated parents can provide environmental knowledge and concern through conversation, books, magazines and opportunities to travel.
 - b) People educated in the social sciences, humanities and creative arts are more likely to be critical of economic rationalist, consumerist and gender ideologies.
 - c) Elaborated rather than restricted cultural codes of educated families are more conducive to adolescent academic success, access to environmental ideas, and to a universalistic outlook that may be more characteristic of environmentally aware people.

Non English-speaking Background (NESB)

Although there is some evidence that people born overseas in a country where the first language is not English are likely to be less environmentally concerned, the research does not indicate whether this is a factor of SES or ethnic minority background. Nevertheless, there are possible reasons for such a pattern:

- Given that a major reason for migrating to Australia is the desire for greater financial prosperity and security, it is conceivable that NESB people will have a more consumerist consciousness and be less aware than people of Australian birth of the ‘downstream’ environmental effects of their consumption.
- Coming in general from more densely populated countries to live overwhelmingly in the major cities, recent settlers may have had less contact with wilderness areas and be less appreciative of the importance of flora and fauna.

Location

The few studies of urban-rural differences among students present a mixed picture, mostly sampling tertiary students and interpreting environmental concern and knowledge in different ways. Studies of urban-rural differences among adults have also been few but tend to indicate greater environmental concern among urban dwellers and concern about

different aspects of the environment (e.g. soil degradation rather than logging of native forests). Given that environmental concern increases with level of education and people in rural Australia have fewer years of formal education than their urban counterparts, some of the differences may be attributable to level of education rather than location. It is also the case that rural people are still more conservative on social, political and cultural issues - qualities that tend to be negatively correlated with environmental concern - even though the advent of television, wider consumer choice and more rapid communication between country and city have done much to erase many of the cultural differences that once may have existed. Nevertheless, there is a plausible argument that the depressed state of the rural economy would lead country dwellers, who are either directly engaged in farming or providing services to it, to give priority to economic survival rather than environmental preservation. People under severe financial constraint often do not have the time, money or inclination to engage in measures to ensure ecological as well as economic sustainability.

Study Design

A two stage design was adopted. The first stage involved administering to all year 10 students in six State secondary schools the series of screening tests described below. The schools were selected on the basis of socio-economic status, proportion of NESB students and location . The literature gave strongest support for the decision to control for SES and gender and the reasons for selecting according to the other two have been given. Thus the school sample consisted of four metropolitan schools and two rural schools (one in a sheep-wheat area and one in a dairying one). The four metropolitan schools were selected as being characteristic of those of high and low socio-economic status (SES) and those with high or low proportion of NESB as:

high SES high NESB	high SES low NESB
low SES high NESB	low SES low NESB

In the second stage, about one sixth of the original sample were selected for interview as indicated below.

Choice of age-group

Year 10 students were selected for study for several reasons. It is during adolescence that individuals develop attitudes and values that persist into adulthood; they strive for independence and autonomy from parents and a sense of social responsibility; and finally, Year 10 is the last year of compulsory schooling.

Instruments

Each of the 661 Year 10 students (307 girls and 354 boys) completed a screening test comprising: a set of purpose-built environmental attitude/belief questions, a set of environmental knowledge questions, a five item environmental behaviour scale, a ranking of ten issues of most concern, and a self-ranking of performance in Maths and English.

Environmental Knowledge

The 20 items in the knowledge scale can be broadly categorised as those relating to:
energy (3) eg

Most of electrical energy used in Australia is produced by

- i) nuclear power plants*
- ii) coal-burning power plants*
- iii) oil-burning plants*
- iv) natural gas plants*
- v) I don't know*

pollution (4) eg

Most of the phosphates that reach the oceans come from

- i) local council drains*
- ii) industrial sources*
- iii) farms*
- iv) boats*
- v) I don't know*

population (2) eg

Population is growing fastest in

- i) highly industrialised countries*
- ii) countries just becoming industrialised*
- iii) underdeveloped countries*
- iv) rice-growing countries*
- v) I don't know*

biodiversity (4) eg

Many organic wastes are broken down in water. In the process something is removed which makes the water unfit for supporting life. What substance is taken out of the water?

- i) carbon dioxide*
- ii) hydrogen*
- iii) oxygen*
- iv) sulphur*
- v) I don't know*

atmosphere (4) eg

The increasing thinning of the ozone layer will result in

- i) the climates of the world getting warmer*
- ii) an increase in the ultraviolet rays striking the earth*
- iii) a decrease in the number of chlorofluorocarbons (CFCs) in the atmosphere*
- iv) more days on which people's breathing is affected*
- v) I don't know*

and waste and resources (3) eg

At present, the cheapest way to dispose of solid wastes collected by local Councils is by:

- i) burning*
- ii) recycling*
- iii) dumping in pits and covering with soil*
- iv) composting*
- v) I don't know*

Environmental Concern

Measures of environmental concern included:

1. Willingness to make financial sacrifices for environmental amelioration, eg

It will be necessary to ban the use of CFCs (Chlorofluorocarbons) in refrigerators and air-conditioners to protect the ozone layer (even if this does reduce our standard of living);

2. Willingness to accept constraints on individual liberty in the interests of environmental protection, eg

People should be allowed to use motor vehicles as much as they wish;

3. Attitude towards environmentally destructive acts, eg

It is everyone's responsibility to report to the EPA (Environment Protection Agency) any car seen driven with a smoky exhaust; and,

4. Self-report of involvement in pro-environmental behaviour, eg

I do all I can to make sure that all used aluminium cans are recycled.

Interviews

On the basis of the first three (ie the attitude/belief, knowledge and behaviour) scales, the five boys and five girls who showed the highest levels of concern and knowledge ("highs") and the five boys and five girls who demonstrated the lowest levels ("lows") for each of the schools, were selected for subsequent interview. One hundred and seventeen students, selected in this manner, agreed to participate, and were then interviewed for 40 to 70 minutes each, using questions derived from, among other sources, an extensive survey of literature on environmental education, attitudes and behaviour. Interview schedules for the low scorers were changed slightly to reduce feelings of threat.

The main headings for interview questions were:

Sources of Information:

Television - including video-games; newspapers; magazines, and books. (This question was converted to an “interests” question for the low scorers).

Leisure:

Gardening, bird-watching, photography, camping, bush-walking, fishing, membership of environmental, or scouting groups, and environmental protest action.

Friends:

Number, time given to, interests.

Powers of Persuasion and Locus of Control:

Seven questions were asked under these headings.

Family:

Type and location of dwelling, environmentally relevant behaviour, political interests, and family member most influencing participant’s ideas.

Schooling:

We sought to explore the type of environmentally focused activity in the school and the relevance of the curriculum to the environment.

Results

Characteristics that distinguish boys and girls high in concern and knowledge from those low in such attributes

As indicated, high concern is clearly related in the present study to social class attributes, particularly parental education and father's occupation. "Highs" of both sexes also had a clearer idea than "lows" about what jobs they wanted as adults. However, it is noteworthy that a small but significant number of low concern girls (7), but no low concern boys indicated that they would like a job in an environment-related area. The results on the 10-item scale of concerns from the full sample of 660 students indicated an apparent future-orientation among those high in concern. The concern for "*deterioration of the environment*", correlated with

- "*succeeding at school*",
- "*getting along with parents*",
- "*possibility of Australia's involvement in another war*",
- "*being dominated by technology*" and
- "*getting a job when I am older*".

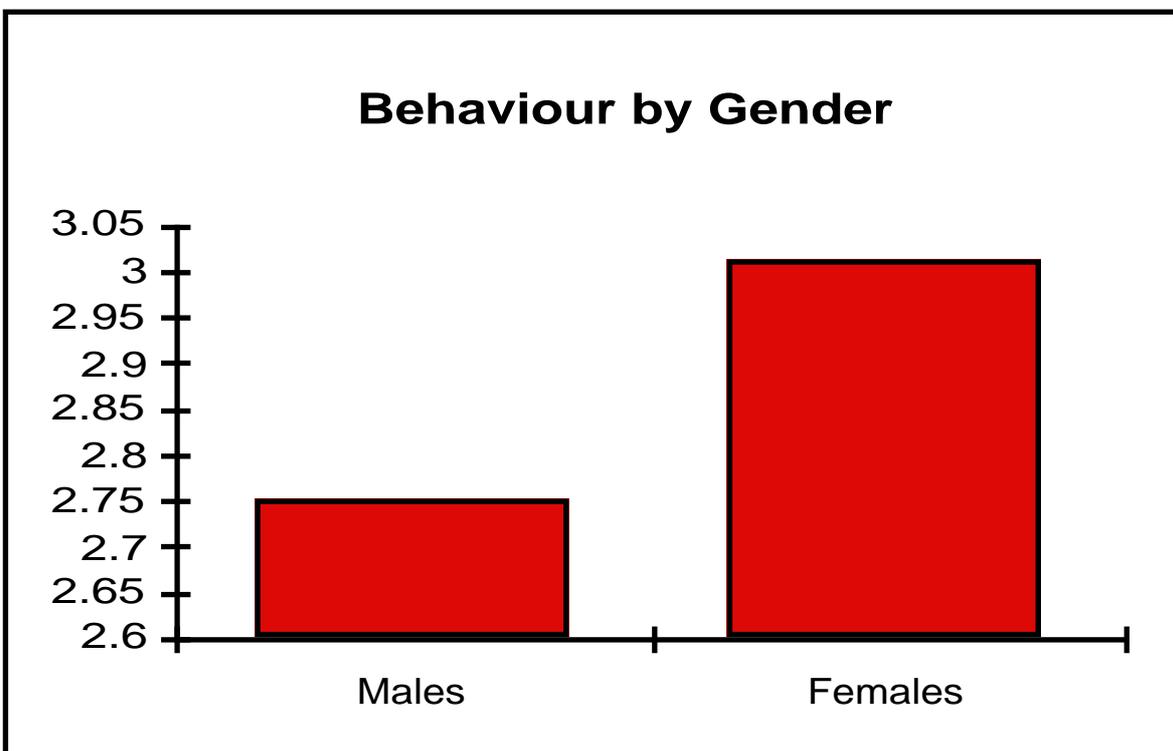
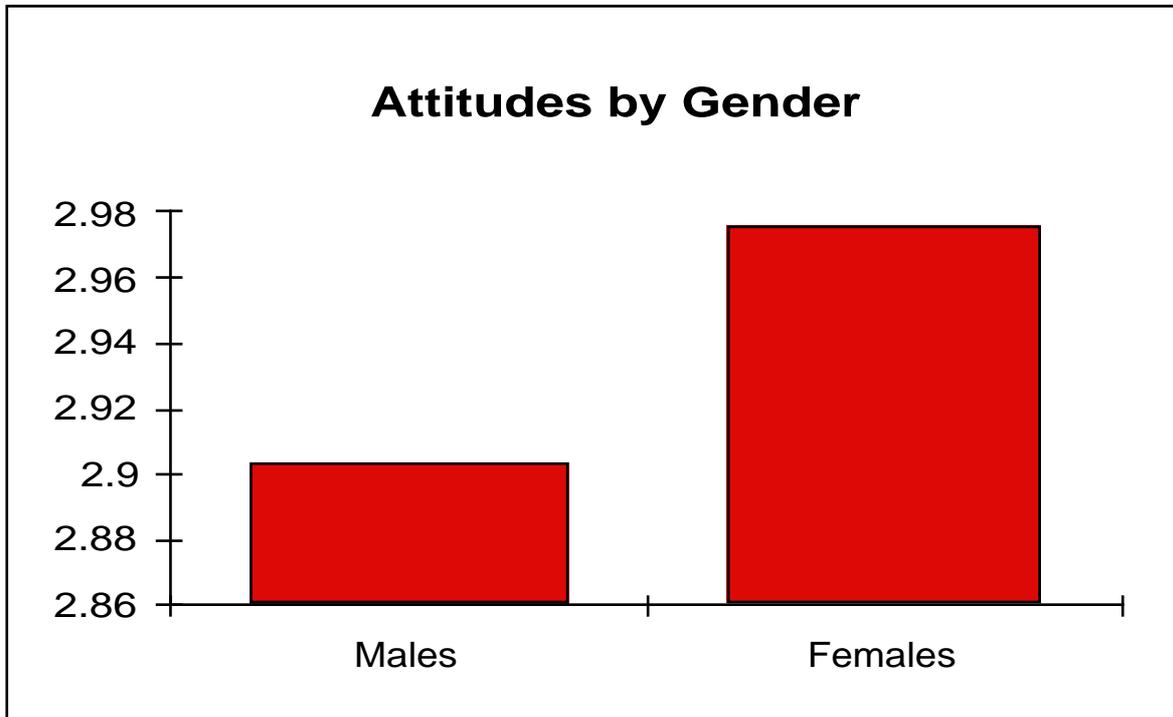
These results are consistent with a number of personal attributes found by other researchers among first-year tertiary students who were high in environmental concern, including "ethical-conscientious dispositions" to a higher degree. During the interviews for our study, "highs" reported worrying more than others of their age about world events. In one form or another, "highs" showed a greater political sensitivity than "lows".

The next stage in the analysis was to examine the data in the light of the demographic variables discussed earlier.

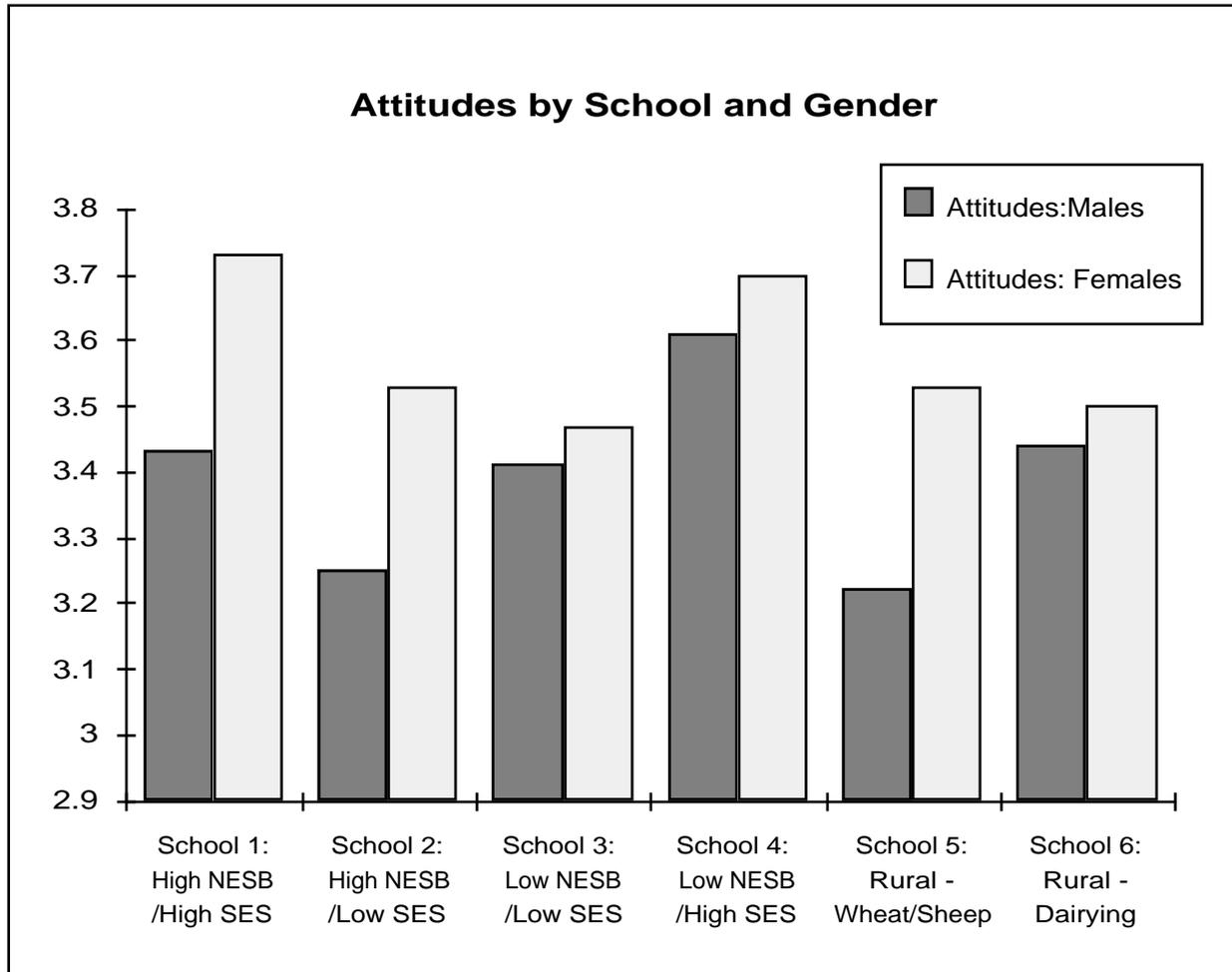
Gender

Attitudes, Beliefs and Behaviour

Responses to both the attitude/belief scale and the self-report of environmentally responsible behaviour indicated that girls were more concerned than boys.



These differences also varied between schools with the most striking gender difference occurring in the school located in the sheep-wheat region. It is important to note, however, that across the entire sample of 661 fifteen year-olds the level of environmentally responsible behaviour was fairly low. Mostly they scored somewhere between *rarely* and *sometimes* in their behaviour of this type.



The items on which the 307 girls reported taking the most responsible stance were mainly related to taking individual responsibility for their actions: use of motor vehicles; access of 4 wheel-drive vehicles to parks; recycling; and right to obstruct workers in environmental protest. Four of the five items with which boys agreed significantly more than girls indicate that they were more favourably disposed towards regulation: restrictions on packaging; industry controls; obligation to report smoky exhausts; and the need to restrict the use of domestic heating.

There are several factors possibly contributing to this pattern.

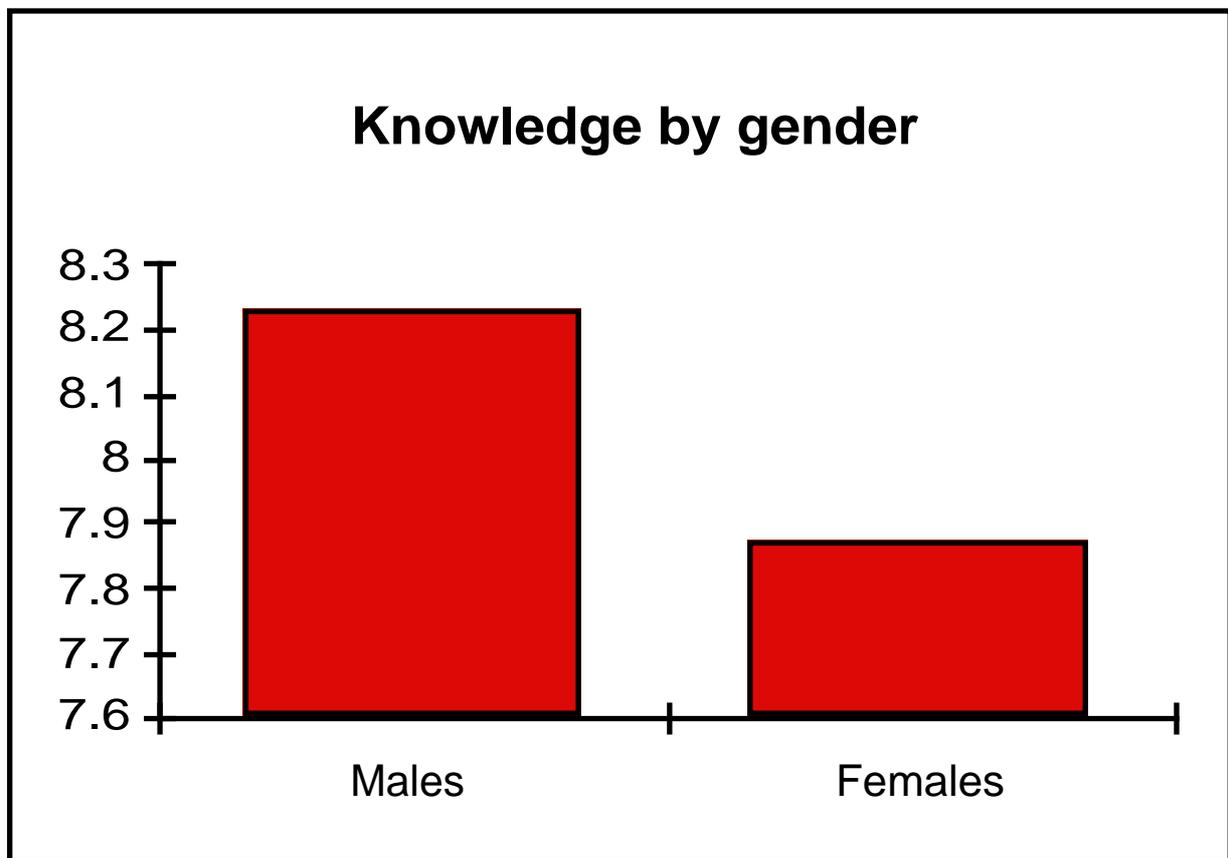
- Boys' early assumption of responsibility in the public or political sphere; girls in the private or domestic one.

-
- Girls' code of morality that is defined more in terms of relationship to, and personal responsibility for, others than in terms of abstract notions of fairness or justice - as boys would see it (Gilligan, 1983; Gilligan, Ward and Taylor, 1988).
 - Two of the items boys are most in favour of - restrictions on packaging and use of domestic heating - are likely to affect girls more than boys.
 - Boys' desire to project a more "macho" image than girls.

Boys also showed a greater concern about money on the list of 10 concerns; and girls showed a greater fear of domination by technology. There is some indication that boys are more 'instrumental' or 'exchange' oriented in their outlook; while girls are more 'use' oriented. Girls, more often than boys, agreed with the view that individual efforts to save the environment make a difference.

The greater sensitivity to political considerations among "highs" of both genders showed itself in different ways. "High" boys knew better than "low" boys how they would vote as an adult and "high" girls showed a greater interest in politics than "low" girls. By virtue of the different positions of males and females in the labour market, boys' interest in the economy is typically greater than girls' and politics frequently tends to be reduced to economics. Boys' greater concern about lack of money has been mentioned.

Knowledge



On the 20 item knowledge scale, boys showed that they knew slightly more - perhaps an indication that environmental knowledge is still seen as the domain of science over which males have believed they have a mortgage. However, the gap between what the boys know and how they behave, echoes other research showing that knowledge alone is a poor predictor of behaviour. As the Hines *et al* (1987) model showed, attributes such as an environmentally concerned attitude, a desire to change behaviour, a feeling that such effort makes a difference, knowledge of how to change and so on, are also necessary attributes.

Interview items

To a small degree, both “high” girls and boys felt better able than “lows” of both genders to resist being persuaded by others. In addition, “high” boys more than “low” boys say that they try to persuade others to their point of view. Clearly, these are small indications of greater self-confidence in argument, greater self-control, and perhaps the beginnings of a more political outlook. Girls also showed slightly greater tendencies to write a letter of protest about an environmental issue or to join an environmental organisation. These confirm other evidence in this sample of a better link between their concern and their behaviour than was shown by the boys, although as mentioned, Hines *et al*'s (1987) survey of the literature produced no link between gender and environmental behaviour.

Given that retrospective studies had shown that early exposure to wilderness is related to environmental concern, we sought to find out whether activities such as camping, fishing, bird-watching and photographing nature were related to higher concern. Most young Australians, it seems, have been camping and so camping itself did not discriminate “high” from “lows” of either gender. Both “high” and “low” boys had been fishing more than girls from either group but fishing itself was not related to environmental concern. It has been bracketed with shooting in other studies as a “consumptive” rather than passive recreational activity (such as bird-watching, photography or bush-walking), and unrelated to environmental responsibility or concern (Dunlap and Heffernan, 1975). It is important to mention that “high” boys more than “low” boys recall with pleasure having been out in the “bush” or mountains on their own. Such apparent contentment with their own company, combined with evidence of lesser susceptibility of “high” to influence by others may indicate a stronger individual identity.

Boys in both the “high” and “low” groups said that they played video games much more than did girls. Given that a number of these involve interaction with violent images, it could be said that such activity promotes the sort of abstracting, objectifying, desensitising consciousness and promotes a binary morality separating self from other that ecofeminists say is inimical to environmental concern. However, further enquiry may show that the problem-solving content of the videos that the “highs” watch may be higher.

Socio-economic factors

As parental education and occupational ranking increased so did environmental concern. Adolescents in lower SES schools responded in a more “materialist” way than did their more socially advantaged peers. The students in the low SES/high NESB school, for example, were:

- more likely to assert the right to use cars as wished;
- more likely to assert the right to use 4 wheel-drive vehicles freely in parks;
- less likely to believe that recycling cans was worthwhile; and finally,
- less confident that individual effort to save the environment makes a difference.

It should be stressed that the lower SES residential areas of Melbourne are less well served by public transport than higher SES ones although we did not examine transport provision in each of the areas studied.

On three other items, low SES/high NESB respondents scored low and showed a more laissez-faire attitude towards environmental controls: restrictions on the use of plastics in packaging; banning of CFCs, and government controls of industry. By contrast, the high SES/low NESB students scored in more liberal, “green green” or ecocentric way on 7 of the attitude items including opposition to the removal of trees and the right to make environmental protest. This school is also located in a “leafy” suburb.

It is to be remembered that boys and girls in lower SES schools did not respond in the same way. For example, lower SES girls were more likely than boys to say they wanted a job in an environmentally related field.

The highest ranking given to “*succeeding at school*” on a list of 10 values was at the high SES/high NESB school which was also second highest in environmental concern. It seems likely that social advantage and the aspiration of upwardly mobile migrants combined to produce a relatively high need for school achievement.

Analysis of the data from the 117 interviews showed that for boys a higher level of parental education (particularly that of mothers) was the most important factor accounting for separation into “highs”. For girls, parental education was much less important.

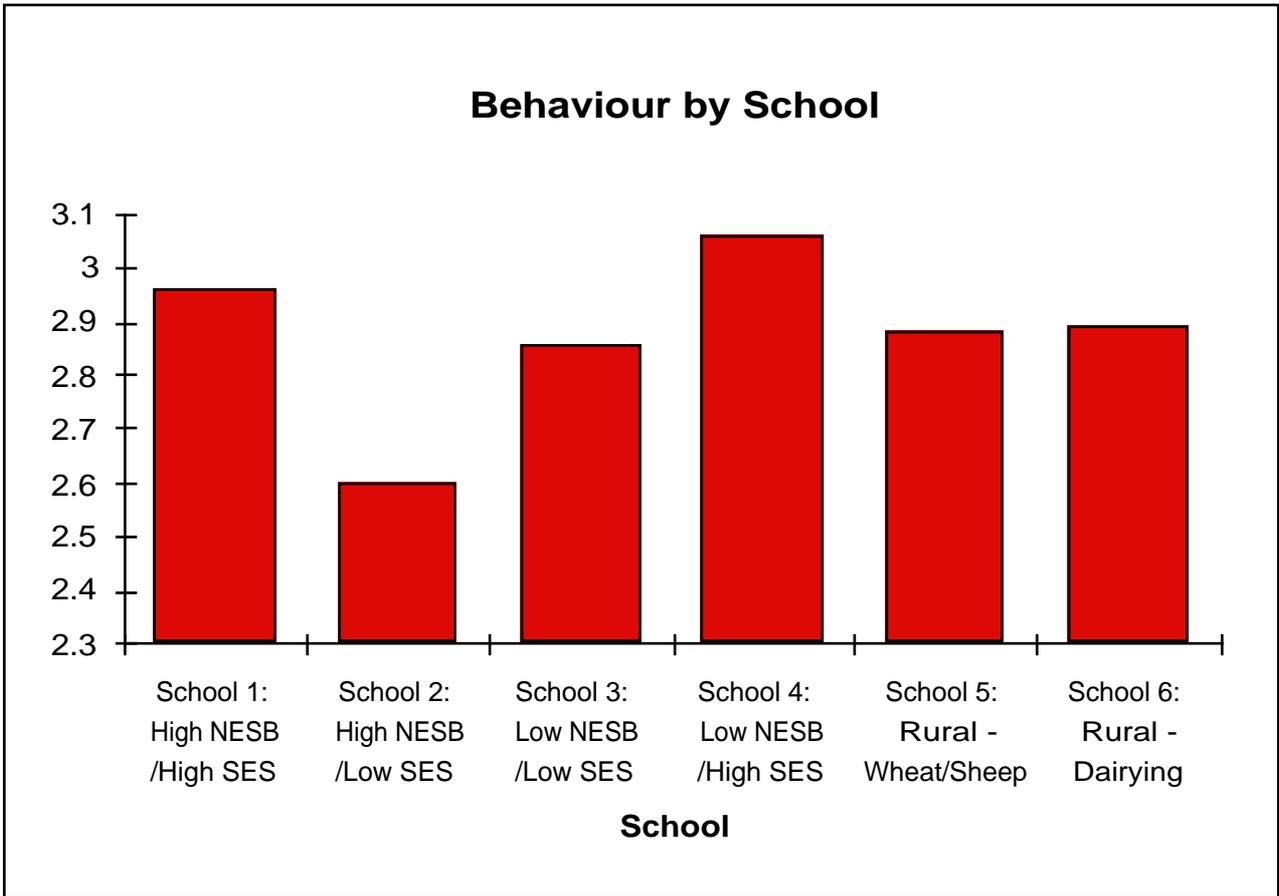
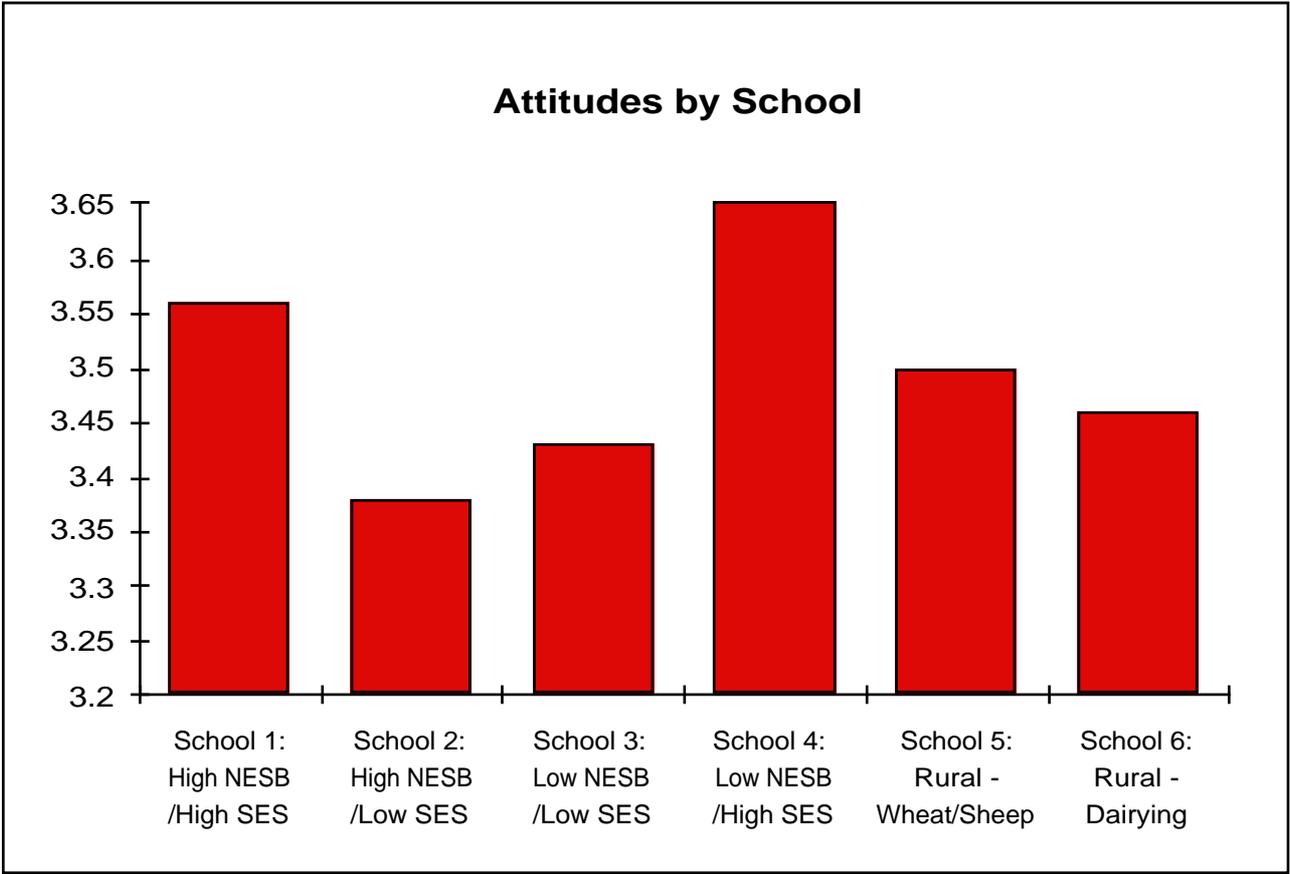
Another likely influence of higher level of parental education is the greater interest in politics shown by high concern adolescents that has been mentioned above.

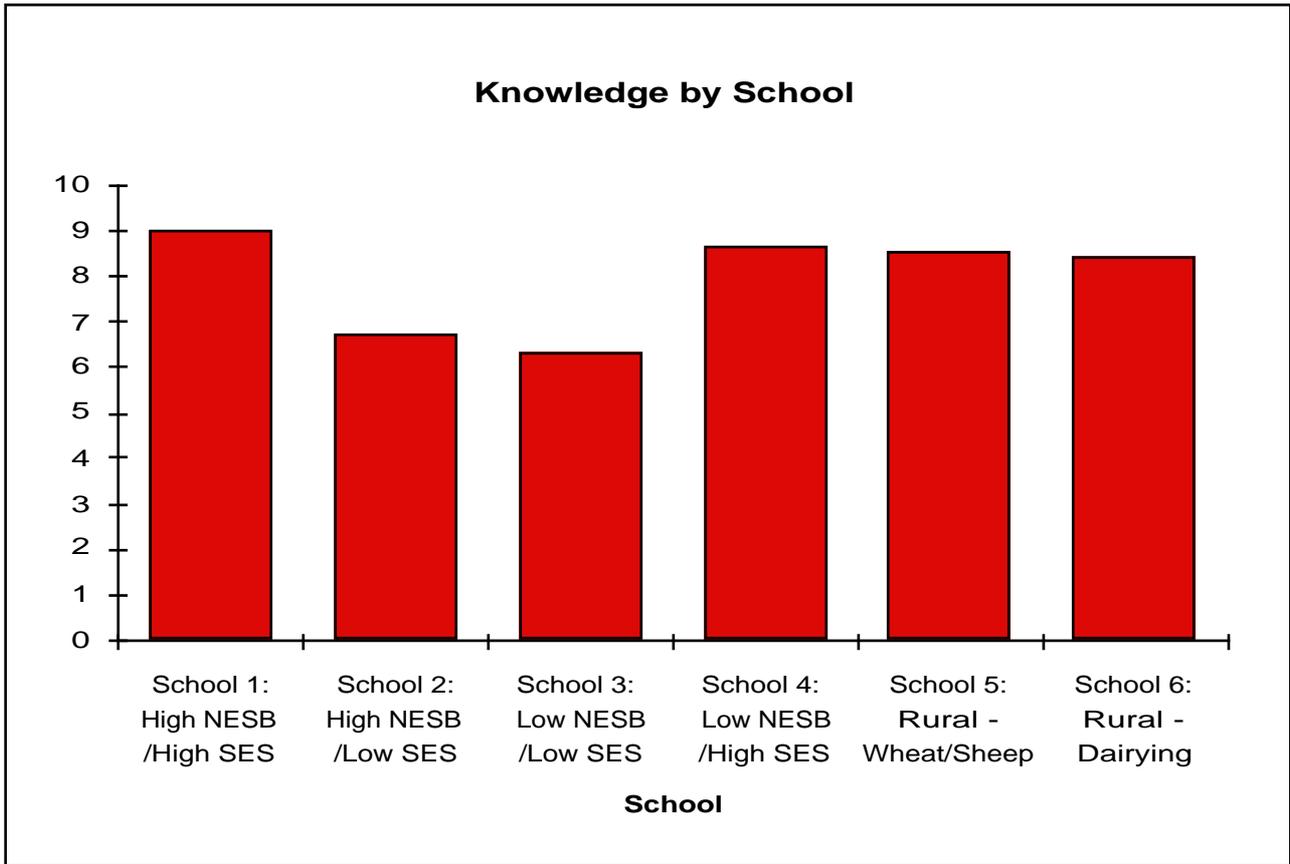
Market research indicates that those who read **The Age** or **The Australian** newspapers rather than the more popular **Herald Sun** and who watch the ABC television news instead of the commercial versions are likely to be better educated. This socio-economic attribute also applied to the parents of students who are high in environmental concern.

Both high concern girls and boys were more interested in gardening than the low concern ones and this was particularly the case among the girls. Both genders agreed strongly that this interest in turn spilt over to an interest in trees and plants in general although they may

Social class (SES), gender and ethnic composition (NESB) of the six secondary schools and mean scores on environmental attitude (range 1-5), behaviour (range 1-5) and knowledge (range 0-20) scales.

School Type	Boys (frequency and mean scores)	Girls (frequency and mean scores)	Total (frequency and mean scores)
School 1 High NESB High SES	<i>n</i> = 85 Attit: 3.43 Behav: 2.81 Know: 9.19	<i>n</i> = 62 Attit: 3.73 Behav: 3.16 Know: 8.79	<i>n</i> = 147 Attit: 3.56 Behav: 2.96 Know: 9.01
School 2 High NESB Low SES	<i>n</i> = 71 Attit: 3.25 Behav: 2.54 Know: 6.23	<i>n</i> = 65 Attit: 3.53 Behav: 2.66 Know: 7.32	<i>n</i> = 136 Attit: 3.38 Behav: 2.60 Know: 6.75
School 3 Low NESB Low SES	<i>n</i> = 45 Attit: 3.41 Behav: 2.82 Know: 6.73	<i>n</i> = 21 Attit: 3.47 Behav: 2.94 Know: 5.43	<i>n</i> = 66 Attit: 3.43 Behav: 2.86 Know: 6.32
School 4 Low NESB High SES	<i>n</i> = 65 Attit: 3.61 Behav: 2.90 Know: 9.42	<i>n</i> = 59 Attit: 3.70 Behav: 3.24 Know: 7.85	<i>n</i> = 124 Attit: 3.65 Behav: 3.06 Know: 8.67
School 5 Rural: Wheat-Sheep	<i>n</i> = 25 Attit: 3.22 Behav: 2.40 Know: 8.36	<i>n</i> = 56 Attit: 3.53 Behav: 3.09 Know: 8.66	<i>n</i> = 81 Attit: 3.50 Behav: 2.88 Know: 8.57
School 6 Rural: Dairying	<i>n</i> = 63 Attit: 3.44 Behav: 2.85 Know: 8.95	<i>n</i> = 44 Attit: 3.50 Behav: 2.95 Know: 7.56	<i>n</i> = 107 Attit: 3.46 Behav: 2.89 Know: 8.38
Total (students)	354	307	661

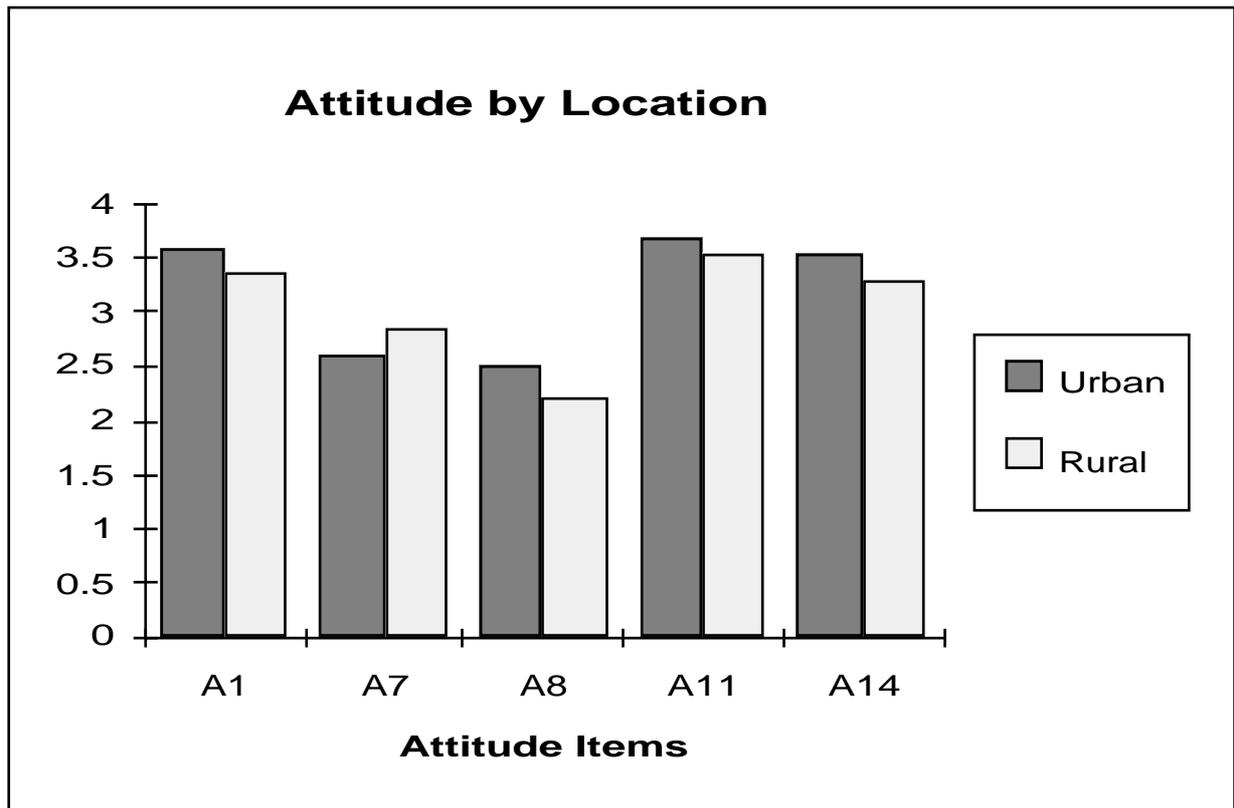




have felt that this was what the interviewer wanted them to say. Access to domestic land and nearby trees and park tends to increase with socio-economic status. As SES increases also, gardening in spare time is more likely to be seen as a contrast to sedentary paid employment. Teachers in the lower SES/high NESB school said that the boys perceived gardening to be too similar to the arduous agricultural and labouring employment their immigrant parents sought to escape.

Urban - rural differences

As measured by the attitude/belief scale, urban students were slightly more concerned about environmental issues than rural ones. The four items for which the former showed greater support were: the right to make environmental protest, family planning (for population control), reporting of cars with smoky exhausts, and significantly, acceptance of government controls for environmental purposes. Conservative populations such as farming communities tend to be opposed to such government controls. Not surprisingly, the one item for which the rural students showed greater support was the belief that individual environmentally responsible effort does make a difference.



A1: Strong controls by Government are the most effective way to reduce pollution problems.

A7: Environmental protesters have no right to get in the way of people doing their job.

A8: No matter how hard an individual tries, acting alone, their efforts to help save the environment not going to make any difference.

A11: Family planning is important if over-population is to be avoided, and a reasonable standard of living assured.

A14: It is everyone's responsibility to report to the EPA (Environmental Protection Agency) any car seen driven with a smoky exhaust.

An interesting response on the five item behaviour scale was that to:

If I had a cat of my own, I would put bells on its neck to reduce the killing of native birds, animals and reptiles.



B1: I do all I can to make sure that all used aluminium cans are recycled.

B5: If I had a cat of my own, I would put bells on its neck to reduce the killing of native birds, animals and reptiles.

Rural students in general were least likely to say that they would bell their cat and the boys from the wheat/sheep town were the least likely of all the 12 sub-groups to endorse this statement. Perhaps the boys saw it as the cat's duty to kill mice and sparrows and perhaps they also believed that feral animals accounted for such destruction of wild-life that belling the cat would have little effect.

Rural students knew more than the urban ones about the issues dealt with by the knowledge scale. It was only on the item asking for a definition of an ecosystem that the urban students performed better. Rural school students were markedly better informed about the extent of forest removal in Australia, *e coli* as a measure of water pollution, effects of thinning of the ozone, the location of (now abandoned) developments of wind energy production along the southern coast, and finally, the definition of a temperature inversion. The urban-rural differences must be viewed cautiously; in a sample of only two rural and four urban schools, knowledge differences can reflect different emphases in teaching rather than location as such.

Consistent with the sample as a whole, rural girls showed greater concern than boys on the attitude/belief scale, the behaviour scale, and in their ranking of *deterioration of the environment* on the list of ten concerns.

Urban school students put a higher value than their rural counterparts on their *succeeding at school*, the lowest score of the six on this variable being at the school in the wheat-sheep area. The boys there recorded the lowest attitude score of all and gave highest priority of all the 12 sub-groups to *doing better at sport*. By contrast, the girls scored highest of all on the recycling item on the behaviour scale. According to teachers at the school, the girls had responded to a comprehensive recycling program. This gives an indication of the way in which work on attitudes and behaviour reinforce one another.

Conclusion and implications for research and teaching

As indicated earlier, although “the environment” has a material reality, it is also a human construction. Our relationship to it is shaped by culture - by our identity or notion of what we are and our social and material goals, and by the means we use to achieve such goals. That is, our consciousness of the environment is related to self-consciousness, our understanding of ourselves and the part we see ourselves playing in society. It is not surprising that environmental concern among adolescents is linked to gender, one of the significant forms of division, identity and mobilisation in society and also to level of parental education. Gender and education serve to mediate experiences and enable people to draw different meanings from them.

Environmental amelioration is therefore of central, not peripheral sociological and educational concern. If we want to restrain environmental degradation we need to look first of all at the ways we feed, clothe, house educate, transport, and entertain ourselves: at our patterns of production and consumption. Second, and conversely, we need to see how those initial choices serve to liberate or constrain us. Third, (and not the subject of this research) are the factors within a given social grouping or stratum that lead to greater or lesser concern, desire to change, sense of potency, sense of control, and all the other socio-cultural variables identified in the model described. At the same time, any policies or strategies for change must recognize that people have differential access to power, influence and material rewards and thus differential opportunities to contribute to ecological sustainability.

The literature search for this study showed the importance for environmental concern among adults of an extended education, particularly in the humanities, social sciences and creative arts. Our research shows a clear association between level of parental education and boys’ environmental concern. It would seem likely that such extended parental education helps equip boys to become more critical of economic rationalist and consumerist policies, to distinguish between ends and means, to strike a balance between the instrumental aspects of our culture on one hand and the expressive and evaluative aspects on the other. If these are the benefits of this sort of education, it is particularly distressing from the environmental perspective to see a decline in the popularity of the social sciences and humanities at the senior secondary school level over recent years.

It may also be the case that a benefit for boys’ environmental concern of their parents’ extended education is that the latter, and in particular the mother’s education, leads both parent and child to be more critical of gender roles. It may be that more people receiving an extended liberal and socially critical education encourage their sons to identify with and

engage in some of the activities such as child-care, housework, caring for relatives and shopping that might normally be left to girls. It remains for further research to show whether a more diverse socialization for boys is conducive to environmental concern. However there is some suggestion in our research that this might be so. For example, the literature shows us that in rural areas, gender divisions are still more marked than in urban areas. Our data show that boys in the wheat-sheep area who were the most concerned of all about doing better at sport - a distinctive feature of rural masculine culture - exhibited the lowest environmental concern. It is possible that as rural women are given more responsibility for decision-making and given adequate recognition for the responsibilities they do have, that the rural gender divisions will be softened to the benefit of the environment. Concern is also low among boys in the two lower SES urban schools where a more aggressively masculine culture is typical.

We were not able to identify any clear patterns of influence from the participants' schooling although the results are consistent with the need to adopt what has been called a 'socially critical' approach to environmental understanding. This perspective has been summarised elsewhere (Hampel, Holdsworth and Boldero, 1996). Broadly, it argues that it is important for programs to be geared towards ecological and resource sustainability and not merely ones that involve either learning **about** the environment or taking place **in** it. The socially critical perspective emphasizes action research and all the social, political and technical skills, attitudes and types of knowledge required to undertake it.

As stated at various points, our research emphasizes the relationship between extended education, being female, and environmental concern. Previous studies of adults indicate that optimum benefit is achieved if the studies are broad and liberal rather than narrowly technical or instrumental. The integration of environmental issues into the broad framework of studies of society as developed in the Victorian Curriculum Standards Framework seems to be a sound move.

A further point to emerge from the research is that we have some work to do with boys. To say this is not to devalue the very important steps taken over the last two decades to redress educational and social disadvantage suffered by girls. Rather, it is saying that it is sound feminist strategy to look at the extent to which boys are provided with a socially and environmentally dysfunctional upbringing. When males occupy the most powerful positions in society and their environmental sensitivity is less than that of females, we clearly have to turn educational efforts towards the construction of masculinity among young people.

We wish to emphasize at the outset that in questioning what it is to be male, especially from a lower socio-economic or rural stratum, nothing will be achieved by condemning the culture of origin. Adolescents have to be led to an understanding of the forces shaping their lives and to appreciate the strengths and weaknesses of their gendered behaviour. The motor car, for example, assumes great significance in the lives of many such adolescents. Certainly

it is a major source of atmospheric pollution in both its construction and use. It contributes oil and other chemicals to stormwater. It disturbs the peace. It is a massive user of resources and energy and incurs colossal emotional and financial costs when it is crashed. Making road and parking space for it divides our neighbourhoods and destroys much of our natural environment. But for the adolescent it can provide unparalleled mobility and scope for social contact while offering an image of virility, modernity and power. Its appeal is very strong. It is meeting felt needs of adolescents and so its place in their social life and sense of self must be acknowledged first.

As indicated by the above example, we must recognize that knowledge of the environment as such contributes little to environmentally responsible behaviour. Attitudes and behaviour must simultaneously be addressed. We also have to broaden our concept of environmental knowledge and skills. Knowledge of political, economic and social systems and our part in them is an essential part of environmental knowledge. The skills of social research, communication, collaboration, organization and lobbying need to accompany skills in literacy and analysis. Curriculum change in the direction of greater environmental sustainability cannot be additive; it has to involve synthesis and integration of environmental investigation with the social and physical sciences. Fortunately, recent developments in curriculum frameworks indicate a concern to achieve this goal.

The most distinctive of the educational recommendations we make on the basis of our research is that relating to gender, in particular to the education of boys. In doing so we stress however, that the relationship between gender identity and environmental responsibility must be the object of further investigation. Much can be learnt from the recent work on the development of appropriate curricula and methods for girls.

Broadly, we need to strive to make positions of authority within schools equally attractive to girls and boys. Basic social education knowledge should include the distribution of males and females across positions of power and influence in the public spheres of society and child-care and domestic labour. Parent education and practice in interpersonal relationships could well assist a move towards greater environmental responsibility among boys. Theoretical enquiry should be accompanied by practical activity. Where possible, the adolescents' own lives and environment need to be the subject of empirical enquiry and appropriate action. Meaning, significance, priority, authenticity, value, purpose, opportunity, constraint, norms, power, status, violence, responsibility, connectedness etc. as they relate to adolescents' lives and the lives of others in different times and places must assume priority. We have to stop our young people at the school gates as it were and ask them how they understand what they have experienced.

Of course, all of this implies a measure of personal and professional threat for teachers. However, the alternative to risk-taking seems to us to be acquiescence in social reproduction, widening social division and environmental degradation that are the antithesis of desired educational outcomes.

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