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Environmental worldviews in higher education: a case study of Turkish college students

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Abstract

This study was designed to explore the nature of Turkish college students’ environmental worldviews and test hypothesized relations on environmental views, environmental course status, gender, school status and socio-economic status. A sample of 1295 undergraduate students from four Turkish universities was selected for the study and their views were measured on 25 statements. A self-administered survey questionnaire was used to collect the data. Study findings indicated that 56.5 % of students hold pro-environmental views while 24.6 % embrace views associated with the dominant social paradigm and 18.8 % have ambivalent views. Results provided partial support for the hypothesized relationships. Female students, students with low socio-economic status and first-year students have higher pro-environmental orientations. Taking a course on environment makes only slight difference in opinions. It was concluded that students’ environmental orientations change varying extent according to gender, socio-economic status and education which are probably determined by the historical and cultural context and characteristics of the population under study. Results suggest that there exists a reasonable level of environmental awareness; however university policies and practices on the environmental education and issues need to be reassessed and geared toward cultivating environmental sensitivity.

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Keywords: Environmental worldview; environmental education; New Ecological Paradigm; environmental culture

1. Introduction

Theory and research interests in environmental issues have been steadily increasing since 1970s, because it was realized that nobody is immune from the outcomes of ecological devastations and the well-being of future

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generations are in jeopardy (Vlek & Steg, 2007; Whitmarsh, 2011). Many researchers think that there are set of basic beliefs and values, called Dominant Social Paradigm (DSP), behind the problem of the ecological crisis (Martinez, Alonso, & Martin, 2008). It entails the belief that (a) humans are superior over nature, (b) humans are exempt from ecological constraints (c) Humans, by virtue of possessing culture and technology, are able to adapt nature to human ends, rather than adapt to the natural environment, (d) natural resources are abundant, progress is continuous and the laissez-faire economic growth is necessary, (e) science and technology can solve our problems, and (f) private property rights are sacred increasing sensitivity toward and concern for the environment have brought about a shift from the anthropocentric DSP to the ecocentric view which is based on (a) high valuation of nature, (b) generalized compassion toward other species, other people and other generations, (c) careful planning and acting to avoid risks to humans and nature, (d) recognition that there are limits to growth to which humans must adapt, (e) new society with cooperation, openness and participation, and (f) consultative and participatory new politics emphasizing on foresight and planning.

Concurrently, environmental studies have emerged and proliferated. Using the general assumption that the nature of environmental condition depends on the prevailing character of mental and material production of daily life, studies have concerned mostly with the existing environmental conditions, environmental use, and people’s dispositions toward environment (De Grooth & Steg, 2007; Nooney et al., 2003), the socio-psychological and cultural aspects (DeGroot & Steg, 2007; Schultz et al., 2005). Majority of studies (Aytülkasapoglu & Ecevit, 2002; Johnson, Bowker, & Cordell, 2004; Poortinga, Steg, & Vlek, 2004; Talay, Gündüz, & Akpınar, 2004; Bodur & Sarigölü, 2005) have been based on cross-sectional analyses using various socio-demographic, educational, cultural, attitudinal and behavioral variables. Numbers of them (Bamberg, 2003; Kemmelmieier, Krol, & Kim, 2002; Davis, Green & Reed, 2009; Choi & Fielding, 2013) have focused on the differences due to the diverse structure of concerns, worldviews, values, beliefs and attitudes or on causal relationships among the various variables. Increasing number of studies (De Groot & Steg, 2007; Leung & Rice, 2002; Rauwald & Moore, 2002; Fairbrother, 2012) have been interested in cross-national or cross-cultural comparisons.

One of the commonly studied population groups in environmental studies has been college students. Students comprise of important segment of society and warrant attention in terms of studying environmental culture, opinions, attitudes and behaviors. They will be working in various sectors of society in the near future and performing important works such as managers, teachers, businessmen, industrialists and the like. The future quality and stability of life on our planet depends on youngsters developing the worldview necessary for making informed and sensitive decisions about the environment and becoming active participant in the creation of sustainable world. Students also have been the leading crusaders in the modern environmental activities and movements (Gough, 2008; Jenkins & Pell, 2006; Thapa, 2001; Rappaport, 2008). Understanding students’ worldviews on environmental issues are also functional for the design of policies to enhance the environmental awareness and sensitivity and support development and use of sustainable practices, methods and products.

Environmental studies focusing on students generally are interested providing cross-sectional information on the psychological and/or socio-demographic variables and the nature of environmental concerns, behaviors, worldviews and orientations of students. Such studies (Aytülkasapoglu & Ecevit, 2002; Johnson, Bowker & Cordell, 2004; Poortinga, Steg, & Vlek, 2004; Talay, Gündüz, & Akpınar, 2004) wanted to know the nature of students’ knowledge, opinions and attitudes toward environment and environmental issues. Studying undergraduate students in the United States, Thapa (2001) found that students seemed to express the importance towards environmental issues, but they lacked awareness. Some studies found significant relationship between environmental knowledge and environmental behaviors (Ridener, 1999), while others found no significant relationship (Shean & Shei, 1995). Regarding Turkish case, the 1990s and 2000s represent important changes in environmental consciousness, attitudes and behavior of Turkish people (Oğuz, Çakıcı, & Kavas, 2011; Erdogan & Baris, 2007; Talay, Gunduz, & Akpinar, 2004). It is an unquestionable fact that there is increasing need to conduct academic and administrative studies in Turkey. Thus, this article was designed to examine the environmental worldviews of Turkish university students. The primary objective of the study was to examine the
nature of students’ environmental worldviews and test five hypothesized relations in order to contribute to the accumulated knowledge on the issue for academicians, policy makers, field workers, organizations and other interested parties.

Studies on environmental orientation/worldviews of various sections of Turkish population generally state that people have rather conservative values (Taskin, 2009). However, the nature of Turkish population has been changing especially since 1980s. They have been watching, listening and reading a lot about the environmental issues and problems. Thus, their environmental awareness is expected to rise. College students represent the educated and advance section of society. Due to amounting information and discussion on environmental problems and felt need for environmental protection, we expect that majority of students hold pro-environmental views. Based on the above rationale, the following hypothesis was put forward:

H1: Although more students are expected to have pro-environmental views, they are not expected to embrace high level of pro-environmental orientation.

It is generally believed that education can increase an individual’s ability to appreciate complex and integrative large scale problems, and thus serves to heighten environmental awareness and concern (Ewert & Baker 2001; Ruff & Olson, 2009). Environmental literacy are connected with students’ sensitivity, awareness, and understanding of changing environmental issues and asserted that increased and responsible environmental action skills are developed as a result of environmental education (Bradley et al. 1999; Magnitorn, & Hellden, 2007; Moseley, 2000; Woodworth, Steen-Adams & Mittal, 2011). Some researchers (Leeming et al. 1997; Tikka et al., 2000) indicate that students’ participation in environmental activities is an important parameter in acquiring environmental attitudes. Hence, it is expected that taking a course on environment can make some difference, however extent of effect of taking a course in environment is expected to vary according to socio-cultural environment and personality traits:

H2: Students who took a course in environment and students who did not take any will differ in their environmental worldviews.

Generally, people gain environmental sensitivity through formal and lifelong education in society. The extent of environmental sensitivity depends on the extent of circulation of information and discussions about environment in daily agendas set by social institutions like mass media, family and school in a society. Given the fact that there is inadequate, yet somewhat increasing level of such informational environment and adaptation of environmental culture in Turkey, years spent at school is expected to influence students’ existing opinions about environment and environmental issues. However, studies provide conflicting results. Some of the previous studies have found positive relationship between school grade (years passed at school) and environmental opinions/attitudes. Others found negative relations. Some studies suggest that young children had more positive attitudes toward environmental issues than did older students (Malkus and Musser, 1997; Musser and Diamond (1999). Based on these facts, the following hypothesis was extracted:

H3: First year students and fourth year students will differ in their environmental views.

Several studies found that females have more positive opinions and attitudes and greater concern toward environmental issues than do males (Tikka, Kuutinen & Tynys, 2000; Yilmaz et al., 2004; Taskin, 2009). Paradoxically, some studies found males to be more sensitive to environmental issues than females (MacDonald & Hara, 1994). Yet some others found no significant gender differences (Yilmaz et al, 2004). Females are acculturated in Turkish society in such a way that they become more sensitive to their social, cultural and physical environments. Thus, it is expected that more females hold pro-environmental views than males. Despite the conflicting finding on gender differences, it is safe to assume that Turkish female students are more environmental oriented in their worldviews as compared to males, because Turkish society is changing, but still reproduces traditional values about the gender differences:

H4: There is a gender difference in environmental views: more female than male students have pro-environmental views, while more male than female students have pro-DSP view.
Some studies have found positive relations between socio-economic status (SES) and environmental opinions/attitudes and behaviors (Yilmaz et al, 2004), while some others came up with the contrary results (Taskin, 2009; Uyeki & Holland, 2000). It is generally assumed that Turkish university students mainly come from a particular socio-economic sector of society, therefore, there is certain homogeneity of environmental orientation, awareness, opinions and attitudes among them (Talay, Gündüz & Akpınar 2004). Socio-economic-status is still expected to make some significant differences in environmental orientation, because there is high probability that they expose to differing information and activity on environmental protection in their daily life. The existing research suggests that direction of difference is dependent upon variety of cultural and personal factors like the way students evaluates the information they receive. This means that the difference is expected, but the direction cannot be predicted. Thus, the following hypothesis was put forward:

H3: There is relationship between socio-economic status and environmental views.

This article was designed to examine the environmental worldviews of Turkish university students. The primary objective of the study was to examine the nature of students’ environmental views and test five hypothesized relations in order to contribute to the accumulated knowledge on the relationship between some socio-demographic variables and environmental orientations.

2. Method

The study population of this survey research included students from Baskent University, Ankara University, Mustafa Kemal University and Karadeniz Technical University. A sample of 145 students from Mustafa Kemal University, 107 from Karadeniz Technical University, 102 from Ankara University, and 941 from Baskent University were selected for the study. Study sample included 1295 students.

A 25 item questionnaire was developed by using the related studies and the revised NEP scale which was constructed by Dunlap, Van Liere, Mertig & Jones in 2000 and considered one of the most widely used and scrutinized methods to measure environmental orientation, attitudes and behavior (Dunlap, 2008). Socio-demographic variables included gender, school status, environmental course and socio-economic status. School status was defined as years at school and categorized under first-year, second-year, third-year and fourth-year students. Environmental course was defined any environmental related course and measured by asking if a student has taken any course on environment, and coded as “yes” (course-taker) and “no” (non-taker). SES was measured by family income and grouped as “low”, “medium” and “high”. Mean scores for central tendency and frequency analysis for evaluation of single item distributions were used. Besides providing the univariate distributions for every item on the study scale, summary-indexes were developed in order to determine the overall environmental orientation: Two types of summary-indexes were constructed in order to obtain average distributions from the 25 items: (1) An overall environmental orientation index was calculated by averaging the mean scores of 25 items. (2) Frequency distribution indexes for each column were calculated by averaging the column scores. These summary-indexes were calculated in order to provide (a) a general central tendency score of students on the mean distributions of the 25 items, and (b) general frequency distribution scores on each level of 5 scale ordinal measurement. This is not done in order to test the scale, but to summarize the responses of students further. Chi-square test was utilized in order to test the hypotheses. The value of Pearson’s χ² and its probability value (p) are reported to indicate the statistical significance. Adjusted standardized residuals (R) were used to decide which levels/cells of the variables are the major contributors, but were not reported in tables. The 25 item scale theoretically included five dimensions with two major factorial orientations (the pro-environmental and DSP orientations). The principal components analysis and varimax factor rotation were carried out in order to find out the existence of (1) general dimensional structure and (2) two dimensional structure of the scale, and thus, to validate the scale by demonstrating that its constituent items load on the same two factors assigned as the pro-environmental and pro-DSP statements. Each item were measured on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). All pro-environmental responses were expected to be relatively high scores and
all DSP responses were expected to be relatively low score. Agreement with the first 15 items indicates pro-environmental orientation. Agreement with the remaining 10 items indicates pro-DSP orientation. Therefore, the scores were reversed for these 10 items.

3. Findings

3.1. Students’ environmental worldviews

The environmental worldviews and orientations of the students were determined by providing percentage distribution, mean scores and indexes of the students’ scores (Table 1). The first hypothesis indicated that more students have pro-environmental worldviews, however they will not show high level of pro-environmental orientation. Findings supported this hypothesis: Frequency distributions of the overall orientation index (Table 1) show that 30.3% students strongly agree and 26.2% agree (56.5% overall agreement), whereas 11.5% strongly disagree and 13.1% disagree (24.6% overall disagreement). 18.8% have ambivalent views about the issues studied.

Distributions on the Pro-environmental items (items 1-15) show that three thirds of students (75.3%) agree on these statements, whereas only 10.5% disagree and 14.1% are undecided. In terms of overall mean index of pro-environmental items, general orientation of students is at 4.05 (mildly agree) level. Conversely, distributions on the pro-DSP items (items 16-25) reveal that 28.5% agree with the statements, while there are considerable numbers of disagreeing (45.7%) and undecided (25.8%) students. Regarding overall mean index of pro-DSP items, general orientation of students is at 3.31 (middle) point.

3.2. Difference between the environmental course-takers and non-takers

The second hypothesis stating differences between the students who took an environment related course and those who did not take any was partially confirmed: Chi-square test results showed only six significant results at 0.05 levels. These six statements are related with environmental abuse, fast economical growth, trust in human ingenuity, nature’s ability to overcome impact of modern industries, human’s rule over nature and limitless usability of nature.

Agreements on items by course-takers range from 61.8 to 81.0% for pro-environmental items and 17.4 to 40.6% for the pro-DSP items. Agreements by non-takers range from 49.7 to 84.6% for the pro-environmental items and 23.2 to 39.9% for the pro-DSP items. Item 4 has an undecided percentage of 6.6 for course-takers and 6.5 for non-takers. The remaining undecided responses range from 11.5 to 39.6% for course-takers and 20.7 to 32.9% for non-takers. Distribution of agreement with the statement that humans are severely abusing the environment is 81.0% for the course-takers and 84.6% for non-takers. 12.5% of course takers and 8.9% of non-takers disagree with the same statement. Similarly, 61.8% of course-takers and 49.7% of non-takers agree with the statement of “fast economical growth mostly engenders more harm than benefit.” Disagreement is relatively low: It is 14.0% for course-takers and 20.3% for non-takers. More non-takers (30.0%) than course-takers (24.2%) are undecided. Those who think that human ingenuity will insure that we do not make the earth unlivable comprise 39.9% of non-takers and 40.6% course-takers. Contrary to the expectation that there would be more anti-exemptionalist view among course-takers than non-takers, more non-takers (27.2%) than course-takers (19.8%) do not agree with the statement. There are 32.9% non-takers and 39.6% course-takers that are undecided.

Disagreement between the non-takers and course-takers on the statement that the balance of nature is strong enough to cope with the impacts of modern industries are slight (46.9% and 43.9% respectively). Similarly, 24.8% of non-takers and 25.3% of course-takers agree with the statement. There is a considerable difference between the two groups in the idea that humans were meant to rule over the rest of nature. 63.3% of course-takers and
50.3% of non-takers do not agree with the idea. Correspondingly, 17.4% of course-takers and 30.0% of non-takers agree with it. Likewise, 68.5% of course-takers and 55.1% non-takers do not agree with the idea that resources can be used limitless for the development of tourism, and more undecided (20.7%) and disagreeing students 23.2%) are found among non-takers than course-takers (11.5% and 20.0% respectively).

Table 1. Frequency and mean distributions, and overall orientation index.*

<table>
<thead>
<tr>
<th>Item</th>
<th>Statements</th>
<th>% Distribution</th>
<th>N</th>
<th>Mean*</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td></td>
<td>SD</td>
<td>D</td>
<td>U</td>
<td>A</td>
</tr>
<tr>
<td>1.</td>
<td>We are approaching the limit of number of people the earth can support</td>
<td>7.5</td>
<td>8.5</td>
<td>22.0</td>
<td>33.5</td>
</tr>
<tr>
<td>2.</td>
<td>When humans interfere with nature it often produces disastrous consequences</td>
<td>5.2</td>
<td>9.3</td>
<td>13.9</td>
<td>35.4</td>
</tr>
<tr>
<td>3.</td>
<td>Plants and animals have as much right as humans to exist</td>
<td>2.4</td>
<td>2.4</td>
<td>4.2</td>
<td>16.5</td>
</tr>
<tr>
<td>4.</td>
<td>Humans are severely abusing the environment</td>
<td>3.6</td>
<td>6.0</td>
<td>6.4</td>
<td>35.3</td>
</tr>
<tr>
<td>5.</td>
<td>Despite our special abilities humans are still subject to the laws of nature</td>
<td>4.7</td>
<td>7.6</td>
<td>20.6</td>
<td>37.9</td>
</tr>
<tr>
<td>6.</td>
<td>Balance of nature is very delicate and easily upset</td>
<td>3.1</td>
<td>12.0</td>
<td>14.6</td>
<td>35.7</td>
</tr>
<tr>
<td>7.</td>
<td>If things continue on their present course, we will soon experience a major ecological catastrophe.</td>
<td>2.9</td>
<td>4.8</td>
<td>19.9</td>
<td>36.8</td>
</tr>
<tr>
<td>8.</td>
<td>Science cause harm as much as benefit</td>
<td>9.4</td>
<td>10.9</td>
<td>21.7</td>
<td>31.2</td>
</tr>
<tr>
<td>9.</td>
<td>Technological development cause harm as much as benefit</td>
<td>4.7</td>
<td>8.1</td>
<td>14.2</td>
<td>38.8</td>
</tr>
<tr>
<td>10.</td>
<td>Human should live in harmony with the nature in order to survive</td>
<td>1.4</td>
<td>2.4</td>
<td>9.4</td>
<td>29.7</td>
</tr>
<tr>
<td>11.</td>
<td>Fast economical growth engenders more harm than benefit most of time</td>
<td>4.1</td>
<td>14.6</td>
<td>28.5</td>
<td>32.7</td>
</tr>
<tr>
<td>12.</td>
<td>Environmental laws should be enforced vigorously</td>
<td>2.0</td>
<td>5.1</td>
<td>9.1</td>
<td>28.9</td>
</tr>
<tr>
<td>13.</td>
<td>We should take strong measures to protect resources of our country</td>
<td>1.4</td>
<td>3.1</td>
<td>6.9</td>
<td>21.0</td>
</tr>
<tr>
<td>14.</td>
<td>There should be control over the industry in order to prevent environmental problems</td>
<td>1.9</td>
<td>4.9</td>
<td>11.8</td>
<td>35.1</td>
</tr>
<tr>
<td>15.</td>
<td>Tourism should meet its responsibility to protect the environment</td>
<td>1.9</td>
<td>3.2</td>
<td>8.6</td>
<td>18.5</td>
</tr>
<tr>
<td>16.</td>
<td>Humans have the right to modify natural environment to suit their needs</td>
<td>38.6</td>
<td>26.5</td>
<td>15.1</td>
<td>13.6</td>
</tr>
<tr>
<td>17.</td>
<td>Human ingenuity will insure that we do not make the earth unliveable</td>
<td>8.6</td>
<td>16.7</td>
<td>34.6</td>
<td>25.2</td>
</tr>
<tr>
<td>18.</td>
<td>Balance of nature is strong enough to cope with the impacts of modern industries</td>
<td>18.3</td>
<td>27.9</td>
<td>28.8</td>
<td>16.6</td>
</tr>
<tr>
<td>19.</td>
<td>The so-called &quot;ecological crisis&quot; facing humankind has been greatly exaggerated</td>
<td>29.3</td>
<td>30.0</td>
<td>25.5</td>
<td>11.1</td>
</tr>
<tr>
<td>20.</td>
<td>Humans were meant to rule over the rest of nature</td>
<td>31.3</td>
<td>22.2</td>
<td>19.6</td>
<td>18.7</td>
</tr>
<tr>
<td>21.</td>
<td>Humans will eventually learn enough about how nature works to be able to control it</td>
<td>6.4</td>
<td>10.2</td>
<td>30.0</td>
<td>32.1</td>
</tr>
<tr>
<td>22.</td>
<td>Most problems can be solved by technological development</td>
<td>6.9</td>
<td>20.1</td>
<td>32.9</td>
<td>31.6</td>
</tr>
<tr>
<td>23.</td>
<td>Environmental protection laws got too strict in recent years</td>
<td>28.5</td>
<td>26.0</td>
<td>22.8</td>
<td>13.0</td>
</tr>
<tr>
<td>24.</td>
<td>Environmental laws put unfair burden on industry</td>
<td>26.3</td>
<td>23.8</td>
<td>30.6</td>
<td>13.5</td>
</tr>
<tr>
<td>25.</td>
<td>Resources can be used limitless for the development of tourism</td>
<td>37.5</td>
<td>21.7</td>
<td>18.4</td>
<td>13.8</td>
</tr>
</tbody>
</table>

Overall Orientation Index | 11.5 | 13.1 | 18.8 | 26.2 | 30.3 | 1286 | 3.75 | 1.100

* SD = Strongly disagree, MD = Mildly disagree, U = Unsure, MA = Mildly agree, SA = Strongly agree

* Mean Likert scores after adjustment for direction. Higher score indicates pro-environmental view.
3.3. School status

The respondents comprised of 37.6% first year, 32.3% second year, 16.8% third year and 13.4% fourth year students. The chi-square tests provided no support on 22 items for the hypothesis (H3). There were significant differences of opinion on only three statements at .05 level (items 9, 19, 25). Frequency distributions on the three items show that there are considerable differences between first year students and fourth year students: 76.3% of the first year and 62.8 % of last year students agree with the statement that technological development cause harm as much as benefit, whereas 10.7% of first years students and 17.2% of last year students do not agree with it ($\chi^2=17.3$, df =4, $p=.002$). Regarding the statement “humans were meant to rule over rest of nature”, 28.8% of first year students agree, while 23.1% of fourth year students agree. Undecided first year students are much more than fourth year students (22.2% and 13.6 %, respectively). Similarly, less first year students (49.0%) than fourth year students (63.3%) disagree with this statement ($\chi^2=11.1$, df=4, $p=.02$). Similar results were found regarding the statement that resources can be used limitlessly for the tourism development: 24.0 % of first year students and 18.5% of fourth year students agree with the statement, whereas 58.1% fist year and 69.9% of the fourth year students disagree ($\chi^2=17.3$, df=4, $p=.002$).

3.4. Gender differences

Majority of students (54.7%) were females. Chi square test results showed that females and males significantly differ in 20 out of 25 items. More females than males agree with all 13 significant pro-environmental statements. On the other hand, more males than females agree with all significant pro-DSP statements. These results overwhelmingly support the hypothesis stating existence of gender difference on environmental worldviews (H4). Range on the agreement responses of females on the pro-environmental items is higher than males (55.4 to 93.5% and 49.5 to 88.0%, respectively). Disagreements on the same items range from 2.7 to 16.9% for the females and 4.9 to 24.5% for males. Similarly, there are no striking gender differences in the pro-DSP items: Agreements range from 11.9 to 52.9% for females and 19.3 to 53.9% for males, whereas disagreements range from 14.8 to 69.2% for females and 18.9 to 60.3% for males. A large majority of both female and male students agree on all pro-environmental statements (statements 1-15). However, more girls agree than boys with all these statements. There is also no particularly marked difference in worldviews of males and females on pro-DSP statements. Majority of both sexes disagree that humans have the right to modify the natural environment to suit their needs, however more females (69.2%) than males (60.3%) show disagreement. Similar ranges of differences are found in their answers to statements 19, 20 and 23. The range of differences in undecided responses between females and males are also not enormous: maximum difference is 6.6%. It seems that little over one-third of both sexes have ambivalent views on the human ingenuity that we do not make the earth unlivable place (statement 17).

3.5. Socio-economic status

Of 1295 students, 504 (% 38.9%) declined to answer to this question. The test results showed 16 significant and 9 insignificant correlations at .05 level. These results provide partial support for the hypothesis (H5) on the existence of relationship between socio-economic status (SES) and environmental orientation. Regarding the significant relations, low SES students agree with all pro-environmental statements more than medium SES and high SES students. Expectedly, low SES students agree less with pro-DSP statements. Similar results were found in most statements between the medium SES and high SES students. Agreement responses on the pro-environmental items were in the range of 65.4% - 96.1% for low SES group, 69.0- 90.6% for the medium SES group and 59.9% - 88.2% for the high SES group. Agreement on the pro-DSP items were in the range of 12.8% - 27.1% for low SES group, 18.7% - 29.1% for the medium SES group and 20.7 % - 26.5% for the high SES
group. Findings also show that there are considerable differences in undecided responses: The lower SES group has less undecided responses than the other two groups on all items. Furthermore, there are more undecided responses to the pro-DSP items than to the pro-environmental items.

4. Conclusion and discussion

The study results show that majority of students (56.5%) hold pro-environmental views. However, about one fourth of students (24.6%) have pro-DSP oriented ideas. Furthermore, there is considerably high percentage of undecided responses (18.8%). Human exemptionalist views are rather low, whereas anti-exemptionalist ones are comparably high among students (Items 17, 21, 5). Anthropocentric beliefs are slightly low (between 20-25%), while anti-anthro beliefs are quite high (Items 3, 16, 20). Only one-fourth place faith in the Earth’s ability to rebound from the industrial impacts. There is a mixed opinion on the harm/benefit of the science and technological development. In the same way, majority are either skeptical (34.6%) or disagree (25.3%) on the idea that human ingenuity will ensure to solve environmental problems. These findings suggest that the students’ environmental worldviews do not reflect a widespread adoption of the pro-environmental orientation.

Students’ responses to some items that show higher environmentally sensitive views partially support the Bryan Norton's convergence hypothesis that both anthropocentric and non-anthropocentric ethics will recommend the same environmentally responsible behaviors and policies. Yet, the present findings and accumulated knowledge on the subject show that anthropocentric ethics legitimately raises questions about how to feel, not just about which actions to take or which policies to adopt, and undermines some of the common attitudes like love, respect and awe toward the natural world (McShane, 2007). The previous studies mostly indicate positive relationship between environmental knowledge and pro-environmental behaviors (Mangtorn & Hellden, 2007; Tikka, Kuutinen, Tynys, 2000). Finding only 6 significant relations out of 25 correlations implies at least two inhibiting conditions: (1) the nature of the courses in environment is not adequate in cultivating environmental knowledge, awareness, sensitivity and pro-environmental orientation, and (2) there is a lack of necessary supportive social, cultural and political atmosphere/practices. The findings on the relationship between the school status and environmental views can be considered as an additional indicator confirming these two conditions: It was found that first year students are more concerned about the environment than last-year students. This also supports previous studies (Malkus & Musser, 1997; Musser & Diamond 1999) that found that younger students had more positive attitudes toward environmental issues than older ones. Some studies provide conflicting results about the relationship between environmental knowledge/education and environmental opinions, attitudes, and behavior (Bradley et al., 1999; Hsu, 2004; McMillan et al., 2004; Yilmaz et al., 2004). The differences between first-year and fourth-year students in the present study lead us to question the value/nature of the knowledge obtained in and time spent at the university. All these results also suggest we should pay close attention to strong intervening variables like willingness to take proper action and environmental behavior. Furthermore, environmental policies and designs should pay closer attention to the issues such as motivational, affective and cognitive issues, content of curriculum, method of teaching, instructional design and nature of daily social practices. A proper policy and design also mean an evolution from conservational type of environmental education to education for sustainable development characterized by an awareness of the need for self-determination, democratic processes, a sense of involvement, ownership and empowerment, and of the complex relationship between environment and social equity (Gough, 2008; Van Weelie & Wals, 2002). Empirical findings about gender differences in environmental concern/view are inconsistent and inconclusive. Some studies found little if any gender differences while others found significant high level of support among females of the pro-environmental orientation (Ekici, 2005; Fernandez-Manzanal et al., 2007; Schreiner & Sjberg, 2003; Taskin, 2009; Tuncer et al., 2005; Uttro et al., 2004; Yilmaz et al., 2004). Finding of the current study implies that gender differences in environmental worldviews could have resulted from differences in students’ upbringing as being “girl/woman” and “boy/man” in a society that produces
differences in gender sensitivities. Future studies should focus on factors that create gender differences in environmental views, attitudes, motivation and behaviors.

The present study found inverse relations between SES and environmental opinions/attitudes, indicating that respondents with lower socio-economic status are more pro-environment than ones with higher status. Some studies came up with the similar findings (Taskin, 2009; Uyeki & Holland, 2000; Yilmaz et al., 2004, but others (Schultz, Zelezny, and Dalrymple, 2000) found that SES are not significantly related to ecocentric environmental concerns. These inconsistent findings suggest that the future studies should try to question, at least, (1) differences within the same SES across cultures in different countries and (2) the justifications low and high SES respondents provide for their own views, attitudes, concerns and/or behaviors.

Findings of this study suggest that there is still a long way to go in creating socially and environmentally responsible worldviews, behaviors, landscape and architectural designs, product designs and uses, and capacity building in industrial relations. Although this study provides fresh information on the subject studied, additional research in different settings is needed before definite conclusions can be made about environmental worldviews and related variables.

References


