The effects of demographic variables on students’ responsible environmental behaviors

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Abstract

The aim of the study was to investigate the effects of university students’ background variables (gender, age, grade and nature experience) on their responsible environmental behaviors. A total number of 307 students (134 females, 173 males) enrolled in various departments of Akdeniz University constituted the sample of the study. University Students’ Responsible Environmental Behavior Scale (USREBS) developed by the authors was used for this investigation. USREBS included 33 items on a six point Likert type scale (never to always) and consisted of seven sub-dimensions with acceptable reliability coefficient values (political behavior – α = .91, warning behavior – α = .84; legal behavior – α = .84; recycling behavior – α = .72; physical protection behavior – α = .69; saving behavior – α = .76 and persuasion – α = .86). Separate MANOVA analyses revealed that university students’ responsible environmental behaviors significantly varied across gender, grade, reading nature-related publications and participation in nature-related activities. These statistically significant results suggested that female students and those who followed nature related publications (e.g. books, journals, magazines) and frequently participated in nature related-activities engaged in responsible behaviors more than those who didn’t to protect the environment and prevent the environmental problems.

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1. Introduction

The acquisition of environmentally responsible behavior (ERB) is considered as the ultimate goal of EE (Hungerford & Peyton, 1977). It is a common sense that participation of people in environmental protection studies seems to be crucially important for preventing and solving environmental problems and issues for sustainable future.

The literature in the field of environmental education (Hines, Hungerford & Tomera, 1886/87; Sivek & Hungerford, 1989/90; Hungerford & Volk, 1990; Osbaldiston, 2004) indicated four main categories of variables which predict ERB. These categories are (1) Personality factors (perception of moral responsibility, environmental concern, environmental sensitivity, locus of control, environmental attitudes, environmental responsibility and verbal commitment, values…etc) (2) Cognitive factors (knowledge and skills), (3) Demographic factors (age, gender, income, residence, parent education level,…etc), and (4) External factors (external influences, pressure groups, opportunities to choose different action…etc) (Erdogan, 2009). However, total variance of ERB has not yet

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been totally explained. Investigation of these predictors is quite important for designing and/or re-designing EE curriculum both for formal education and for non-formal education process. In this sense, this study is important since it seeks the impact of university students’ demographic variables and nature-related experiences on their level of responsible behavior to protect the environment. This study is also important because it is believed that the findings of the present study will partially shed light on development and or revision of university policy related to environmental protection.

1.1. Purpose of the Study

The purpose of the study was to investigate the effects of university students’ background variables (gender, age and grade) and nature-related experience on their responsible environmental behaviors. Following research hypotheses guided overall study

1. Female students showed more responsible behaviors for protecting the environment than male students
2. Those who follow/read nature-related publications show more responsible behaviors for protecting the environment than those who do not
3. Those who frequently participate in nature-related activities show more responsible behaviors for protecting the environment than those who do not
4. Lower grade students show more responsible behaviors for protecting the environment than higher grade students

2. Method

This study was an initial step of university-wide survey study undertaken with university students studying in various fields and grades in Akdeniz University, Antalya, Turkey.

2.1. Sample

In this initial study, a total number of 307 students (134 females, 173 males) enrolled in three different departments in Akdeniz University constituted the sample of the study. Table 1 summarizes the basic demographics of the sample. Students’ age average was 21.45 ranging from 18 to 29.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Frequency (f)</th>
<th>Percentage (%)</th>
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</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
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<tr>
<td>Female</td>
<td>134</td>
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<tr>
<td>Male</td>
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<tr>
<td>Hospitality Management</td>
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<td>Travel Management</td>
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<td><strong>Grade</strong></td>
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<tr>
<td>Sophomore</td>
<td>49</td>
<td>16</td>
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<tr>
<td>Junior</td>
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</tr>
<tr>
<td>Senior</td>
<td>59</td>
<td>19.2</td>
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</tbody>
</table>
2.2. Data Collection Instrument

The instrument, University Students’ Responsible Environmental Behavior Scale, developed by the authors was used for data collection. This instrument was developed in five steps.

2.2.1. Review of the literature

Literature on ERB (e.g. Hines et al. 1986/87; Leeming, Dwyer, Porter & Cobern, 1193; Ramsey & Rickson, 1977) was initially surveyed to establish conceptual framework for the scale development. The literature revealed five main dimensions behind ERB as eco-management, consumer/economic action, persuasion, political action and legal action.

2.2.2. Developing item pool

Five open ended items each corresponding to the dimensions of ERB were prepared and then applied to 246 university students to reveal the behaviors they demonstrated to protect the environment. The collected data were coded and categorized under the dimensions.

2.2.3. Expert opinion

Frequently repeated responses to five open items were taken from the item pool to establish an initial form of the instrument. This form of instrument along with expert evaluation form was sent to seven experts to obtain their views on the items. Necessary changes were done over the items based on the suggestions received from the experts.

2.2.4. Pre-pilot administration

A workshop session was held with 22 university students to get their initial reaction to the items. Each of the items was discussed with regard to understandability, clearness and appropriateness to the focus of the instrument.

2.2.5. Pilot testing

A test prepared as a result of aforementioned steps was given to the 407 students for pilot testing. For this administration, three departments from two faculties were randomly selected from the population of Akdeniz University, Antalya. Due to several reasons, 100 students’ responses were excluded from the data set for the further analyses.

2.2.6. Construct validity

Data collected from the students were entered into data set created using SPSS 17 version. Having performed the initial descriptive statistics (e.g. outlier analysis, missing case analysis) to clean the data, Exploratory Factor Analysis using (EFA) Principle Component technique with direct oblimin rotation was undertaken to observe the dimensionality behind the instrument. EFA resulted in seven dimensions.

2.2.7. Reliability Analysis

Cronbach’s Alpha reliability coefficient was calculated using reliability analysis in SPSS for each dimension. The reliability scores were observed to be in the acceptable limit, .70, but, only for one dimension, reliability was found.69.
2.3. Data Analysis

Descriptive statistics were initially performed to observe outlier cases and the randomness of the missing values. These analyses helped clean the data before conducting further descriptive and inferential statistics. Mean, frequency and percentage using descriptive statistics were calculated in order to describe the data. Later, one way MANOVA was run to examine the effects of each dependent variable (gender, age, grade and nature experience) on dimensions revealed as a result of EFA. Assumptions of MANOVA were also tested.

3. Results

Only few of the students reported that they were equipped with high level of information regarding the environment overall (n=11, 3.6%) and environmental problems (n=10, 3.3%). Of the remaining students, 204 (66.4%) reported average level of knowledge, 90 (29.3%) reported low level of knowledge and 2 reported no knowledge on the environment. Similarly, 172 (56%) reported average level of knowledge, 116 (37.8%) reported low level of knowledge and 9 reported no knowledge on the environmental problems. As far as the information sources on the environment were concerned, only 58 (18.9 %) of the students were following environment-related publications (e.g. magazines, newspapers, journals) and 43 (14%) already attended seminars on the environmental issues. Although 60 students either never visited (n=5, 1.6%) and very rarely visited (n=55, 17.9%) natural environment, most visited natural environments occasionally (n=156, 50.8%) and frequently (n=90, 29.3%) Students believed in the importance of protecting the environment due to sustaining the sources for the new generation (n=70, 22.8%), saving the ecological balance (n=150, 48.9%), continuing the habit and quality of life, and living in visually good environment (n=13, 4.2%).

Separate MANOVA analyses revealed that university students’ responsible environmental behaviors significantly varied across gender (Wilks’ $\lambda =$ .918, $F(7, 251) = 3.218, p<.01$), grade (Wilks’ $\lambda =$ .826, $F(7, 251) = 2.35, p<.01$), reading nature-related publications (Wilks’ $\lambda =$ .93, $F(7, 249) = 2.56, p<.01$) and participation in nature-related activities (Wilks’ $\lambda =$ .885, $F(14, 492) = 2.22, p<.01$). Univariate analysis for each MANOVA analysis was also undertaken to examine the effect of each independent variable on dimensions of ERB. Significance difference between male and female was only observed for warning behavior [$F(1, 257) = 14.02, p<.01,$ partial $\eta^2 = .052$]. Female students demonstrated this type of behavior more frequently than male students did. Significance difference was also observed among the students in different grades (1st to 4th) for political action [$F(3, 255) = 5.76, p<.01$, partial $\eta^2 = .063$], legal action [$F(3, 255) = 3.93, p<.01$, partial $\eta^2 = .044$] and persuasion [$F(3, 255) = 5.64, p<.01$, partial $\eta^2 = .062$]. Significance difference between those who read / followed the environmental-related publication and those who did not was observed only for political action [$F(1, 255) = 6.26, p<.01$, partial $\eta^2 = .024$], legal action [$F(1, 255) = 6.39, p<.01$, partial $\eta^2 = .024$] and persuasion [$F(1, 255) = 16.76, p<.01$, partial $\eta^2 = .062$]. Furthermore, those who usually participated in nature-related activities demonstrated warning behavior [$F(2, 255) = 8.16, p<.01$, partial $\eta^2 = .060$], physical action [$F(2, 255) = 5.22, p<.01$, partial $\eta^2 = .039$] and conservation behavior [$F(2, 255) = 4.57, p<.01$, partial $\eta^2 = .035$] significantly more than those who occasionally participated or never participated.

These statistically significant results pointed out that female students and those who followed nature related publications (e.g. books, journals, magazines) and frequently participated in nature related-activities engaged in responsible behaviors more than males and those who didn’t follow the publication and visit natural areas to protect the environment and prevent the environmental problems.

4. Conclusion and Discussion

The present study presented the results of the pilot study of a university-wide survey. University students’ environmentally responsible behaviors were examined considering their gender, grade, reading environment-related publications, attendance in seminars addressing to the environment, and participation in nature-related activities. Four hypotheses were proposed for testing.
The hypothesis “Female students showed more responsible behaviors for protecting the environment than male students” was accepted as a result of statistical analysis. Similar results were also observed in other research studies on ERB (Barr, 2007; Chu, Shin & Lee, 2006; Eisler, Eisler & Yoshida, 2003). This result could be attributed that female students may show more responsibility and sensitivity toward the environment (Erdogan, 2009).

The hypothesis “Those who follow/read nature-related publications showed more responsible behaviors for protecting the environment than those who do not” was also accepted. This result was supported with the result of the study investigating the effects of environmental literature on individuals’ responsible environmental behavior (Mobley, Vagias & DeWard, 2010). This could be interpreted that reading books, magazines, newspaper articles etc. on the environment may encourage the university students to take action and also inform them about how to take action to protect the environment. Thus, environmental-related publications could be used as a vehicle to motivate people to demonstrate ERB.

The hypothesis “Those who participate in nature-related activities showed more responsible behaviors for protecting the environment than those who do not” was accepted. Participation in nature related activities such as picnicking, tracking, orienteering, field trips etc. involve people directly in the nature, help them realize the natural beauty and observe the interaction within the environment (Erdogan, Erentay, Barss & Nechita, 2008). Erdogan (2009) in his nationwide survey study found similar results and reported that the more the students are involved in natural areas, the more they demonstrated ERB.

On the other hand, the hypothesis “Lower grade students show more responsible behaviors for protecting the environment than higher grade students” was rejected. Second and third grade students demonstrated ERB more than those in other grades. This may be due to the course they took in second and third grade and the club activities they were involved in later grades.

Due to the fact that the study is an initial step of a large group survey, it is limited with 307 students randomly drawn from three departments in Akdeniz University. A more general picture can only be reached through the data set to be obtained from large group survey in the same university. Furthermore, in-depth analysis and face-to-face interview with university students should be undertaken to shed light on the reasons of their self-reported actions for protecting the environment. Thus, qualitative investigation should also be undertaken just after the university-wide survey study.

References