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### Assessing Environmental Values through Gender and Stream Intersections

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#### Abstract

Concern about the nature of environmentalism has grown on a global scale. To ascertain how these issues are impacting the next generation, the research investigates environmental values that undergraduate college students hold. The research looks at how gender and stream affect the sample group's environmental value in this particular scenario. The data was analyzed by employing quantitative research approach by using survey method and 3 X 2 factorial design. The subjects were chosen from the undergraduate college students (n=400) affiliated to the University of Calcutta belonging to three different streams i.e. arts, science and commerce. In the study stratified purposive sampling was undertaken. A standardized tool namely 'Environmental Value Questionnaire (EVQ)' consisting of 25 items was used to measure the students environmental value. The choices for each item are strongly agree, agree, undecided, disagree, strongly disagree and I don't know. A two-way ANOVA was conducted to determine the effect of stream and gender on environmental value. The result indicated that stream and gender had a significant effect on the different dimensions of environmental value.

**Key-words:** Altruistic Value, Egoistic Value, Biospheric Value, Environmental Value and Undergraduate College Students etc.

#### Introduction

In recent decades, environmental concerns have been the most contentious subject and topic of discussion. The human race as a whole is to blame for the threat to our ecology and life support system. Protecting our ecology necessitates a broader awareness and alteration in our behavioural habits, even in addition to maintaining and conserving our surroundings. According to Gardner & Stern, 2002; Nickerson, 2003; de Groot 2012, human behaviour has a significant role in all of these environmental issues and their remedies. Studying environmental behaviour often takes value systems into account since they are inextricably linked to environmentalism (Dunlap, Grieneeks and Rokeach, 1983; Naess, 1989). There is strong evidence of a link between the two factors. Value system is so intrinsically interwoven with environmentalism that it is often considered when studying environmental behaviour (Dunlap, Grieneeks and Rokeach, 1983; Naess, 1989). The correlation between the two variables is well established (Dietz, Fitzgerald and Shwom, 2005). Values are the guiding principles in life that influence our life goals, identity, thoughts, attitudes and behaviour (Grouzet, et al., 2005). Value system is so intrinsically interwoven with environmentalism that it is often considered when studying environmental behaviour (Dunlap, Grieneeks

and Rokeach, 1983; Naess, 1989). The correlation between the two variables is well established by Dietz, Fitzgerald and Shwom, 2005. Values are the tenets of our lives that direct our aspirations, identities, attitudes, and behaviours (Grouzet, et al., 2005). Values are "relatively stable principles that help us convey some sense of what we consider good and help us make decisions when our preferences conflict." It serves as a generic standard for evaluating certain actions in particular contexts. According to Seligman and Katz (1996), values are amorphous rules that have the potential to impact several behavior-specific factors and actions in diverse settings. Rokeach (1973) defined values as internal, generalised standards of conduct. Environmental values are a person's unique opinions on the environment and their strong feelings or responses to it. Three value dimensions were shown to be associated with behaviour: altruistic, egoistic, and biospheric (De Groot and Steg, 2008; Hansla, Gamble, Juliusson, & Gärling, 2008). **Altruistic Value** is concern with the benefit for other human beings (e.g. De Groot and Steg 2007, 2008, 2010; Schultz, 2000, 2001; Steg, Dreijerink, & Abrahamse, 2005; Stern 2000; Stern, Dietz and Guagnano 1998). **Egoistic Value** is based on people concern for valuing their self and self-oriented goals. Such individuals are concerned about the environment for the sake of their own interests and desires. **Biospheric value** (or ecocentric) is

concerned with the inherent value of the natural environment (Schultz and Zelezny, 1999) and the quality of nature and the environment for its own sake (De Groot, Steg, Keizer, Farsang, & Watt, 2012). Thus values (altruistic, egoistic and biospheric) are considered to be crucial for assessing sustainable behaviour. Researches of the past revealed value to be considered as a core concept in environmentalism, and tried to link research on environmentalism with social psychological literature on values (Schultz and Zelezny, 1999) and thus considered important predictors of sustainable behaviour.

In the context of environmentalism, value system as an important variable has been studied extensively. Researches of the past tried to link various psychological construct with environment. Along with attitude, values are considered to be an important predictors of environmental behaviour especially altruistic value are found to stimulate pro environmental behaviour (Xu et al. 2021). Obviously researches in India are not yet adequate to understand the effects of these psychological construct on environmental sensibility. However in the field of environmental psychology, various studies have been conducted to examine the relationship between values, beliefs, intentions, and sustainable behaviour. (Gärling, Fujii, Gärling, & Jakobsson, 2003; Joireman, Lasane, Bennett, Richards, & Solaimani, 2001; Nordlund & Garvill, 2002, 2003; Schultz & Zelezny, 1998; Stern & Dietz, 1994; Stern, Dietz, Abel, Guagnano, & Kalof, 1999). In a study conducted by (Jarrar & Gheith, 2013) on values and environmental concern, found that the students have a system of values in four dimensions but the students tended to be more directed towards traditional value and less towards human value. The findings also showed a positive correlation between two dimensions of general values namely conservatism and self-transcendence and ecological and anthropocentric values which comprise environmental values. They further obtained a weak correlation between general value (openness and self-enhancement) and environmental values. *Again de Groot et al.* (2012) found that among the Hungarians egoistic, altruistic and biospheric value can be distinguished empirically. It was also observed that biospheric value strongly helped to explain personal norms towards various environmental behaviours. The authors further suggested that biospheric values are relevant for understanding environmental beliefs, norms action in Hungary. Stern and Dietz, value-belief-norm theory postulates that environmental concerns are the result of person's value system. Specifically they proposed that environmental concern is related to social-altruistic, egocentric and biospheric values (Stern and Dietz, 1994). On the contrary Dietz, T., Fitzgerald, A. and Shwom, R. (2005) focused their study on four value clusters namely self-interest, altruism, traditionalism, and openness to change. They reported that values especially altruism are related to environmentalism but little is known about the causes of value change and the overall effects of value change on changes in behaviour. The researches on the different dimensions of value system, no doubt, are vibrant and an enthusiastic area for academicians but obviously there is a gap in research integrating environmentalism and undergraduate college students.

### Problem and Objectives of the Study

After reviewing the literature it can be concluded that researches in the realm of environmentalism in relation to values held by the undergraduate college students are very scarce. Thus in the view of attaining sustainability, it is worth studying what type of values are espoused by the undergraduate college teachers so that their sustainable behaviour can be predicted. The present study aims to

distinguish altruistic, egoistic and biospheric value as different dimensions of environmental concern in relation to stream and gender of undergraduate college students.

### Method

The data was analyzed by employing quantitative research approach by using survey method and 3 X 2 factorial designs.

### Participation

The subjects were chosen from the undergraduate college students both boys and girls ( $n=400$ ) affiliated to the University of Calcutta belonging to three different streams i.e. arts, science and commerce. In our study we have undertaken stratified purposive sampling due to paucity of time.

### Instrument

**Environmental Value Questionnaire (EAQ)** - Schwartz's universal scale- Schwartz, 1992; Stern et al., 1999 to be adapted by the researchers. The scale consists of three value dimensions namely Altruistic, Egoistic and Biospheric. The choices for each item are strongly agree, agree, undecided, disagree, strongly disagree and I don't know. The Cronbach alpha was determined and the value was 0.713. The inter-item correlation was significant for all items. No negative correlation was found.

### Hypotheses of the Study

The investigator made the following null hypotheses-

- H<sub>0</sub>1- There is no significant difference in Altruistic Value scores among undergraduate colleges students in respect to discipline (arts, science and comers).
- H<sub>0</sub>2- There is no significant difference in Altruistic Value scores between undergraduate college students in respect to gender (boy and girl).
- H<sub>0</sub>3- There is no significant interaction effect of Altruistic Valuescores of undergraduate students between discipline and gender.
- H<sub>0</sub>4- There is no significant difference in Egoistic Value scores among undergraduate colleges students in respect to discipline (arts, science and comers).
- H<sub>0</sub>5- There is no significant difference in Egoistic Value scores between undergraduate college students in respect to gender (boy and girl).
- H<sub>0</sub>6- There is no significant interaction effect of Egoistic Valuescores of undergraduate students between discipline and gender.
- H<sub>0</sub>7- There is no significant difference in Biospheric Value scores among undergraduate colleges students in respect to discipline (arts, science and comers).
- H<sub>0</sub>8- There is no significant difference in Biospheric Value scores between undergraduate college students in respect to gender (boy and girl).
- H<sub>0</sub>9- There is no significant interaction effect of Biospheric Value scores of undergraduate students between discipline and gender.
- H<sub>0</sub>10- There is no significant difference in Environmental Value scores among undergraduate college's students in respect to discipline (arts, science and comers).

H<sub>0</sub>11- There is no significant difference in Environmental Value scores between undergraduate college students in respect to gender (boy and girl).

H<sub>0</sub>12- There is no significant interaction effect of Environmental Valuescores of undergraduate students between discipline and gender.

**Results and Discussion**

**Table-1**

**Mean and Standard Deviation of Altruistic Value, Egoistic Value, Biospheric Value and Environmental Value regarding Gender**

Gender		Altruistic	Egoistic	Biospheric	Value
Girl	Mean	16.87	10.92	14.84	42.63
	N	119	119	119	119
	Std. Deviation	1.065	2.237	2.531	3.247
Boy	Mean	16.28	10.63	14.45	41.36
	N	281	281	281	281
	Std. Deviation	1.572	2.313	2.402	3.258
Total	Mean	16.45	10.72	14.57	41.73
	N	400	400	400	400
	Std. Deviation	1.464	2.292	2.444	3.303

The above table depicts the means and standard deviations of the two categories of sample group namely boys and girls having altruistic value, egoistic value, biospheric value and environmental value. It is observed that the altruistic value, egoistic value, biospheric value and environmental value score of the girl students (16.87, 10.92, 14.84 and 42.63) respectively are negligibly lower than that of boy students (16.28, 10.63, 14.45 and 41.36).

**Table-2**

**Mean and Standard Deviation of Altruistic Value, Egoistic Value, Biospheric Value and Environmental Value regarding Discipline**

Discipline		Altruistic	Egoistic	Biospheric	Value
Arts	Mean	16.4	10.73	14.51	41.64
	N	254	254	254	254
	Std. Deviation	1.497	2.253	2.421	3.312
Science	Mean	16.42	10.98	14.7	42.1
	N	106	106	106	106
	Std. Deviation	1.493	2.366	2.423	3.295

Commerce	Mean	16.85	9.92	14.6	41.38
	N	40	40	40	40
	Std. Deviation	1.099	2.212	2.687	3.264
Total	Mean	16.45	10.72	14.57	41.73
	N	400	400	400	400
	Std. Deviation	1.464	2.292	2.444	3.303

Data from table 2 shows the means and standard deviations of the three categories of sample group namely arts, science, and commerce having altruistic value, egoistic value, biospheric value and environmental value. It was found that altruistic value, egoistic value, biospheric value and environmental value score of the commerce students (16.85, 9.92, 14.6 and 41.38) were higher than that of arts students (16.4, 10.73, 14.51 and 41.64). However the score of altruistic value, egoistic value, biospheric value and environmental value (16.42, 10.98, 14.7 and 42.1) of the science students were even higher than the other two disciplines.

**Table-3**

**Summary of the Factorial Analysis of Variance (ANOVA) for the Scores of Altruistic Value**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
<b>Main Influence</b>					
Discipline (A)	4.53	2	2.265	1.088	0.338
Gender (B)	14.393	1	14.393	6.915	0.009
<b>Interaction Influence</b>					
Discipline and Gender (A x B)	1.092	2	0.546	0.262	0.769
Error	820.07	394	2.081		
Total	109129	400			
Corrected Total	855.097	399			

a. R Squared = .041 (Adjusted R Squared = .029)

**Main Influences**

The main influences of the category variables namely Discipline (A) and Gender (B) on Altruistic Value scores are reported below-

**First Main Influence (A)**

Table-3 indicated that the first main effect of discipline was insignificant. This finding could be reported as: there was

non-significant main effect of discipline [F (1/394) =1.088, P=0.338].

**Second Main Influence (B)**

From the Table-3 it might be concluded that there was a significant effect of gender on Altruistic Value (the significant value less than 0.01). The F-ratio was found to be highly significant. It indicates that students in two types differed significantly on their Altruistic Value. This might be interpreted as: there was significant main effect of undergraduate students on their Altruistic Value [F (1/394) = 6.915, P<0.01]. This indicates that H<sub>0</sub> 1 is accepted and H<sub>0</sub> 2 is rejected.

**Interactional Influences**

The main influences of the category variables namely discipline (A) and gender (B) have already been reported.

As the research design is 3X2 factorial design so the interactional effects are shown by first order interactional effects [(A X B)]

**First order Interactional Influences (A X B)**

Table-3 indicated a not-significant interaction effect between discipline and gender group. For this, the F-value was found to be 0.262, which was not-significant [F (1/394) = 0.262, P=0.769]. This indicates that H<sub>0</sub> 3 is accepted.

**Table-4**

**Summary of the Factorial Analysis of Variance (ANOVA) for the Scores of Egoistic Value**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
<b>Main Influence</b>					
Discipline (A)	34.096	2	17.048	3.276	0.039
Gender (B)	6.732	1	6.732	1.294	0.256
<b>Interaction Influence</b>					
Discipline and Gender (A x B)	3.945	2	1.972	0.379	0.685
Error	2050.39	394	5.204		
Total	48020	400			
Corrected Total	2095.51	399			

a. R Squared = .022 (Adjusted R Squared = .009)

**Main Influences**

**First Main Influence (A)**

From the Table-4 it might be concluded that there was a significant effect of discipline on Egoistic Value (the significant value less than 0.05). The F-ratio was found to be highly significant. It indicates that teachers in three types differed significantly on their Egoistic Value. This might be interpreted as: there was significant main effect of undergraduate students on their Egoistic Value [F (1/394) = 3.276, P<0.05].

**Second Main Influence (B)**

The second main effect of gender was insignificant. This finding could be reported as: there was non-significant main effect of gender [F (1/394) =1.294, P=0.256]. This Result indicates that H<sub>0</sub> 4 is rejected and H<sub>0</sub> 5 is accepted.

**First order Interactional Influences (A X B)**

Table-4 indicated a not-significant interaction effect between discipline and gender group. For this, the F-value was found to be 0.379, which was not-significant [F (1/394) = 0.379, P=0.685] indicating that H<sub>0</sub> 6 is accepted.

**Table-5**

**Summary of the Factorial Analysis of Variance (ANOVA) for the Scores of Biospheric Value**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
<b>Main Influence</b>					
Discipline (A)	1.089	2	0.545	0.091	0.913
Gender (B)	0.823	1	0.823	0.138	0.71
<b>Interaction Influence</b>					
Discipline and Gender (A x B)	25.101	2	12.551	2.108	0.123
Error	2345.57	394	5.953		
Total	87269	400			
Corrected Total	2384.18	399			

a. R Squared = .016 (Adjusted R Squared = .004)

**Main Influences**

**First Main Influence (A)**

Table- 5 indicated that the first main effect of discipline was insignificant. This finding could be reported as: there was non-significant main effect of discipline [F (1/394) =0.091, P=0.913].

**Second Main Influence (B)**

The second main effect of gender was insignificant. This finding could be reported as: there was non-significant main effect of gender [F (1/394) =0.138, P=0.71]. This shows that H<sub>0</sub> 7 and H<sub>0</sub> 8 are accepted.

**First order Interactional Influences (A X B)**

Table-5 indicated a not-significant interaction effect between discipline and gender group. For this, the F-value was found to be 2.108, which was not-significant [F (1/394) = 2.108, P=0.123] reflecting that H<sub>0</sub> 7 and H<sub>0</sub> 8 are accepted.

**Table-6: Summary of the Factorial Analysis of Variance (ANOVA) for the Scores of Environmental Value**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
<b>Main Influence</b>					
Discipline (A)	19.623	2	9.812	0.925	0.398
Gender (B)	53.223	1	53.223	5.016	0.026
<b>Interaction Influence</b>					
Discipline and Gender (A x B)	18.924	2	9.462	0.892	0.411
Error	4180.888	394	10.611		
Total	701076	400			
Corrected Total	4351.91	399			

a. R Squared = .016 (Adjusted R Squared = .004)

**Main Influences**

**First Main Influence (A)**

Table- 6 indicated that the first main effect of discipline was insignificant. This finding could be reported as: there was non-significant main effect of discipline [F (1/394) =0.925, P=0.398].

**Second Main Influence (B)**

The second main effect of gender was also significant. This finding could be reported as: there was significant main effect of gender [F (1/394) =5.016, P<0.05]. This shows that H<sub>0</sub> 10 is accepted and H<sub>0</sub> 11 is rejected.

**First order Interactional Influences (A X B)**

Table-6 indicated a not-significant interaction effect between discipline and gender group. For this, the F-value was found to be 0.892, which was not-significant [F (1/394) = 1.375, P=0.411] reflecting that H<sub>0</sub> 12 is accepted

**Conclusion**

The statistical analysis of the data shows that in totality there is significant difference on value score among undergraduate college students. Value orientations contributed strongly to the explanation of environmental concern (De Groot, 2008). All three value orientations did not, however, contribute in a distinctive and noteworthy way to the issue of environmental concern. Our findings support the notion that comprehending the word "environmentalism" requires an appreciation of altruistic values. Significant differences in terms of gender were found on altruistic score, where female being altruistic in nature tend to be more concerned about environment and take positive actions towards its protection. Women's eco-friendly and nurturing attitudes towards their children and family members also strengthen their concerns about environmental issues (Zelezny et al., 2000; Migheli, 2021; Zhao et al., 2021). Supportive evidence was provided by Sahin (2013) demonstrating that individuals possessing

altruistic value have shown more environmental friendly behaviour. On the contrary Thompson and Barton (1994) and Schultz and Zelezny (1999), pointed out that egoistic value orientations are utilitarian in character. Supported by Nordlund and Garvill (2003) an egoistic individual would be less likely to protect the environment if other human-centered values like material quality of life interfered. However no significant difference occurs in any of the dimensions of environmental value score pertaining to different streams. Thus the present study also showed that all the three dimensions of value system are significantly and positively correlated with each other. This finding is consistent with earlier studies that used Schwartz's value theory (1992).

**Implication**

In order to enhance undergraduate college students perception regarding sustainability, it is crucially important to determine as to which values dimension play an important role in understanding behavioural changes. It is assumed that environment related issues cannot be merely solved by looking at from theoretical aspect. It is quite obvious students' behavior for sustainability is not adequate. The study implies that positive measures are to be taken to improve the sustainable behaviour of the students so that sustainable living can be ensured. This allows a comprehensive understanding and implementing newer ways of combating sustainable issues. As rightly stated by Kothari Commission, 1964 that the destiny of our nation is being shaped by the children, therefore there is the need for emphasizing the moral and ethical aspect of Environmental Education in our teaching-learning situation. Moreover some computer based learning activities (Nicoleau et al, 2009) related to environmental sensibility should also be incorporated to ensure sustainability.

**Limitation**

Although rigorous research method was followed in this study yet there are some limitations. The sampling should have been more rigorous and larger in size. A sample from a larger group including postgraduate college students would have given a broader perspective. The qualitative aspect of the research has not been included due to paucity of time. It is required to understand the relationship between the variables in depth. Also the effect of different psychological variables like attitude, values, belief, locus of control etc. were not included in the present study. As far as environmentalism is concerned other agencies like media, the influence of family members and pro-environmental practices at home to a large extent determine the behaviour pattern of the students. The study could not include these sub category variables due to paucity of time.

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