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To the environmental responsibility among students through developing their environmental values

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Abstract

This research explores interconnection between environmental values and environmental responsibility among young people. Basic question of this study was whether and to which degree the environmental values influence the development of the environmental responsibility? By answering on this question, we want to provide guidelines for educational activities in schools which aim to develop environmental awareness among the young people of Serbia. The survey covered a sample of 252 students from primary and secondary government schools from Belgrade. Students were tested on a five point Likert type scales which examined environmental responsibility and environmental values. To assess the reliability and validity of the scales standard statistical procedures were used. The results of our study confirmed positive linear dependence between environmental values and environmental responsibility. On the basis of students' environmental values 48% of their environmental responsibility can be predicted. On the basis of our results, it is possible to conclude that students who believe that efficient functioning of society and the survival of life on the Earth is unimaginable without environmental protection, display desirable attitudes towards environmental responsibility. The obtained results may help to identify future directions of formal education activities regarding the improvement of personal environmental responsibility among young people.

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1. Introduction

Growing public concern over the quality of the environment and the intensification of the environmental crisis has created among researchers a continuing interest in the study of environmental awareness and development factors for environmental responsibility among individuals. This study examines the interrelatedness of environmental values and environmental responsibility among primary and secondary school students in Belgrade. By answering the question whether and to which degree the students' environmental values influence the formation of personal environmental responsibility among them; we want to provide guidelines for educational activities in schools which aim to develop environmental awareness among the young people of Serbia. We believe that this issue is of the utmost importance for environmental protection, since the task of resolving current and future environmental problems on both local and global levels will fall upon the younger generation; furthermore along with informal education, formal education is an important external factor in the development of a pro-environmental individual. This study should in fact initiate a dialogue on the most effective methods to be employed in environmental education in order to develop environmental responsibility among young people, and as such it contributes to the development of the theory and practice of environmental education.

Values may be defined as "Criteria people use to select and justify actions and to evaluate people (including the self) and events" (Schwartz, 1992). Therefore, values may be viewed as an important part of the identity of each individual, on the basis of which they form various specific attitudes in specific situations (Rokeach, 1973). Previous studies have shown that environmental values have a considerable influence on pro-environmental behavior, while some scientists have found that there are differences in the influence of certain types of values (Stern, 2000; Barr, Gilg, & Ford, 2005; Gärling, Fujii, Gärling, & Jacobsson, 2003). It has been seen that anthropocentric and ecocentric values have a positive influence on pro-environmental behavior, where individuals with anthropocentric values behave in a pro-environmental manner for the sake of benefit to humans, and those with ecocentric values do so out of concern for nature and the biosphere. There are varying opinions on whether ecocentric (Barr, Gilg, & Ford, 2005) or anthropocentric (Nordlund & Garvill, 2002; Poortinga, Steg, & Vlek, 2004) values are better predictors of pro-environmental behavior.

From the standpoint of psychology, responsibility can be defined as self-chosen limitations of the individual with regard to taking action depending on how it would affect other people (Bierhoff & Auhagen, 2001). The issue of the formation of environmental responsibility is of vital importance because its viability is based on the conviction that it is possible to persuade individuals and institutions to accept responsibility for causing environmental problems and to change their everyday practices to mitigate negative consequences (Barr, 2003). The sense of personal responsibility concerning environmental issues is connected to personal norms and belongs to the personal moral domain. Personal norms are defined as personal expectations about personal behavior in various situations (Abrahamse & Steg, 2009). These norms consist of feelings of personal moral obligations towards other people and/or nature. However, the sense of personal responsibility does not always have a moral aspect because people often feel obliged in a conventional manner (Kaiser, Ranney, Hartig, & Bowler, 1999). Obligation due to convention arises when people feel responsible under pressure of social norms. For example, tradition or state organs could make people feel obligated due to conventions.

The designation of environmental values among students as an independent variable and personal environmental responsibility as a dependent variable in our study was due to several reasons.

It is a fact that the teaching of environmental protection content in primary and secondary schools in Serbia is mostly focused on imparting knowledge of environmental problems, while the formative moral, affective and behavioral components of environmental education are almost completely neglected. This is an inevitable conclusion to be reached after an examination of the curriculum, goals and results achieved in the courses (biology, geography, chemistry, physics, mother tongue and fine arts) within the framework of which environmental content is taught. The formal environmental education of the young people in Serbia is carried out on an integrated level. Optional subjects such as Guardians of Nature in primary schools and Ecology and Environmental Protection in vocational secondary schools certainly cannot compensate for the disorganized and fragmented teaching of environmental content in a multi-disciplinary model of environmental education. It has been noted that there isn't enough environmental content being taught and not enough is to be found in textbooks being used to teach certain subjects. In the case of most teachers the attractions of a multi-disciplinary model of environmental education pale when put into practice, since

teachers are more focused on specific content and goals related to their own subjects and less on contents, goals and results in environmental education. It is also the case that inadequate environmental literacy, shortcomings in the methodological-didactic training of teachers required for the successful teaching of environmental content, the lack of educational standards in this area, the absence of mutual cooperation between schools and local communities and the failure of schools to engage in environmental education projects, create additional difficulties in the implementation of this model in primary and secondary schools in Serbia.

Our choice of the topic of this study is based on Schwartz's (1977) Norm activation model which deals with the question of the personal obligation of an individual to behave in a pro-environmental way. The model assumes that the personal obligation of an individual to act for the benefit of others depends on: assigning personal responsibility and on the individuals' awareness of the consequences of their own behavior. Our study is also based on the model put forth by Kaiser, Ranney, Hartig and Bowler (1999) according to which environmental knowledge environmental values and responsibility jointly predict pro-environmental intentions which in turn influence pro-environmental behavior. This model uses environmental responsibility to bridge the gap between the Rational-choice theory and the Norm-activation theory. The resulting conclusion is that knowledge and values can predict 40% of pro-environmental intention and by including responsibility this influence increases by 5%. In our study we wish to measure the degree of influence of individual environmental values on environmental responsibility in this model. Another starting point for this study was the framework of environmental behavior developed by Barr and Gilg (2007). This is founded on the idea that values and behavior are related, but there are a number of situational and psychological factors mediating in between, and these factors in fact influence the formation of intention and the intention-behavior link. Since in this model the sense of environmental responsibility is one of the psychological factors which mediate between values and pro-environmental intentions, in our study we wanted to measure the direct relationship between values and responsibility.

2. Method

2.1. Sample and Procedure

The sample included 252 students in the 14 – 17 years age group. There were 54.76% females and 45.24% males. This was an accidental sample of students from 18 primary and secondary public schools from Belgrade (6 primary schools, 6 gymnasium high schools and 6 vocational secondary schools). From each school 14 final year A-grade students in geography and biology in the 2009/2010 school year were randomly chosen. Biology and geography are subjects in which environmental problems are taught the most.

Prior to the study (June 2011) a pilot survey was carried out using a sample of 100 students in order to verify the metric characteristics of the instruments. The preliminary questionnaire contained 14 items on the environmental values scale and 20 items on the personal environmental responsibility scale. The final questionnaire included items which had an item-total correlation value of .3 and which had the highest factor loading (over .3) for the first main factor.

Prior to the study, principals of all 18 schools, with the written consent by the students' parents, approved the implementation of the study. After receiving required instructions from the researchers, the students answered the questionnaire in the allotted time of 45 minutes.

2.2. Instruments

The environmental values scale (7 items) was based on the EAATE Scale (Thompson & Barton, 1994). The "Ecocentric and Anthropocentric Attitudes towards the Environment Scale" consists of three subscales: ecocentric (12 items), anthropocentric (12 items), and environmental apathy (9 items). As our study focused on measuring the ecocentric and anthropocentric attitudes of the students, only these items were taken from the EAATE Scale. Similarly, because of the limited time for filling in the questionnaires, the number of questions selected from these two categories was revised. In the final Likert-type scale (in the range from 1- not at all to 5- totally) four items measured ecocentric values orientation (e.g. "Nature is valuable for its own sake") and three the anthropocentric one (e.g. "Nature is important because of what it can contribute to the pleasure and welfare of humans"). Since factor loading for all items on the first factor ranged from .68 to .82, only one factor was extracted from the scale which

explained a total of 57.20% variance. On the basis of Skewness (-.01) and Kurtosis (-.47) coefficient, it can be said that scores on the scale had an approximately normal distribution. Cronbach's alpha ($\alpha = .87$) was high, and item – total correlation values ranged from .58 to .72.

The five point Likert-type scale (8 items) was used to examine environmental responsibility among students. The most positive attitude earned a score of five points while the most negative attitude earned one point. Skewness (-.269) and Kurtosis (-.406) coefficients showed that the scale was adequately discriminative, as the score distribution was within permissible limits (between -.5 and +.5). Cronbach's alpha coefficient was high ($\alpha = .94$), the item-total correlation values ranged from .74 to .82. Factor analysis of main components was used to extract one factor which explained a total of 70.4% variance. Primary loading on the first factor was high for all items (from .80 to .87).

3. Results and Discussion

Our hypothesis in the study was that environmental responsibility among students is motivated by values which include ecocentric and anthropocentric values. Linear regression analysis confirms that the environmental values of the students have a high positive linear dependence with their environmental responsibility ($R = .69$, $p < .05$). Hierarchical analysis results show that students' anthropocentric values ($R = .75$, $p < .05$) have a higher degree of influence on their sense of personal environmental responsibility than ecocentric values ($R = .55$, $p < .05$). On the basis of results obtained it is possible to accept the initial hypothesis and reach the conclusion that students who think for example that a well preserved natural environment must be provided to future generations and that care for preserving the natural environment is a crucial prerequisite for carrying out activities in the nature, exhibit more desirable attitudes towards personal responsibility for environmental protection. It is observed that students take a more responsible view of their own role in environmental protection if they think that the natural environment should be protected primarily for the good of the people. The attitude that the natural environment is to be safeguarded for the survival of the ecosystem and the biosphere is a less powerful predictor of personal environmental responsibility. Students with more prominent anthropocentric values are more expressive of the opinion that safeguarding the natural environment is unimaginable without personal efforts to be invested by each individual. On the basis of results obtained it may be concluded that generally individuals with less developed environmental values are less aware of the fact that during everyday activities they are constantly harming certain elements of the environment, thus they do not think of changing their life style in order to reduce the harm done to the environment by their own behavior. In this case they generally try to justify their own behavior by focusing on the influence of other factors such as industry, state organs, political decisions and the development of modern science and technology.

Results of our research show that on the basis of the students' values as much as up to 48 % ($R^2 = .48$) of their environmental responsibility can be predicted. From the hierarchical analysis it can be seen that of the total variance of personal environmental responsibility 30% of variance ($R^2 = .30$) can be explained due to the fact that students vary when it comes to their ecocentric values. After the introduction of anthropocentric values in the cluster of predictors in the second step of the hierarchical analysis, the increase in explained variance of personal environmental responsibility stood at 26% ($R^2 = .56$). Partial standardized regression coefficient values also show that anthropocentric values ($\beta = .55$, $p < .05$) can be considered moderators of the link between ecocentric values ($\beta = .64$, $p < .05$) and personal environmental responsibility among students.

If we also take into account the fact that the environmental values of an individual are formed in relation to the extent of their knowledge (Reser & Bentrupperbäumer, 2005), perception and recognition of environmental problems (Van den Bergh, 2008; Grob, 1995), encounters with nature (Reser & Bentrupperbäumer, 2005), environmental beliefs (Barr & Gilg, 2007; Milfont & Duckitt, 2010), awareness of consequences of environmental threats (Hansla, Gamble, Juliusson, & Gärling, 2008; Milfont & Duckitt, 2010), empathy (Ballantyne & Packer, 2005) etc, it can be concluded on the basis of the results of this study that values can be considered mediators between environmental responsibility on one hand and the aforementioned psycho-social factors on the other. Thus, for example, if students have a better perception of the gravity of environmental problems in their own immediate and wider surroundings, they will probably have a positive attitude towards the environment, and will probably have a more developed sense of responsibility towards protecting it. Similarly, if students have better knowledge of environmental problems, they will better understand the consequences of these problems for their own lives and

they will attach more importance to the environment and have far more developed pro-environmental intentions. This conclusion is in accordance with the Theory of Planned Behavior (Ajzen, 1991) and the Norm Activation Model (Schwartz, 1977). Aforementioned facts show the need for more effective ways of forming systems of declarative and procedural knowledge related to environmental problems and also of other psycho-social variables which directly affect the development of environmental values, through environmental education, improvements in curriculum, textbooks, teaching methods and the inclusion of students in environmental education projects and extracurricular environmental activities. For example, by developing Encounters with nature and empathy among students the formation of ecocentric values can be influenced, while equipping students to properly perceive and recognize environmental hazards in their surroundings, and developing their awareness about the consequences of environmental threats for their own selves and the entire society can influence the formation of anthropocentric values. The formation of environmental values among students will make it possible for them to form a sense of personal environmental responsibility, which can further lead to the formation of pro-environmental intentions and finally pro-environmental behavior.

4. Conclusion

Results of this study show that there is a high degree of positive linear dependence between environmental values and environmental responsibility. On the basis of environmental values exhibited by the study subjects it is possible to predict as much as 48% of their attitudes towards environmental responsibility. We find that anthropocentric values have a greater degree of influence on the development of personal environmental responsibility than ecocentric values, among the students. Results show that values are strong predictors of environmental responsibility among young people and have a direct impact on its development. While looking for the answer to the question as to why there are instances of individuals with an irresponsible attitude towards the environment even when they have the correct values, one should bear in mind the fact that the value system of an individual is formed within the framework of the value system of a society which has profit and conformity as its main goals. In such a society young people do not have positive models for the formation of clear pro-environmental goals. For these reasons they do not think of collective responsibility towards the environment as the sum of the responsibility of all individuals, but tend to associate it with the work of state and judicial bodies. Considering this situation, the education sector is faced with the very complex task of reducing conflict between: personal and social, global and local, traditional and modern, long term and short term, competition and equality. Education should offer young people a clear vision and well defined goals regarding their behavior in modern society. Results of this study show that it is necessary to change curriculum, goals and results as well as teaching techniques in schools, so that environmental education in schools in Serbia may effectively influence the formation of environmental values among young people and in turn the formation of environmental responsibility.

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