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Exploring the New Ecological Paradigm Scale on Environmental Worldviews of Turkish University Students

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Abstract

This study was designed to explore the environmental worldviews of Turkish university students and assess the reliability and dimensionality of the New Ecological Paradigm (NEP) scale by examining the nature of responses of students. A sample of 1295 undergraduate students from four universities was selected. Students' worldviews were measured by the NEP scale which consisted of 15 statements. The study findings indicate that there is no widespread support for the NEP: 56.0 % of students hold pro-NEP views while 24.9 % embrace pro-DSP views and 19.1 % have ambivalent views. It was found that the NEP scale has low consistency and four dimensions, thus, the NEP items should be taken cautiously as a single (unidimensional) internally consistent measuring device, and carefully constructed and evaluated according to the historical and cultural context and characteristics of the population under study.

Keywords: Environmental worldviews, Dominant Social Paradigm, New Ecological Paradigm, university students;

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1. Introduction

Critical researchers argue that the mode and relations of industrial production, distribution and consumption are responsible for the environmental crisis [1, 2]. Others put forward that there are set of basic beliefs and values behind the problem of the ecological crisis [3]. Based on this approach, a long tradition of an anthropocentric worldview was established in the western world, beginning with the history of industrialization and disseminated to the other parts of the world. According to the anthropocentric view, (a) human are superior and above nature, (b) there is abundance of natural resources and there is no need for conservation, (c) Human beings, by virtue of possessing culture and technology, are able to adapt nature to human ends, rather than adapt to the natural environment [4] (d) social sciences considered humans as exempt from ecological constraints. These views had been manifested in a set of beliefs and values, called the Dominant Social Paradigm (DSP). It entails (1) a belief in limitless resources, continuous progress, and the necessity of growth, (2) faith in the problem solving abilities of science and technology, and (3) strong emotional commitment to a laissez-faire economy and to sanctity of private property rights [5]. With an increasing sensitivity toward and concern for the environment, a shift from the DSP to the ecocentric New Environmental Paradigm (NEP) has emerged. The NEP worldview is based on (1) high valuation of nature, (2) generalized compassion toward other species, other peoples and other generations, (3) careful planning and acting to avoid risks to humans and nature, (4) recognition that there are limits to growth to which humans must adapt, (5) new society with cooperation, openness and participation, and (6) consultative and participatory new politics emphasizing on foresight and planning [6].

Despite the large number of environmental attitude measures available, reviewers agree that only three have been widely used [7]. These are the Ecology Scale [8], the Environmental Concern Scale, and the NEP Scale. Dunlap and Van Liere [3] constructed a 12-item scale to measure the extent to which people are endorsing this new worldview. They argued that their NEP scale is reliable, valid and unidimensional. Various studies attempted to test the NEP scale and found that the NEP scale proved to be a reliable scale and a valid tool to measure environmental values [9]. Some studies argue that the degree to which the original NEP scale remains a valid and reliable measurement tool is open to discussion [10]. However, most researchers found that the NEP scale is not unidimensional. Contrary to Dunlap and Van Liere's assertion [3] that it is appropriate to treat all 12 items as forming an internally consistent and unidimensional NEP scale, Gooch [11], Manoli, Johnson and Dunlap [12] found three dimensions. Furthermore, La Trobe and Acott [13] and Gunden and Miran [14] found four dimensions. The multidimensional nature of the NEP scale suggests that environmental attitudes of any kind are more complex than was originally thought. Researchers suggest that there is not enough evidence for a definite number of dimensions and further research in that area is recommended [10]. As Noblet, Anderson and Teisl [15] indicated in their study, such different conclusions raise the question of the reliability, validity and dimensionality of the scale in capturing ecological worldview in a single and different context. Some researchers have used the NEP scale in its original and complete form [16, 17]. Most researchers used only parts of the NEP scale or revised some statements to reflect the particular focus of their study [22, Bechtel, Corral-Verdugo, Asai, & Riesle, 2006). They extracted subsets of items to use as stand-alone measures of environmental concern. Dunlap et al., [7] came up with important revisions and renamed the New Environmental Paradigm as the New Ecological Paradigm (revised NEP).

Studies using the NEP also focused on selected groups of people, including students, in order to provide information on the nature of environmental worldviews [17, 18, 19]. Most researchers [20, 21] conducted cross-sectional analyses using various socio-demographic, cultural, attitudinal, behavioral and personality variables. Some researchers [22, 23, 24) worked with a single selected population and tried to determine the character of general distribution and test the scale. Some others [25, 26, 27] were interested in cross-national or cross-cultural comparisons.

In Turkey, environmental problems have increased rapidly since the mid-70s. However, the adequate awareness of industries and people on the environment is still yet to develop, thus, there is

an increasing need to conduct academic and administrative studies in Turkey. The objectives of this study are to explore the environmental worldviews of Turkish university students, assess the reliability and dimensionality of the Revised NEP scale in Turkish culture, and, thus, contribute to the need for environmental knowledge which is useful for academicians, policy makers, field workers and organizations. Students were chosen as study population, because they are the future of the society and have been the leading crusaders in the modern environmental movements throughout the world.

2. Method

The study population of this survey research consisted of students from four universities. A convenient sample of 145 students from Mustafa Kemal University, 107 from Karadeniz Teknik University and 102 from Ankara University, and a simple random sample of 941 students from Baskent University were selected for the study. The study used the revised NEP scale which included 15 items. It is one of the most widely used and scrutinized methods to measure environmental orientation, attitudes and behavior. Mean scores for central tendency and frequency analysis for evaluation of distributions were used. Besides providing the percent and mean distributions for every item on the study scale, summary-indexes were developed in order to determine the overall environmental orientation. Chi-squre test were utilized for the cross-sectional analyses. Cronbach's alpha was used to test the reliability of the 15 item NEP scale. We could have a high Cronbach's alpha even if our scale is not unidimensional. That is why, the principal components analysis and varimax factor rotation were carried out in order to find out the existence of dimensions. Each item was measured on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). All pro-NEP responses were expected to be relatively high scores and all DSP responses were expected to be relatively low score.

3. Findings

3.1. Environmental worldviews

The environmental worldviews of the students were determined by providing percentage distribution, mean scores and indexes of the students' NEP scores (Table 1). The mean score for the 15 items, after correcting for the directionality of the items (that is, pro-NEP views are represented as higher numbers), was found to be 3.50 which indicate that the overall NEP views of students falls at the lower rank of pro-NEP orientation. The general orientation index (3.75, out of a possible 5) shows that the overall orientation of students falls at the lower rank of pro-NEP scale (represented as 4 and 5). 28.6% of the students have strong and 27.4% have mild pro-NEP view, whereas 24.9% show mild to strong DSP views. Moreover, a significant amount of students (19.1%) have ambivalent views on the environmental issues. The mean scores for eight pro-NEP items range from 3.40 to 4.58, whereas the mean scores for seven DSP items range from 1.60 to 3.78. Frequency distributions on the Pro-NEP items show that three quarters of students (75.3 %) agree on these statements, whereas only 10.5 % disagree. Conversely, distributions on the pro-DSP items reveal that 45.6 % agree with the statements, while there are considerable numbers disagreeing (28.6%) and undecided (25.8 %) students. Hence, examination of the overall frequency and mean distributions reveals that a majority of students support for the NEP statements to varying degree, but there is no widespread support for pro-NEP views in general. Findings on the statements are as follows: The NEP assumes that people reject the human exemptionalism which is based on the worldview that humans are exempt from the constraints of nature. This view supports the human domination and domination of economy over nature. Findings on items 4 and 14 indicate that 21.0% of the students have mild (13.5%) to strong (7.5%) anti-exemptionalist worldview, whereas 46.8% of students have exemptionalist views and 32.3% have ambivalent opinion. It seems that more students have trust in human ingenuity and ability to overcome the constraints of nature. However, over two thirds of them (67.1%) believe that "despite our special abilities, humans are still subject to laws of nature" (item 9). The NEP does not accept the idea that nature exists primarily for human use and has no inherent value of its own (item 12), and humans have the right to modify the natural environment to suit their needs (item 2). Over

one third of the students (35.0%) strongly and 24.3% mildly oppose anthropocentric view (items 2 and 12). There is still considerable number of supporters (23.4%). The Anti-anthropocentric statement about the right of existence of plants and animals (item 7) is supported by the vast majority (91.0%). This result suggests that one does not have to be an environmentalist in order to acknowledge the right of existence of plants and animals. The NEP stresses on human dependence to nature and disastrous outcome of human interference to nature. The great majority of students (78.1%) agree with two statements about human abuse (item 5) and probable ecological catastrophe (item 15).

Table 1. Frequency and mean distribution of the NEP scale items [a] (n= 1295)

NEP items	% distribution					Mean[b]
	SD	MD	U	MA	SA	
1. We are approaching the limit of the number of people the earth can support	7.5	8.5	22.0	33.5	28.5	3.67
2. Humans have the right to modify the natural environment to suit their needs	38.6	26.5	15.1	13.6	6.2	3.78
3. When humans interfere with nature it often produces disastrous consequences	5.2	9.3	13.9	35.4	36.2	3.88
4. Human ingenuity will insure that we do not make the earth unlivable	8.5	16.8	34.6	25.2	14.9	2.83
5. Humans are severely abusing the environment	3.6	6.1	6.5	35.3	48.4	4.19
6. The earth has plenty of natural resources if we just learn how to develop them	2.3	3.0	7.8	26.4	60.5	1.60
7. Plants and animals have as much right as humans to exist	2.4	2.4	4.2	16.5	74.5	4.58
8. The balance of nature is strong enough to cope with the impacts of modern industries	18.3	27.9	28.8	16.6	8.4	3.31
9. Despite our special abilities humans are still subject to the laws of nature	4.7	7.5	20.6	37.9	29.2	3.79
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated	29.3	30.0	25.5	11.1	4.1	3.69
11. The earth is like a spaceship with very limited room and resources	9.1	13.7	23.2	35.7	18.2	3.40
12. Humans were meant to rule over the rest of nature	31.3	22.2	19.6	18.7	8.2	3.50
13. The balance of nature is very delicate and easily upset	3.1	12.0	14.6	35.7	34.6	3.87
14. Humans will eventually learn enough about how nature works to be able to control it	6.4	10.2	30.0	32.1	21.3	2.48
15. If things continue on their present course, we will soon experience a major ecological catastrophe.	2.9	4.8	19.9	36.8	35.6	3.97
Index[c]	**11.5**	**13.4**	**19.1**	**27.4**	**28.6**	**3.50**

[a] SD = Strongly disagree, MD= Mildly disagree, U= Unsure, MA= Mildly agree, SA= Strongly agree

[b] Mean Likert scores after adjustment for direction. Higher score indicates pro-environmental worldview.

[c] Pro-NEP worldview index for frequency distributions was calculated by allowing for the reversed direction of even-numbered items

3.2. Reliability and dimensionality

The second objective of the study was to test the reliability of the revised NEP scale and determine the dimensionality in order to find out if the 15 items can be treated as measuring a single construct. A reliability coefficient of .70 or higher is considered acceptable in most research situations. The coefficient alpha for 15 items was .53. The findings on the corrected item-total correlations for each item show very low to low correlations, ranging from .045 to .364 (Table 2).

Table 2. Item-Total Correlations and Cronbach's Alphas (n= 1295)

Scale Items	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
NEP 1	.192	.090	.508
NEP 2	.237	.122	.498
NEP 3	.256	.139	.494
NEP 4	.141	.106	.519
NEP 5	.228	.182	.501
NEP 6	-.242	.258	.581
NEP 7	.234	.310	.503
NEP 8	.285	.141	.487
NEP 9	.090	.072	.529
NEP 10	.338	.159	.476
NEP 11	.113	.067	.526
NEP 12	.278	.158	.487
NEP 13	.260	.163	.494
NEP 14	.045	.107	.539
NEP 15	.364	.237	.476

The removal of items with low correlation changed the alphas of the scale up to .58. This result indicates that the NEP scale is low consistency in the Turkish case. In order to check the possible dimensionality, the factor analysis was used. Principal components analysis using varimax factor rotation produced four factors with eigenvalues of more than 1. Each of the four factors contains at least two of five NEP subscales which include issues of (1) Fragility of nature's balance, (2) The possibility of eco-crisis, (3) Anti-anthropocentricism, (4) Anti-exemptionalism and (5) The reality of limits to growth. These results show that the NEP scale is multidimensional in measuring at least five NEP dimensions.

4. Discussion and conclusion

The present study results show that a majority of students (56.0%) hold pro-NEP views. However, about one fourth of students have pro-DSP oriented ideas in varying degree. Furthermore, one in five students cannot decide on environmental issues. Thus, these results indicate that there is no widespread adoption of the NEP orientation by students. Students approve some statements of the NEP scale while disapproving other parts of it. For some, the different constituent parts seem unrelated. Moreover, there are some items that respondents probably cannot relate to. For instance, item 11 uses "spaceship with very limited room and resources" metaphor. Moreover, some people may agree with "limited room" idea, but disagree with "limited resources". It seems that this usage confused respondents and prevented a stronger support for item 11, because 23.2% of students were unsure and 22.8% disagreed, while only 18.2% strongly agreed. The problem with item 1 is that human population growth is everybody's concern for different reasons. Furthermore, agreeing or disagreeing about items 1, 6 and 11 does not necessarily make a person a supporter of the NEP (or DSP) view. These three items should be reconsidered, revised or eliminated.

Supporting the findings of Manoli et al., [12], La Trobe and Acott [13], Lalonde and Jackson [10] the present study found that the NEP scale has more than one dimension and each dimension (even each item in some cases) should be evaluated separately. Acknowledging this possibility, Dunlap et al., [7] indicated that "differing populations will no doubt vary in the degree to which the NEP beliefs are organized into a highly consistent belief system, and in many cases it will no doubt be more appropriate to treat the NEP as multidimensional." The multidimensional nature of the NEP scale suggests that environmental attitudes/views of any kind are more complex than was originally thought. The detection of more than one dimension does not detract from the usefulness of the NEP

scale. Any of the individual factors can be used as a unique and separate scale. However, it seems that there should be few extractions from and new additions to the NEP scale in order to treat it as a measure of coherent belief system or worldview. The present study findings also suggests that the set of 15 NEP items should be taken cautiously as an internally consistent measuring device in, at least, different socio-cultural environments, because the alpha test is low and all 15 items have weak item-total correlations indicating the existence of internal consistency. As Gooch [11] indicated, modern research into environmental values is predominantly western in origin, and the DSP and the NEP as theoretical concepts have been formulated and developed in the United States. Similar concern was addressed by some other studies [28] that found significant cultural differences in the NEP scale. Similarly, findings which are related with reliability and dimensionality are probably due to the contextual (cultural and historical) character of the study population.

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