

MEASURING ECOLOGICAL ATTITUDES IN A ROMANIAN CONTEXT

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Abstract: *The present research aims to measure the ecological attitudes and the environmental concern in a Romanian context, using a relatively new instrument, The New Ecological Paradigm (NEP) scale. Our study showed that for the Romanian version, NEP has good reliability coefficients. In order to test the construct validity of the scale, exploratory and confirmatory factor analysis were performed, showing that both the two-factor and the unidimensional solution had good fit indices. Other results showed that core personality traits were associated with environmental concern: Openness and Conscientiousness revealed the highest correlations while Extraversion, Emotionality and Agreeableness revealed weaker correlations with the environmental variables.*

Key words: *ecological attitudes, environmental concern, personality traits.*

1. Introduction

The continuous and accelerating overuse and destruction of natural resources is not only a serious threat to human environments, but also a topic of research for many scientific fields. In psychology, the environmental concern and attitudes are investigated in associations with core personality traits or values, trying to identify the individual aspects which could predict the pro-environmental behaviours. Therefore, the need to find valid measures for the environmental variables become more stringent. Lately, many instruments were developed, starting from the association of environmental concern with a general attitude towards the environment or value orientation. One of the most used instrument is the New Ecological Paradigm (NEP) scale (Dunlap, Van Liere, Mertig, & Jones, 2000). The NEP measures environmental values and concern, being widely used during the past two decades. The NEP scale emerged from the paradigm focused on beliefs about humanity's ability to upset the balance of nature, the existence of limits to growth for human societies, and humanity's right to rule over the rest of nature (Dunlap et al., 2000). The development of the NEP Scale is based on the dichotomy between the dominant social paradigm and the new environmental paradigm. The dominant social paradigm focuses on endless progress, growth, abundance and attitudes contributing to environmental degradation, while the new ecological paradigm highlights the disruption of ecosystems caused by modern industrial societies exceeding environmental limits (Dunlap & Van Liere, 1978 as cited in Kopriva, 2011).

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Recent research has shown that personality traits are a source of individual differences in environmental concern, agreeableness and openness being the most highly associated with pro-environmental attitudes (Brock & Lewis, 2016; Hirsh, 2010). Agreeableness and Openness influence the extent to which the natural world is regarded as part of the self-concept and the extent to which the self is regarded as part of nature or separate from it is an important predictor of environmental attitudes (Hirsch, 2010).

Other personality dimensions were also found as being highly associated with environmental concern. Several studies have shown that values contribute to the explanation of various environmental attitudes and behaviours. Values explain various environmental attitudes and behaviours. For example, biospheric and self-transcendent values are positively related to pro-environmental behaviour (Schultz & Zelezny, 1999).

2. Methods

2.1. Research Questions

The main aims of our research were the following:

- To analyse the psychometric properties of the NEP scale on a Romanian sample.
- To identify the relationships between personality traits, values and pro-environmental attitudes.

2.2. Participants and Procedure

The participants were 243 students, 77.7% female. The mean age was 26 ($SD = 7.88$, $X_{min} = 19$, $X_{max} = 52$). We used a correlational design and the questionnaires were administrated during class time. Informed consent was obtained from all individual participants included in the study.

2.3. Measures

We used the following questionnaires:

- 1) The New Ecological Paradigm (NEP) scale (Dunlap et al., 2000) measures the environmental concern. The fifteen items focuses on beliefs about humanity's ability to upset nature, the existence of limits to human economic growth and development, and humanity's right to rule over the rest of nature. The authors of the instruments explained that the 15 items could be grouped in five dimensions related to the environmental attitudes (Reality of limits to growth, Anti-anthropocentrism, Fragility of nature's balance, Rejection of exceptionalism, Possibility of an eco-crisis), respectively (Dunlap et al. 2000). Some researchers use the NEP items as a single measure of environmental attitudes (Ogunbode, 2013), while others use a two dimension version, showing that the eight odd-numbered items indicate a pro-ecological view (new environmental paradigm - ecocentrism) and the seven even-numbered items indicate the disagreement regarding the pre-ecological view (the dominant social paradigm - anthropocentrism) (Dunlap et al., 2000).
- 2) The International Personality Item Pool scales (IPIP 50, Rusu, Maricuţoiu, Macinga, Virgă, & Sava, 2012) consists of 50 items measuring the Big-Five

personality factors: extraversion (E), agreeableness (A), conscientiousness (C), emotional stability (ES) and openness to experience (O) on a 5-point scale from 1 (very inaccurate) to 5 (very accurate). Cronbach's Alfa coefficients were acceptable: .87 for Neuroticism, .86 for Extraversion, .76 for Openness, .76 for Agreeableness and .80 for Conscientiousness.

- 3) We also used a short version of the Schwartz Value Inventory (Schwarz, 1994) measuring nine values grouped into three dimensions, revealed by the exploratory factor analysis: social justice, peace, equality (Self-transcendence), respect for the planet, environmental protection, solidarity with nature (Environmental values), power, wealth, authority (Self-enhancement). Cronbach's Alfa for the three dimensions were acceptable: .70 for the Self-transcendence values, .73 for the Self-enhancement values and .91 for Environmental values.

3. Results

3.1. Psychometric Properties of the NEP Scale

The original and revised versions of the NEP scale tap into five related facets of environmental attitudes (Reality of limits to growth, Anti-anthropocentrism, Fragility of nature's balance, Rejection of exceptionalism, Possibility of an eco-crisis) (Dunlap et al., 2000). However, other researchers showed that the NEP scale could be unidimensional (Ogunbode, 2013), or bi-dimensional, measuring the pro-ecological view (new environmental paradigm - ecocentrism) and the pre-ecological view (the dominant social paradigm - anthropocentrism) (Dunlap et al., 2000). The initial exploratory factor analysis revealed a five-factor version which do not reflect the theoretical structure of the instrument. Therefore, we computed a two factor analysis, using Varimax rotation. The items loaded into the two factors reflecting the pro-ecological and the pre-ecological views. The two factors covers 45% of the total variance, with eigenvalues higher than 1 (3.11 for the pre-ecological view which covers 24% of the total variance, and 2.11 for the pro-ecological view, counting for 21% of the variance). Cronbach's Alfa for the two dimensions were acceptable, .70 for each dimension, and .73 for the entire scale.

Table 1
Goodness-of-fit measures for the tested models – First order CFA for the NEP Scale

Model	χ^2/df	GFI	CFI	AIC	RMSEA (90% CI)
1. One factor – uncorrelated errors	302.64 / 90 = 3.36 $p < .001$	.82	.60	362.64	.09 (.08-.11)
2. One factor – correlated errors	175.30 / 82 = 2.13 $p < .001$	.90	.82	251.3	.06 (.05-.08)
3. Two factors – uncorrelated errors	206.05 / 89 = 2.31 $p < .001$	.89	.78	268.05	.07 (.06-.08)
4. Two factors – correlated errors	174.35 / 87 = 2.00 $p < .001$	.90	.83	240.35	.06 (.05-.07)

Note. GFI: Goodness-of-Fit Index, CFI: Comparative Fit Index, AIC: Akaike Information Criterion, RMSEA: Root Mean Square Error of Approximation, 90% CI: 90% confidence interval for RMSEA.

The NEPO scale was also analysed using Confirmatory factor analysis in order to compare the fit of the two models: the unidimensional and the bi-dimensional versions.

The first unidimensional model with uncorrelated errors showed very low fit indices, but the model improved significantly after adding the correlations among the errors terms associated with several items (Table 1). Although the fit indices seem to be acceptable, the loadings of some items were problematic, being relatively low, such as item 14 (Figure 1).

The two-factor version showed good fit indices, but quite similar to those obtained for the uni-dimensional model (Table 1). The model with correlated errors between items 1 and 11 was better than the model without correlated errors. In the last model, the item 14 had higher loadings in factor 2, and only item 9 seemed to have to lower loading (Figure 1). The results showed that the models could explain well the attitudes towards the environment. We can conclude that NEP has a good reliability and a good construct validity. The predictive validity is an aspect not explored in this study.

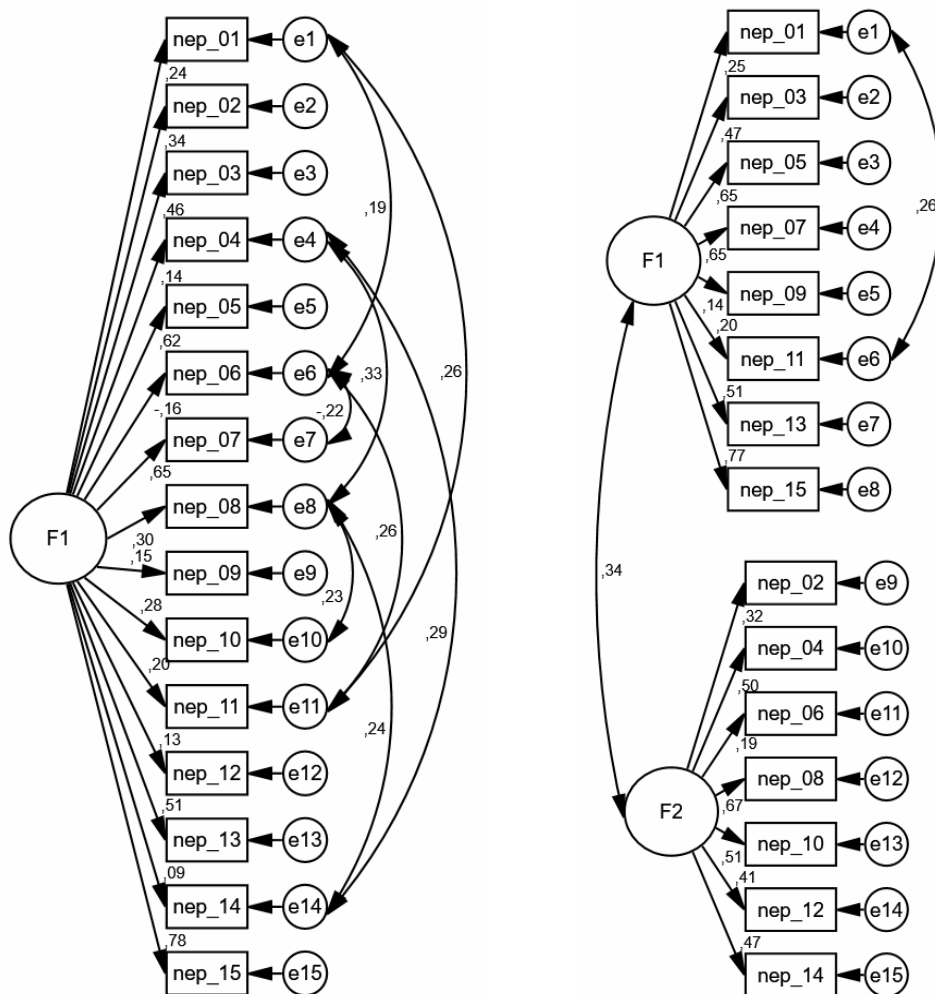


Fig. 1. *Confirmatory factor analysis for the NEP scale*

3.2. Associations between pro-environmental Attitudes, Values and Personality Traits

The second aim of the research was to analyse the relationships between the environmental attitudes and the personality traits. The results showed significant correlations, as expected, with openness and agreeableness (Table 2). Neuroticism, extraversion and conscientiousness did not correlate with the NEP dimensions.

Table 2

Pearson correlation coefficients between the environmental attitudes and the personality traits

	NEP total	Pre-ecological view	Pro-ecological view
Neuroticism	.05	.07	.01
Extraversion	.00	.06	-.06
Openness	.16*	-.09	.15*
Agreeableness	.13*	-.01	.18**
Conscientiousness	.013	.06	-.04

Note: $N = 241$, * $p < .05$, ** $p < .01$

Concerning the associations between the environmental attitudes and the values, we found that only the environmental values were associated with the environmental concern, the correlations being higher for the pro-ecological view (Table 3).

Table 3

Pearson correlation coefficients between the environmental attitudes and the values

	NEP total	Pre-ecological view	Pro-ecological view
Environmental values	.286**	.139*	.302**
Self-transcendence values	-.020	.052	-.080
Self-enhancement values	.036	.055	.003

Note: $N = 241$, * $p < .05$, ** $p < .01$

4. Conclusions and Discussion

The results showed that the NEP scale has good psychometric properties after its translation into Romanian. The construct validity of the instrument is good, the results being convergent with previous studies in the field and confirming the uni- and the two-dimension structure of the NEP (Ogunbode, 2013). Further research should be conducted in order to investigate the two problematic items revealed by the confirmatory factor analysis. Another issue that should be investigated refers to the temporal stability of the results and to the predictive validity of the scale.

Interesting results were revealed by the associations between the environmental concern and the personality traits. These results were consistent with other results reported in the literature (Brick & Lewis, 2016). Contrary to other studies, in our study neuroticism and conscientiousness were not associated with pro-environmental behaviours. However, the results are contradictory, Milfont and Sibley (2012) found that conscientiousness correlates positively with aspects of environmental behaviour such as electricity conservation, while Hirsh (2010), and Markowitz and his colleagues (2012) reported small or inconsistent effects of Conscientiousness on environmental concern. Concerning

to neuroticism, the results reported in the field are also contradictory. While Wiseman and Bogner (2003) showed that certain aspects of environmental engagement could be linked to global tendencies to experience high levels of anxiety and emotional variability, Milfont and Sibley (2012) revealed that greater environmental value was significantly associated with lower Neuroticism. Agreeableness and Openness were related to environmental concern, similar results being recently reported in the literature (Brick & Lewis, 2016). The lack of associations between extraversion and the environmental concern is supported by previous research showing that extraversion does not have a strong influence on environmental behaviour (Hirsch, 2010; Markowitz et al., 2012; Milfont & Sibley, 2012).

The results were promising and guide us to future research ideas, concerning the relationships between personality and pro-environmental behaviours. Thus, future studies will try to find what variables could mediate the relationship between personality traits and pro-environmental behaviour.

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