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Original paper

Gender Differences in Environmentalism: A Case Study of Macedonian Students

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Extended summary

This study focuses on the impact of gender on environmental worldview and concern. Environmental worldview can be defined as “the collective beliefs and values that give people a sense of how the world works, their role in the environment, and right and wrong behavior toward the environment” (Gillaspy, 2015: 1). Environmental concern is defined as “the affect (i.e., worry) associated with beliefs about environmental problems” (Schultz et al., 2004: 31). “Social scientists are motivated to study environmental concern because if we are to move towards environmental sustainability, we need to better understand the environmental worldviews that influence resource consumption and pollution” (Castro, 2006: 248), as a relevant part of the “circumstances under which individuals and groups make decisions and enact behaviors that affect levels of resource consumption and environmental pollution” (Stokols, 1995: 828).

The following hypothesis was put forward: Because most studies comparing women and men on the revised New Environmental Paradigm scale (NEP) found that women scored higher than men, we expected the same. We used revised New Environmental Paradigm scale also known as the NEP scale developed by Dunlap et al. (2000). This 15-item scale uses a 5-point Likert scale to measure endorsement of an ecological worldview. Each item was measured on a scale ranging from 1 to 5: strongly agree (5), agree (4), neither agree or disagree (3), disagree (2), and strongly disagree (1). Agreement with the eight odd-numbered items indicates pro-NEP orientation, while agreement with the seven even numbered ones indicates pro-DSP orientation. The NEP scale was tested for reliability using Cronbach’s α . For the pilot study, Cronbach’s α for this scale was within acceptable internal consistency (.71).

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The sample used in the final analysis consisted of 448 Macedonian elementary and high school students (193 or 43.1% boys, and 252 or 56.3% females). The schools were chosen for reasons of attainability and willingness to cooperate.

The principal components factor analysis (PCA) with varimax rotation was carried out in order to find out the existence of dimensions. In order to test the equality of two population (or treatment) means by examining the variances of samples that are taken, we used a hypothesis-testing technique or analysis of variance (ANOVA).

Mean total pro-NEP% of females and boys are almost identical (56.63% and 56.80%, respectively). The chi-square tests provided no support on 11 items for the hypothesis. Chi square test results showed that females and boys significantly differ in 4 out of 15 items. There were significant differences of opinion on two statements at .05 level and two at .01 level.

There is no difference in worldviews of boys and females on pro-NEP statements ($\chi^2=0.267$). Although mean total pro-DSP% of females and boys are also almost identical (48.02% and 47.96%, respectively), there is marked difference in worldviews of boys and females on these statements ($\chi^2=21.71$, $p=.01$). Principal components factor analysis (PCA) with varimax rotation, showed four dimensions named "Balance of Nature", "Humans over Nature", "Anti anthropocentrism" and "Limit to growth". There is a (statistically) significant difference among the population means (Mean female = 3.84, SD=0.61; Mean male = 3.71, SD=0.70) in terms of fourth dimension (Limit to growth, $F(1,44) = 4.12$, $p < .043$).

Empirical findings suggest that no firm and clear conclusions can be drawn about the effects of gender on (NEP) environmental concern in a sample of Macedonian students. In general, these findings suggest that genders do not differ on the NEP scale. A large majority of both female and male students agree on all pro-environment statements. These findings support Davidson and Freudenberg's (1996) claim that gender differences in environmentalism are not universal (Davidson and Freudenberg, 1996: 302). We cannot say whether existing differences are due to gender socialization and gendered roles but we can say that more research are needed on gender and the environment in environmental psychology and environmental sociology. From that, future studies should focus on all factors that create gender differences in environmental worldview. The number of these influences suggests that understanding pro-environmental concern is far more complex than previously thought (Gifford and Nilsson, 2014: 114).

In general, across-gender differences do not exist between two groups. Few gender differences in environmental orientations are limited on some items and one factor (dimension). From that, results do not support hypothesis. Our findings also suggest that equal attention should be paid to the role of both genders in the promotion of sustainability, although according to some studies, women tend to score higher on the environmental values that underlie environmental action.

Key words: environmentalism, NEP scale, students, gender, Macedonia.

References

- Arcury, T. A. & Christianson, E. H. (1993). Rural–urban differences in environmental knowledge and actions. *Journal of Environmental Education*. 25, 19–25. DOI: 10.1080/00958964.1993.9941940.
- Arcury, T. A., Scollay, S. J. & Johnson, T. P. (1987). Sex differences in environmental concern and knowledge: The case of acid rain. *Sex Roles*. 16 (9), 463–472. DOI: 10.1007/BF00292481.
- Banu, D. (1986). Secondary School Students’ Attitudes towards Science. *Research in Science and Technological Education*. 4 (2), 195–202.
- Blocker, T. J. & Eckberg, D. L. (1997). Gender and environmentalism: Results from the 1993 General Social Survey. *Social Science Quarterly*. 78 (4), 841–858. P.:17. URL: <http://www.jstor.org/stable/42863735>.
- Burn, M. Sh., Winter, L. P., Hori, B. & Silver, N. C. (2012). Gender, Ethnic Identity, and Environmental Concern in Asian Americans and European Americans. *Human Ecology Review*. 19, 2. Retrieved August 3, 2016. from www: http://www.fs.fed.us/psw/publications/winter/psw_2012_winter001_burn.pdf.
- Castro, P. (2006). Applying social psychology to the study of environmental concern and environmental worldviews: Contributions from the social representations approach. *Journal of Community & Applied Social Psychology*. 16, 247–266. DOI: 10.1002/casp.864.
- Davidson, D. J. & Freudenburg, W. R. (1996). Gender and environmental risk concerns: A review and analysis of available research. *Environment and Behavior*. 28, (3), 302–339. DOI: 10.1177/0013916596283003.
- Davidson, D. & Freudenberg W. (1996). Gender and Environmental Risk Concerns. A Review and Analysis of Available Research. *Environment and Behavior*. 28 (3), 302–339. DOI: 10.1177/0013916596283003.
- Dietz, T., Kalof, L. & Stern, P. C. (2002). Gender, values, and environmentalism. *Social Science Quarterly*. 83, 353–364. DOI: 10.1111/1540-6237.00088.
- Dunlap, R. E. & Van Liere, K. D. (1978). The New Environmental Paradigm: A Proposed Measuring Instrument and Preliminary Results. *The Journal of Environmental Education*. 9 (4), 10–19. DOI: 10.1080/00958964.1978.10801875.
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G. & Jones, R. E. (2000). Measuring the endorsement of the New Ecological Paradigm: a revised NEP scale. *Journal of Social Issues*. 56 (3), 425–442. Retrieved August 3, 2016. from www: <http://academic.evergreen.edu/s/smitht/NEP.pdf>.
- European Commission (2016). *Sustainable Development*. Retrieved August 2, 2016. from www: <http://ec.europa.eu/environment/eussd/2.8.2016>.
- Gambro, J. S. & Switzky, H. N. (1999). Variables associated with American high school students’ knowledge of environmental issues relates to energy and pollution. *Journal of Environmental Education*. 30 (2), 15–22. DOI: 10.1080/00958969909601866.

-
- Gifford, R., Hay, R. & Boros, K. (1982/83). Individual differences in environmental attitudes. *Journal of Environmental Education*. 14 (2), 19–23. DOI: 10.1080/00958964.1983.10801933.
 - Gifford, R. & Nilsson, A. (2014). Personal and social factors that influence pro-environmental concern and behaviour: A review. *International Journal of Psychology*. 49 (3), 141–157. DOI: 10.1002/ijop.12034.
 - Gillaspay, R. (2015). *Environmental Worldviews: Western & Deep Ecology*. Retrieved August 2, 2016. from www: <http://study.com/academy/lesson/environmental-worldviews-western-deep-ecology.html#transcriptHeader>.
 - Grieve, K. W. & Van Staden, F. J. (1985). Environmental concern in South Africa: An attitudinal study. *South African Journal of Psychology*. 15, 135–13. DOI: 10.1177/008124638501500405.
 - Gutteling, J. M. & Wiegman, O. (1993). Gender-specific reactions to environmental hazards in the Netherlands. *Sex Roles*. 28, 433–447. DOI: 10.1007/BF00289606.
 - Hines, J., Hungerford, H. & Tomera, A. (1986/87). Analysis and synthesis of research on responsible environmental behavior. *Journal of Environmental Education*. 18, 1–8. DOI: 10.1080/00958964.1987.9943482.
 - Hunter, L., Hatch A. & Johnson A. (2004). Cross-National Gender Variation in Environmental Behaviors. *Social Science Quarterly*. 85 (3), 677. DOI: 10.1111/j.0038-4941.2004.00239.
 - Idriži, A., Srbinovski, M. & Jonuzi, I. (2014). Attitudes of Macedonian High School Students towards the Environment. *Procedia- Social and Behavioral Sciences*. 159, 636 – 642. DOI: 10.1016/j.sbspro.2014.12.439.
 - Ismaili, M., Abazi, A. & Srbinovski, M. (2009). Students level of environmental education in Macedonian high schools. *SEEU (South-East European University) Review*. 5 (2), 125–135. Retrieved August 1, 2016. from www: http://www.seeu.edu.mk/files/seeu_review_5.2.pdf.
 - Jelle Boeve-de Pauwl, Karen J. & Van Petegem P. (2014). *Environment and Behavior*. 46 (3), 373–397. Retrieved August 2, 2016 from www: <http://eab.sagepub.com/content/46/3/373.abstract>.
 - Joachim Schahn (1990). Studies of Individual Environmental Concern. *The Role of Knowledge, Gender, and Background Variables, Environment and Behavior*. 22 (6), 767–786. Retrieved August 2, 2016. from www: <http://eab.sagepub.com/content/22/6/767.abstract>.
 - Levine, D. S. & Strube, M. J. (2012). Environmental attitudes, knowledge, intentions and behaviors among college students. *Journal of Social Psychology*. 152, 308–326. DOI: 10.1080/00224545.2011.604363.
 - Luchs, M. & Mooradian, T. (2012). Sex, personality, and sustainable consumer behaviour: Elucidating the gender effect. *Journal of Consumer Policy*. 35, 127–144. DOI: 10.1007/s10603-011-9179-0.
 - Maloney, M. P., Ward, M. P. & Braucht, G. N. (1975). A revised scale for the measurement of ecological attitudes and knowledge. *American psychologist*. 30 (7), 787–790. DOI: 10.1037/h0084394.

-
- Mayer, S. F. & McPherson Franz, C. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*. 24, 503–515.
 - Milfont, T. L., Duckitt, J. & Cameron, L. D. (2006). A cross-cultural study of environmental motive concerns and their implications for proenvironmental behavior. *Environment and Behavior*. 1 (38), 745–767. DOI: 10.1177/0013916505285933.
 - Mohai, P. (1992). Men, women, and the environment: An Examination of the Gender Gap in Environmental Concern and Activism. *Society and Natural Resources*. 5, 1–19. DOI: 10.1080/08941929209380772.
 - OSCE (2009). *Gender and Environment. A guide to the Integration of gender aspects in the OSCE's environmental projects*, 17. Retrieved August 13, 2016. from www: <http://www.osce.org/gender/36360>.
 - Palmer, J. A. (2003). *Environmental education in the 21st century, theory, practice, progress and promise*. London and New York: Routledge.
 - Stern, P. C., Dietz, T. & Kalof, L. (1993). Value Orientations, Gender, and Environmental Concern. *Environment and Behavior*. 25, 322–348. DOI: 10.1177/0013916593255002.
 - Rideout, B. E., Hushen, K., McGinty, D., Perkins, S. & Tate, J. (2005). Endorsement of the New Ecological Paradigm in systematic and e-mail samples of college students. *Journal of Environmental Education*. 36 (2), 15–23. DOI: 10.3200/JOEE.36.2.15-23.
 - Scannell, L. & Gifford, R. (2013). The role of place attachment in receptivity to local and global climate change message framing in engagement. *Environment and Behavior*. 45 (1), 60–85. DOI: 10.1177/0013916511421196.
 - Schahn, J. & Holzer, E. (1990). Studies of individual environmental concern: The role of knowledge, gender, and background variables. *Environment and Behavior*. 22, 767–786. DOI: 10.1177/0013916590226003.
 - Schultz, P. W. (2001). The structure of environmental concern: Concern for self, other people, and the biosphere. *Journal of Environmental Psychology*. 21, 327–339. DOI: 10.1006/jev.2001.0227.
 - Schultz, P. & Zelezny, L. (2003). Reframing environmental messages to be congruent with American values. *Research in Human Ecology*. 10 (2), 126–136. Retrieved August 3, 2016. from www: <http://www.humanecologyreview.org/pastissues/her102/102scultzzelezny.pdf>.
 - Raschka, S. (2015). *Principal Component Analysis in 3 Simple Steps*. Retrieved October 20, 2016. from www: http://sebastianraschka.com/Articles/2015_pca_in_3_steps.html.
 - Srbinovski, M. (2001). *Environmental education in primary and secondary schools in the Republic of Macedonia: a biological point of view* (doctoral dissertation). Skopje: Faculty of Natural Sciences and Mathematics.
 - Srbinovski, M. (2004). Some aspects of the students' environmental education in the Republic of Macedonia. *Natura Montenegrina*. 3, 257–268. UDK: 364.2:37.016:502/ 504(497.7) (045)=111.
 - Srbinovski, M. (2005a). *Environmental Education*. Skopje: Prosvetno delo.
-

-
- Srbinovski, M. (2005b). The relationships between some cognitive and affective environmental educational areas. *SEEU (South-East European University) Review* 2 (2), 223–239. ISSN: 1409-7001.
 - Srbinovski, M. (2006). Students' effective attitudes towards the environment, *Teaching and education*, 1: 22-33, ISSN: 0547-3330: eISSN: 2560-3051
 - Stern, P. C., Dietz, T. & Kalof, L. (1993). Value orientations, gender, and environmental concern. *Environment and Behavior*. 25 (5), 322–348, DOI: 10.1177/0013916593255002.
 - Stokols, D. (1995). The paradox of environmental psychology. *American Psychologist*. 50 (10), 821–837. DOI: 10.1037/0003-066X.50.10.821.
 - Tikka, P. M., Kuitnen, M. T. & Tynys, S. M. (2000). Effects of educational background on students' attitudes, activity levels, and knowledge concerning the environment. *Journal of Environmental Education*. 31 (3), 12–19. DOI: 10.1080/00958960009598640.
 - Tuncer, G., Ertepinar, H., Tekkaya, C. & Sungur, S. (2005). Environmental Attitudes of Young People in Turkey: Effects of School Type and Gender. *Environmental Education Research*. 11 (2), 215–233. DOI: 10.1080/1350462042000338379.
 - UALR College of Business (2016). *One-Way Analysis of Variance (ANOVA) Example Problem*. Retrieved August 2, 2016. from www: <http://cba.ualr.edu/smartstat/topics/anova/example.pdf>.
 - Van Liere, K. D. & Dunlap, R. E. (1980). The social bases of environmental concern: A review of hypotheses, explanations, and empirical evidence. *Public Opinion Quarterly*. 44 (2), 181–197. DOI: 10.1086/268583.
 - Weigel, R. & Weigel, J. (1978). Environmental concern: the development of a measure. *Environment and Behavior*. 10 (1), 3–15. DOI: 10.1177/0013916578101001.
 - Wiidegren, O. (1988). The new environmental paradigm and personal norms. *Environment and Behavior*. 30 (1), 75–100. DOI: 10.1177/0013916598301004.
 - Wiseman, M. & Bogner, F. X. (2003). A higher-order model of ecological values and its relationship to personality. *Personality and Individual Differences*. 34 (5), 783–794. DOI: 10.1016/S0191-8869(02)00071-5.
 - Woodford, C. (2016). *Environmentalism*. Retrieved August 3, 2016 from www: <http://www.explainthatstuff.com/introduction-to-environmentalism.html>.
 - World Commission on Environment and Development (2016). *Our Common Future*. Retrieved August 3, 2016. from www: <http://www.un-documents.net/our-common-future.pdf>.
 - Xiao, C. & Hong, D. (2010). Gender differences in environmental behaviors in China. *Population and Environment*. 32 (1), 88–104. DOI: 10.1007/s11111-010-0115-z.
 - Zelezny, L. C., Chua, P. P. & Aldrich, C. (2000). New Ways of Thinking about Environmentalism: Elaborating on gender differences in environmentalism. *Journal of Social Issues*. 56 (3), 443–457, DOI: 10.1111/0022-4537.00177.