
**Validation of the Greek Version of the Responsible Environmental Behavior Scale
and Relationships with Participation in Outdoor Activities**

Aglaia Zafeiroudi, Antonis Hatzigeorgiadis

Department of Physical Education and Sport Science, University of Thessaly

Correspondence with:

Aglaia Zafeiroudi

aglaiazaf@hotmail.com

Department of Physical Education and Sport Science

University of Thessaly

Karies, Trikala, 42100

Greece

International Journal of Sport Management Recreation & Tourism, Vol.13, p.20-37, 2014

© 2014 I.J.S.Ma.R.T. All rights reserved. ISSN: 1791-874X

To link to this article: <http://dx.doi.org/>

DOI: 10.5199/ijsmart-1791-874X-13b

Validation of the Greek Version of the Responsible Environmental Behavior Scale and Relationships with Participation in Outdoor Activities

Abstract

The purpose of the present study was to test the factorial validity of the Greek version of the Responsible Environmental Behavior scale (Zafeiroudi & Hatzigeorgiadis, 2012), and additionally, to investigate differences in responsible environmental behavior as a function of demographic characteristics, and participation in outdoor activities. Participants were 792 adults (379 men and 413 women) from the prefecture of Attica (the largest prefecture of the country). Confirmatory Factor Analysis revealed acceptable fit for the hypothesized 2-factor structure, individual and group environmental action, thus providing support for the factorial validity of the scale. Analysis of internal consistency supported the reliability of the two subscales (Cronbach's alpha .82 and .85 respectively). Analysis of variance revealed significant effects for (a) gender, with men scoring higher in group action and lower in individual action compared to women; (b) age group, with the 35-54 sub-group displaying higher scores than the 18-34 and the 55-68 sub-groups in both individual and group action; and (c) education level, with individuals with elementary education scoring lower in individual action compared to those with secondary and higher education. Finally, with regard to participation in outdoors activities, analysis of variance showed that individuals participating more frequently scored higher in both individual and group action than those who do not participate. The results of the present study provide support for the psychometric integrity of the Greek version of the Responsible Environmental Behavior instrument, and identify an important relationship between environmental behavior and participation in outdoor activities, suggesting that individuals' outdoors experiences may help people getting connected with the natural environment.

Keywords: environmental behaviour; Greece; outdoor activities

Validation of the Greek Version of the Responsible Environmental Behavior Scale and Relationships with Participation in Outdoor Activities

Introduction

The 'good life' has always been a desired but hard to achieve outcome for every human being (Prescott-Allen, 2001). Human populations and economies have grown so much that it has become impossible to improve one's own well-being without affecting the environment (Kalaitzidis & Ouzounis, 2000). Today, pollution, resource shortages, and the declining diversity of animals and plants are signals that the environment is threatened.

Public concern for the natural environment has increased dramatically in Greece the last decade (Valavanidis & Vlachogianni, 2011). An ongoing series of environmental tragedies, such as the catastrophic fires in Peloponnesus in 2007 and 2012, the polluted beaches in Santorini island due to a shipwreck in 2007, and the 10.000 illegal disposal centers all over the country, attracted the population's attention on environmental problems and raised the environmental concern. Environmental concern reflects peoples' sensitivity to environmental problems and their view of the relationship between humans and the natural environment (Dunlap, 2002).

Maloney and Ward (1973) attempted to conceptualize the ecological crisis as a problem which lies in the alteration of human behavior. They stressed that for researchers and policy makers to find solutions for the environmental problems, they must first understand peoples' behavior. According to Stern (2000), there are several types of environmental behavior, which vary according to their location and extent of visibility: environmental activism, centered in the public realm; non-activist political behavior occurring in the public sphere; private-environmentalism, including purchasing decisions; and behavior originating in organizations to which an individual may belong (Mobley, Vagias & DeWard, 2010).

One major way of assessing individuals' concerns for the environment is through their participation in a variety of pro-environmental activities such as household recycling and consumption patterns (Klineberg, McKeever & Rothenbach, 1998). Maloney and Ward (1973) attempted to explain environmental problems through human behavior. In a preliminary attempt to provide such data, Maloney and Ward (1973) developed an 128-item ecological attitude-knowledge scale to assess the extent to which people engaged

in actions to protect the environment. Two years later, the same researchers (Maloney & Ward, 1975) shortened the above scale in an attempt to provide a more practical and efficient instrument. Based on Maloney and Ward's work, Scott and Willits (1991) developed a Responsible Environmental Behavior scale with 10 items in an examination of environmental concern among Pennsylvania citizens in a statewide survey. These items were used also by Cottrell (2003) to examine General Responsible Environmental Behavior in a survey among recreational boaters. General responsible environmental behavior aims to do what is right to help protect the environment in general daily practice (Cottrell, 2003).

Raises in environmental concern in Greece have accordingly increased the research interest. Based on Cottrell's scale (2003), Zafeiroudi and Hatzigeorgiadis (2012) adapted Responsible Environmental Behavior scale for the Greek population. The survey involved 203 people from Greece (56% men and 44% women), coming from the two largest counties of Greece, Attica (69%) and Thessaloniki (31%), aged 18 to 69 years. The results of the exploratory factor analysis for the Responsible Environmental Behavior scale provided a 2-factor solution. The first factor, reflected individuals' systematic attempts to behave responsibly in their daily lives through simple acts of caring for the environment, and was named 'individual environmental action'. The second factor, reflected individuals' attempts to become active agents of the environmentally responsible behavior through their participation in group environmental events and campaigns, and was named group environmental action. Analysis of internal consistency supported the reliability of the two subscales (Cronbach's alpha .77 and .87 respectively). The study by Zafeiroudi and Hatzigeorgiadis (2012) provided preliminary evidence for the psychometric properties of the Responsible Environmental Behavior scale and encourages the continuation of the validation process. The first purpose of this study was to extend the validation process of the Greek version of the Responsible Environmental Behavior scale.

Responsible Environmental Behavior and Socio-demographic characteristics

A considerable part of the literature has explored factors predicting environmentally responsible behavior. Several investigations have identified relationships between socio-demographic characteristics and behavior. Klineberg and colleagues found that age and education were related with environmental concern. In particular, younger and better educated people appeared to be more concerned about

environmental issues and more committed to environmental protection. Gender did not present a clear picture, whereas the size of town predicted environmental concern only when it was phrased in terms of the perceived quality of the local environment. Moreover, income had significant effect on pro- environmental behavior (Klineberg et al., 1998).

The research on the relationship between gender and responsible environmental behavior has provided equivocal results. Similarly to Klineberg et al. (1998), Hines, Hungerford, Tomera (1986/87) found no correlation between gender and responsible environmental behavior. In contrast, Zelezny and Schultz (2000) claimed that women were more engaged to responsible environmental behavior than men, and Johnson, Bowker and Cordell (2004) reported that women scored higher on the New Environmental Paradigm, a scale assessing environmental beliefs, than men. In contrast, results from a Norwegian sample showed that men had higher NEP scores than women (Bjerke, et al., 2006).

With regard to further personal factors, Cordell, Betz and Green (2002) found that participants whose personal beliefs were more pro-environmental tended to have middle to higher incomes and participated in activities such as walking, canoeing, surfing, swimming, skiing and motor boating. Scott & Willits, (1994) supported that persons with higher levels of education expressed greater environmental concern and were more engaged to environmentally responsible behaviors. More recently, Xiao and McCright (2007) suggested also that education was among the strongest predictor of environmental concern and behavior.

In Greece there are a few studies that have examined responsible environmental behavior in adults (Koniari, 2008; Tilikidou & Delistavrou, 2006; Tilikidou, 2007). Tilikidou and Delistavrou (2006) examined environmental behavior among Greek consumers and the influence of some demographics on environmental behavior. The study took place in the city of Thessaloniki. The results showed that the most popular environmental behaviors in Greece were the avoidance of disposing garbage and making noise. Also, the researchers claimed that Greek consumers had low scores of environmentally friendly behavior. Finally, older women, with low income and higher level of education were more engaged to responsible environmental behavior. The second purpose of the study was to explore differences in responsible environmental behavior, using a psychometrically sound instrument, as a function of sex, age, and education level.

Environmental Behavior and Outdoor Recreation Participation

If people want to sustain their own well-being, they need to look after the well-being of the natural environment. Actually, environmental well-being is linked to the good quality of human life (Prescott- Allen, 2001). The improvement of human living and quality of life has directly related to physical activity (Berger, Pargman & Weinberg, 2007). The benefits of exercise were under investigation over the past years and researchers gave to physical activity a range of physical and mental benefits (Haskell, et al., 2007; Penedo & Dahn, 2005). One type of physical activity is the participation in outdoor recreation activities. Since outdoor recreationists are in direct contact with natural environment are more likely to espouse a pro-environmental orientation (Thapa & Graefe, 2003).

Ewert (2003) asserted that direct outdoor experiences help people forming bonds with surroundings and influence individual behaviors. Dunlap and Heffernan (1975) examined the link between type of outdoor activities and environmental action. They found that participants involved in appreciative activities (e.g., hiking) had a stronger association with environmental concern than participants involved in consumptive activities (e.g., hunting).

Theodori, Lulloff and Willis (1998) examined the effect of individual activities on environmental behavior. The respondents participated in both appreciative and consumptive activities. Results showed that people who participated in appreciative activities were more likely to exhibit pro-environmental behaviors than participants in consumptive activities.

In another relevant study, Tarrant and Green (1999) explored the role of outdoor recreation participation as a moderator and a mediator variable on the environmental attitude-behavior correspondence. A mediating effect was found only for appreciative outdoor recreation activities (e.g., bird viewing, hiking) in the environmental attitude-behavior relationship.

In a similar study, Thapa and Graefe (2003) found that individuals participating in forest recreation activities (such as biking, hiking, camping and wild viewing) were more likely to have eco-centric attitudes, compared to individuals participating in consumptive activities (such as fishing and hunting). Furthermore, they reported that participants in motor-boating, snowmobiling and off-road driving viewed the environmental in terms of its potential use for the above vehicles. Teisl and O'Brien (2003) supported the idea that participation in outdoor recreation is positively associated with environmental concern

and behavior. Additionally the level of concern and behavior depends on the type of recreational activity.

Recently, Bjerke Thrane and Kleiven (2006) showed that appreciative and consumptive activities did not constitute homogeneous categories that related to environmental attitudes in opposing ways. For example, various types of hunting and various types of fishing showed different associations with environmental attitudes. Peterson, Hull, Mertig and Liu (2008) also found that frequency of participation in select activities had a great impact on environmental concern. Finally, Thapa (2010) investigated the mediation effect of outdoor recreation participation on environmental attitude – behavior correspondence. The latter researcher supported that attitudes exhibited stronger direct relationships with behavior, when compared to the effect of outdoor participation (as mediator) on environmental behavior.

In Greece, people's interest for outdoor recreation participation has increased over the past decades. A significant number of outdoor commercial companies have been established, providing outdoor activity programs (Kouthouris, 2009). As a consequence, a major growth in popularity and participation rates for outdoor activities has been observed, related to mountains (hiking, skiing), rivers (rafting, kayaking), lakes (canoeing, fishing) and sea (sailing, windsurfing). Zafeiroudi and Hatzigeorgiadis (2012) in a preliminary study regarding the environmental behavior of Greeks identified that individuals participating in physical activities in outdoor sport centers and parks reported more environmentally responsible behavior compared to those not participating in such activities. The final purpose of this study was to explore the relationship between responsible environmental behavior and participation in recreation outdoor activities.

Summarizing the above, the aim of the present study was to further support the psychometric integrity of the scale through confirmatory factor analysis, a more sophisticated and rigorous analyses for testing construct validity. In addition, the study aimed to examine differences in environmental behavior as a function of social-demographic characteristics and participation in recreation outdoor activities.

Methodology

Sample

Participants were 792 Greek adults from Prefecture of Attica. Participants were randomly selected through a telephone survey. Among them, 379 (48%) were men and 413 (52%) were women. With regard to age, 229 participants (29%) were between the

age of 18 and 34 years, 319 (40%) were between the age of 35 and 54 years, and 244 (31%) were between the age of 55 and 68. With regard to educational level, 79 participants (10%) had received elementary education, 302 participants (38%) had completed secondary education, and 410 (52%) had graduated from University. All the characteristics of the participants are presented in Table 1.

Table 1. Demographic characteristics of the sample.

		N
Sex		
	males	379 (48%)
	females	413 (52%)
Age group		
	18-34	229, 29%
	35-54	319, 40%
	55-68	244, 31%
Education		
	Secondary	79 (10%)
	High school	302 (38%)
	University	410 (52%)
Residence		
	Apartment	491 (62%)
	Detached house	301 (38%)
Marital status		
	Single	227 (30%)
	Married	524 (70%)

Questionnaire

Responsible Environmental Behavior. The Greek version of the Responsible Environmental Behavior (Zafeiroudi & Hatzigeorgiadis, 2012) was used to assess environmental behavior. The scale comprises of 10 items assessing the extent to which individuals engage in actions to protect the environment. These items were generated by the literature (Cottrell, 2003; Maloney et al, 1975; Scott & Willits, 1994,) and adapted to the Greek context. Despite that in the original scale (Scott & Willits, 1991; 1994) and previous studies (e.g., Cottrell, 2003) responses were given on a dichotomous (true/false) format, Zafeiroudi et al. (2012) study altered to a 4-point Likert scale, ranging

from 1 (Never) to 4 (Always) to more efficiently capture the variability of the respective behaviors between individuals. Exploratory factor analysis has supported a 2-factor solution, individual and group environmental action. The internal consistency of the modified scale has also been supported with Cronbach's alpha values ranging from .77 and .87 respectively (Zafeiroudi & Hatzigeorgiadis, 2012).

Frequency of Outdoor Participation. Frequency of participation in outdoor recreation activities was assessed with the question: "How often do you normally participate in outdoor activities (such as hiking, orientation, mountain hiking, climbing, mountaineering, rafting, kayaking, canoeing, mountain biking, skiing, sailing, horse trekking), during a year. Responses were given on a three-level scale (1 = never, 2 = sometimes, 3 = systematically).

Process

Participants were randomly selected through a telephone survey from Prefecture of Attica.

Data Analysis

Confirmatory Factor Analysis was used to examine the construct validity of the scale. Model parameters were estimated based on the covariance matrix. The Comparative Fit Index (CFI), the Non-Normed Fit Index (NNFI), the Standardized Root Mean square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA) were the indices used to test the adequacy of the model. For CFI and NNFI values over .95 are indicative of very good fit, whereas values greater than .90 are considered acceptable. For SRMS and RMSEA values lower than .5 are indicative of very good fit, whereas values lower than .08 are considered acceptable (Hu & Bentler, 1999).

Results

Factorial Validity of "Responsible Environmental Behavior" scale

Based on the results of the exploratory factor analysis a two-factor model was tested. The fit indices supported the adequacy of the model. All items had high loadings and relatively low errors, which in addition to the adequacy of the fit indices support the hypothesized factor structure of the instrument. The factor loadings and the fit indices are presented in Table 2. The correlation between the two latent factors was .53.

Table 2. The factor loadings and the fit indices from the CFA for Responsible Environmental Behavior.

Items	Standardized coefficients		Uniqueness	R ²
	Group Action	Individual Action		
participate in events related to the environment	.777		.630	.603
participate in actions of cleaning-up forests, beaches, outdoor areas	.762		.648	.580
participate in meetings of organizations concerned with the environment	.763		.646	.582
participate in tree planting actions	.684		.729	.468
seek information for dealing with environmental pollution		.658	.753	.433
reduce the use of energy recourses in your everyday life		.670	.742	.449
prefer products which have a lower polluting effect		.834	.552	.696
prefer products in recyclable packages/containers		.831	.557	.690
support politicians who are strongly concerned for the environmental problems		.564	.826	.318
support environmental publications and TV programs		.587	.809	.345
	Mean	1.64	3.11	
	SD	0.61	0.68	
	Alpha	.85	.82	
	Fit indices	CFI: .957	NNFI: .944	SRMR:.046 RMSEA: .072

Based on the mean scores computed for each sub-scale, the factor 'individual environmental action' achieved the highest scored, with a mean of ($M= 3.11$, $SD=.68$), which indicates an average scoring between 'never' and 'some times' frequency scores. The second factor 'group environmental action' achieved a lower mean of ($M=1.64$, $SD=.61$). The internal consistency coefficients of both the sub-scales had acceptable values of alpha ($\alpha>.80$). The mean scores and standard deviations of the scales are presented in Table 1.

Environmental Behavior as a function of demographic characteristics

A 3-way ($2 \times 3 \times 3$) MANOVA was conducted to examine the differences in individual and group environmental action due to socio-demographic characteristics. The analysis revealed significant multivariate effects for gender, Pillai's Trace = .03, $F(2, 781) = 12.07$, $p < .001$, $\eta^2 = .03$, age, Pillai's Trace = .04, $F(4, 1562) = 4.45$, $p < .01$, $\eta^2 = .011$, and education level, Pillai's Trace = .05, $F(4, 1562) = 4.66$, $p < .01$, $\eta^2 = .012$. No significant interaction effect emerged. Examination of the univariate effects for gender showed significant differences in both individual action, $F(1, 787) = 3.89$, $p < .05$, $\eta^2 = .005$, and group action, $F(1, 787) = 10.15$, $p < .01$, $\eta^2 = .013$. The mean scores revealed that men scored higher in group action than women, who scored higher in individual action. Examination of the univariate effects for age showed significant differences in individual action $F(2, 787) = 5.15$, $p < .01$, $\eta^2 = .011$ and group action, $F(2, 787) = 7.09$, $p < .01$, $\eta^2 = .018$. Post-hoc analysis showed that 35-54 sub-group scored higher than the 18-34 and the 55-68 sub-groups in both individual and group action ($p < .01$).

Examination of the univariate effects for education level showed significant differences only in individual action $F(2, 787) = 9.33$, $p < .001$, $\eta^2 = .023$. Post-hoc analysis showed that individuals with elementary education scored lower than those with secondary and higher education ($p < .01$). The mean scores for all subgroups appear in Table 2.

Environmental Behavior as a function of outdoor activities participation

In terms of frequency of outdoor activities participation, 485 participants (61%) reported not participating in outdoor activities, 211 participants (27%) reported participating some times, and finally 86 participants (11%) reported participating systematically in outdoor activities. A one way-MANOVA was conducted to examine the effects of frequency of participation in responsible environmental behavior. The analysis revealed a significant multivariate effect, $F(4, 1552) = 13.65$, $p < .001$, $\eta^2 = .03$. Examination of the univariate effects showed a significant effects for both individual

environmental action, $F(2, 779) = 3.37$, $p < .05$, $\eta^2 = .009$, and group environmental action $F(2, 779) = 26.88$, $p < .001$, $\eta^2 = .065$. Post-hoc analysis revealed that participants participating systematically scored higher than participants reporting not participating in outdoor activities ($p < .001$). The mean scores are presented in Table 3.

Table 3. Mean scores in Responsible environmental behavior for all groups.

		Individual action	Group action
		<i>M (SD)</i>	<i>M (SD)</i>
<i>Gender</i>			
	Males	3.04 (0.69)	1.69 (0.64)
	Females	3.17 (0.66)	1.59 (0.58)
<i>Age groups</i>			
	18-34	3.02 (0.69)	1.53 (0.58)
	35-54	3.19 (0.61)	1.72 (0.61)
	55-68	3.08 (0.75)	1.65 (0.63)
<i>Educational Level</i>			
	Preliminary	2.84 (0.91)	1.53 (0.65)
	Secondary	3.14 (0.70)	1.66 (0.63)
	University	3.14 (0.60)	1.66 (0.59)
<i>Outdoors Activities</i>			
	Never	3.06 (0.72)	1.53 (0.56)
	Some times	3.19 (0.61)	1.77 (0.61)
	Systematically	3.20 (0.61)	1.98 (0.72)

Discussion and Conclusion

The purpose of the study was twofold; first to test the factorial integrity of the Greek version of the Responsible Environmental Behavior, and second to examine differences in environmental behavior in relation to demographic factors and participation in recreation outdoor activities. Overall, the results supported the psychometric integrity of the scale, and revealed that responsible environmental behavior is linked to gender, age, education level, and participation in leisure outdoor activities.

Confirmatory factor analysis supported the structure identified for the Greek version of the Responsible Environmental Behavior scale in a previous investigation (Zafeiroudi & Hatzigeorgiadis, 2012). In particular, the analysis supported the existence of two relevant factors, individual environmental action and group environmental action. The factor loadings and the fit indices of the instrument were satisfactory. The mean scores for the two behavioral dimensions suggest that the Greek sample seemed to prefer individual rather than group actions; however, it should be noticed that the mean scores for both individual and group actions were generally low, revealing a relative lack of active environmental concern. Participation in social events such as environmental meetings and campaigns requires time and money. Those requirements are particularly difficult to be satisfied in Greece, especially in urban centers under the economic crisis in years 2011-2013. Moreover, environmental organizations have structural difficulties to organize effectively meetings and campaigns (Papadimitriou, 2006). According to data from the National Center for Scientific Research (<http://www2.ekke.gr/estia>) these difficulties are mostly due to reduced financial resources. The poor organization often creates a negative image of environmental organizations which possibly discourages public participation in environmental events and campaigns.

With regard to gender differences, the results showed that men in Greece were more engaged to group environmental action than women, who in turn reported greater environmentally responsible behavior in individual environmental action. A possible explanation for this finding is that in Greece, women typically take care of the household and the shopping (individual actions), while men are more engaged in public-social events (group actions) (Athanasiadou, 2002). In a relevant study in Greece by Tilikidou and Delistavrou (2006), it was supported that women were more willing to engage in 'green' consumption than men. Similar results regarding gender have been reported in study in USA, where it was revealed that women showed more attention and interest in the environment (Johnson et al, 2004); whereas in contrast, in a study in Norway men were found more caring for the environment than women (Olli, Grendstad & Wollebaek, 2000). Generally, the findings regarding the role of gender in responsible environmental behavior remain inconsistent (Mobley et al, 2009).

Regarding age, the results showed that the group aged 35-54 expressed higher levels of environmental concern and respective behavior in both individual and group action. Compared to the younger age group (18-34) the results can be attributed to the social trends about the notion of family (Koroneou, 1996). It is typically close to the age

of 35 that Greeks become parents, and as such they become more interested in issues related to the future and the quality of life. Regarding the older age group (55 and over), environmental concern and action is a relatively new issue in the Greek society, it is only recently that environmental concern has increased and the environmental care becomes part of our culture.

The results of the study also revealed an effect for education. In particular, it was found that more educated people reported higher levels of responsible environmental behavior, especially for the individual action factor. Greek high schools and universities offer, even though not systematically, environmental education programs and relative events (Flogaiti, 1993; Paraskeyopoulos & Korfiatis, 2005). Apparently the existence of such educational programs could help people gradually develop a friendly life-long environmental behavior (www.pi-schools.gr/perivalontiki/). Under those conditions students could develop an appropriate framework of attitudes and behaviors towards the environment that allow them to ensure a high level of 'life quality' (Papadimitriou, 2006; Paraskeyopoulos & Korfiatis, 2005). Similar results have been reported in other countries (Harris, 2006; Mobley et al., 2010).

Finally, our last aim was to examine environmental behavior in relation to participation in outdoor activities. Examination of the frequency of participation showed that a large percentage of Greek citizens, approximately 40%, were somehow involved in outdoor activities. The results showed that outdoor activity participants were more likely to be engaged in responsible environmental behavior than those not participating. Results confirmed previous relative studies in other countries. Bjerke and his colleagues (2006) showed that participants in many outdoor activities were more concerned for the environment, apart from those participating in activities such as hunting or motorized water sports. Generally, outdoor activities participation not only provide direct experience with natural environment but also reflect a more preservation-oriented philosophy toward the environment (Tarrant & Green, 1999). Furthermore, outdoor activities participation as indirect experience is important in generating responsible environmental behavior (Tarrant & Green, 1999).

The present study supported the psychometric integrity of the Responsible Environmental scale. This instrument may prove a useful tool to further enhance our understanding of the environmental behavior and the factors that influence it. The results suggest that Greek citizens are not very concerned about the environment, at least compared to the European standards. In addition, gender, age and educational were

important determinants of environmental behavior. Finally, it was found that participation in outdoor activities helps people develop a more direct contact with the natural environment. Public, private and voluntary organizations in our country should promote the idea of outdoor activities participation. According to our results, this will enhance participation in environmentally responsible behaviors and actions and contribute towards the global goal of enhancing quality of life. Future research could employ longitudinal designs and employ objective measures of different types of outdoor activities and environment behavior, to further enhance our understanding of the role of outdoor activities participation for the development of responsible environmental behavior.

References

- Athanasidou, C. (2002). *"Young women with university education and reconciliation of private and public realm design of adulthood,"* Ph.D. Dissertation, Department of Psychology, Aristotle University of Thessaloniki, Greece.
- Berger, B., Pargman, D., & Weinberg, R. (2007). *Foundations of exercise psychology*. Morgantown, WV: Fitness Information Technology.
- Bjerke, T., Thrane, C., & Kleiven, J. (2006). Outdoor recreation interests and environmental attitudes in Norway. *Managing Leisure*, 11, 116-128.
- Boutirakis.M, 2008, www.ecocrete.gr/index.php
- Cordell, H. K., Betz, C. J. & Green, G. T. (2002). Recreation and the environment as cultural dimensions in contemporary American society. *Leisure Sciences*, 24, 13-41.
- Cottrell, S. P. (2003). Influence of Socio-demographics and Environmental Attitudes on General Responsible Environmental Behavior among Recreational Boaters. *Environment and Behavior*, 35(3), 347-375.
- Dunlap, R., & Heffernan, R. B. (1975). Outdoor recreation and environmental concern: An empirical examination. *Rural Sociology*, 40, 18-30.
- Robert Prescott- Allen (2001). *The Well-being of Nations. A country -by -country index of quality of life and the environment*. Island Press, U.S.A.
- Dunlap, R. E. (2002). Environmental sociology: A personal perspective on its first quarter century. *Organization & Environment*, 15(1), 10-29.
- Eurobarometer 58,0, 9/12/2012, from <http://www.enthesis.net/>.

- Ewert, A. (2003). Quality of life, recreation, and natural environments: exploring the connection. In A. Clark, & Yu-Fai, Leung, (2007). Outdoor recreation is linked to pro-environmental attitudes and behaviors. *Parks and Recreation*, August, 27-31.
- Flogaiti E. (1993). *Environmental Education*. Greek University Press.
- Gergopoulos, A., & Tsaliki, E. *Environmental Education*. Gutenberg publications, Athens, 1993.
- Harris, P. (2006). Environmental perspectives and behavior in China: synopsis and bibliography. *Environment and Behavior*, 38(1), 5-21.
- Haskell, W. L., Lee, I. M., Pate, R. R., Powell, K.E., Blair, S. N., Franklin, B. A., Bauman, A. (2007). Physical Activity and Public health. *Medicine & Science in Sports & Exercise*, 39, 1423-1434.
- Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1986). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *The Journal of Environmental Education*, 18(2), 1-8.
- Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1987). Analysis and synthesis of research on responsible environmental behavior: A metanalysis. *The Journal of Environmental Education*, 18(2), 1-8.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55.
- Johnson, Y., C., Bowker, M., J., & Ken Cordell, H. (2004). Ethnic variation in environmental belief and behaviour: an examination of the New Ecological Paradigm in a social psychological context. *Environment and Behavior*, 36(2), 157-186.
- Kalaitzidis, D. & Ouzounis, K. (2000). *Environmental Education*. Spanidis Publications, Xanthi, Greece.
- Klineberg, S., McKeever, M. & Rthenbach (1998). Demographic Predictors of Environmental Concern: It Does Make a Difference How It's Measured. *Social Science Quarterly*, 79(4), 734-753.
- Koniari, X. (2008). *The profile of Greek green consumer*. Master in "Sustainable Development". Department of Economics and Ecology, Harokopio University.
- Koronaïou, A. (1996). *The sociology of leisure*. Nisos publications, Athens, Greece.
- Kouthouris C. (2009). *Outdoor recreation activities - Extreme Sports, Management Services*. Christodoulides Publications, Thessaloniki, GR.

- Maloney, M. P., & Ward, M. P. (1973). Ecology: Let's hear it from the people- An objective scale for measurement of ecological attitudes and knowledge. *American Psychologist*, 28, 583-586.
- Maloney, M. P., Ward, M. P., & Braucht, G. N. (1975). Psychology in action: A revised scale for the measurement of ecological attitudes and knowledge. *American Psychologist*, 30, 787-791.
- Mobley, C., Vagias, W., & DeWard, S. (2010). Exploring additional determinants of environmentally responsible behavior: the influence of environmental literature and environmental attitudes. *Environment and Behavior*, 42(4), 420-447.
- Olli, E., Grendstad, G., & Wollebaek, D. (2001). Correlates of environmental behavior: Bringing back social context. *Environment and Behavior*, 33, 181-208.
- Panteion University of Social and Political Sciences. *Environment and upgrade the quality of life. The social representations of the environment*. Greek Letters, Athens, 2000.
- Papadimitriou, E. (2006). *Environmental Policy and Ecological crisis*. Greek Letters publications, Athens, Greece.
- Paraskevopoulos S. & Korfiatis.K. (2005) *Environmental Education. Theories and methods*. Christodoulides publications, Thessaloniki, Greece.
- Penedo, F., & Dahn, J. (2005). Exercise and well- being: a review of mental and physical health benefits associated with physical activity. *Current Opinion in Psychiatry*, 18, 189-193.
- Peterson, N., Hull, V., Mertig, A., & Liu, J. (2008). Evaluating household- level relationship between environmental views and outdoor recreation: The Teton Valley case. *Leisure Sciences*, 30, 293-305.
- Prescott- Allen, R. (2001). *The Wellbeing of Nations. A Country- by- Country Index of Quality of Life and the Environment*. Island Press, USA.
- Scott, D., & Willits, E K. (1991). Environmental concern of Pennsylvania citizens: Data from a statewide survey. University Park: Pennsylvania State University, Department of Agricultural Economics and Rural Sociology. In D. Scott, & E K. Willits, (1994). Environmental attitudes and behavior: A Pennsylvania survey. *Environment and Behavior*, 26, 239-260.
- Scott, D., & Willits, E K. (1994). Environmental attitudes and behavior: A Pennsylvania survey. *Environment and Behavior*, 26, 239-260.

- Stern, P. C. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 36, 407-424.
- Tarrant, M. A., & Green, G. T. (1999). Outdoor recreation participation and predictive validity of environmental attitudes. *Leisure Sciences*, 21, 17-30.
- Teisl, M. F. & O' Brien, K. (2003). Who cares and who acts? Outdoor recreationists exhibit different levels of environmental concern and behaviour. *Environment and Behavior*, 35, 506-522.
- Thapa, B. (2010). The Mediation Effect of Outdoor Recreation Participation on Environmental Attitude- Behavior Correspondence. *The Journal of Environmental Education*, 41(3), 133-150.
- Thapa, B., & Graefe, A. (2003). Forest recreationists and environmentalism. *Journal of Park and Recreation Administration*, 21(1), 75-103.
- Theodori, G. L., Luloff, A. E., & Willits, F. K. (1998). The association of outdoor recreation and environmental concern: Reexamining the Dunlap- Heffernan Thesis. *Rural Sociology*, 63, 94-108.
- Tilikidou, I. & Delistavrou (2006). *Consumers Ecological Activities and their Correlates. Proceedings of the 9th International Conference on Marketing and Development*, Thessaloniki Greece.
- Tilikidou, I. (2007). The effects of Knowledge and Attitudes upon Greeks' Pro-environmental Purchasing behavior. *Corporate Social and Environmental Management*, 14, 121-134.
- The Most Important and Urgent Environmental Problems in Greece in the Last Decade (2000-2010). From www.chem.uoa.gr/
- Xiao, C., & McCright M. (2007). Environmental Concern and Sociodemographic Variables: A Study of Statistical Models. *The Journal of Environmental Education*, 38, 2, 3-13.
- Zafeiroudi, A. & Hatzigeorgiadis, A. (2012). Environmental Responsible Behaviour ' & Physical Exercise in Outdoor Sport Centers. *Hellenic Journal of Sport and Recreation Management* 9 (1), 1-9.
- Zafeiroudi, A., & Hatzigeorgiadis, A. (2009). Environmental Concern, Human Behavior and Participation in Outdoor Recreation Activities. *Hellenic Journal of Sport and Recreation Management* 5 (2), 23-40.
- Zelezny, L. C., & Schultz, P., W. (2000). Promoting Environmentalism. *Journal of Social Issue*, 56, (3), 365-371.