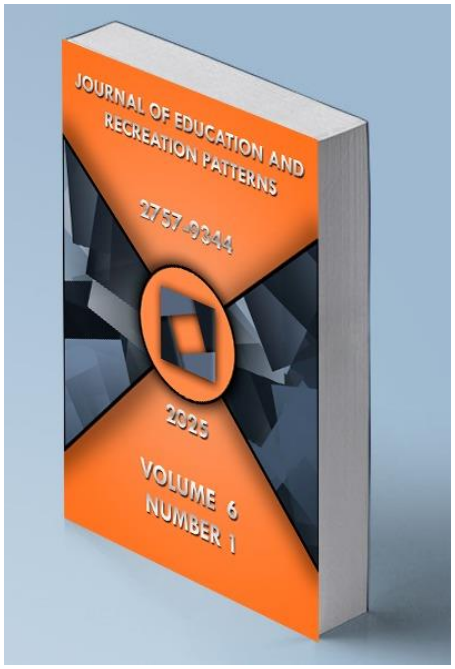

Journal of Education and Recreation Patterns (JERP)

www.jerpatterns.com

An Examination of Ecological Attitude and Nature Relatedness Among Young Adults Participating in Outdoor Recreation Activities

İbrahim Hakkı KAYNAK[1], Mustafa Sabır BOZOĞLU[2], Alper KAYA[3], Sude KILINÇ[4]

To cite this article:

Kaynak, İ.H., Bozoğlu, M.S., Kaya, A. & Kılınç, S. (2025). An examination of ecological attitude and nature relatedness among young adults participating in outdoor recreation activities. *Journal of Education and Recreation Patterns (JERP), 6 (1)*, 54-71. DOI: https://doi.org/10.53016/jerp.v6i1.300

[1] Faculty of Tourism, Necmettin Erbakan University, ihkaynak@erbakan.edu.tr, https://orcid.org/0000-0001-5552-6673
[2] Faculty of Tourism, Necmettin Erbakan University, mbozoglu@erbakan.edu.tr, https://orcid.org/0009-0002-2696-6105
[3] Faculty of Tourism, Necmettin Erbakan University, akaya@erbakan.edu.tr, https://orcid.org/0000-0002-0364-4122
[4] Institute of Social Sciences, Necmettin Erbakan University, sudekilinc@outlook.com, https://orcid.org/0000-0002-6473-0374

Journal of Education and Recreation Patterns (JERP)
Volume 6, Issue 1, Year 2025 ISSN: 2757-9344

An Examination of Ecological Attitude and Nature Relatedness Among Young Adults Participating in Outdoor Recreation Activities

İbrahim Hakkı Kaynak[1], Mustafa Sabır Bozoğlu[2], Alper Kaya[3], Sude Kılınç[4]

ARTICLE INFORMATION
Original Research Paper

Received 02.05. 2025
Accepted 19.06. 2025

https://jerpatterns.com

June, 2025
Volume: 6, No: 1
Pages: 54-71

ABSTRACT
Outdoor recreation activities facilitate individuals' connection with nature. The close contact with nature that such activities provide can positively influence individuals' ecological attitudes and interest in the natural environment. In today's era, where urbanization heavily interferes with human life, both outdoor recreation activities and the resulting interest and attitudes toward nature have gained increasing importance. Accordingly, this study aimed to examine the relationship between ecological attitude and nature relatedness among young adults who regularly participate in outdoor recreation activities. A total of 461 university students who regularly engage in outdoor recreation activities participated in the study. In addition to a demographic information form that included variables such as gender, perceived income level, frequency of participation (monthly), and type of outdoor recreation activity, two measurement tools were employed: the "Nature Relatedness Scale (NRS)" to assess participants' connection with nature, and the "New Ecological Paradigm Scale (NEP)" to measure ecological attitudes. Data were analyzed using SPSS 24. Skewness and kurtosis tests indicated normal distribution of the data, and thus parametric tests were conducted. The findings revealed no meaningful differences in ecological attitudes or nature relatedness based on gender, income level, or participation frequency. However, individuals who engaged in outdoor activities individually rather than in groups exhibited notably stronger emotional bonds with nature. Furthermore, the results demonstrated a moderate and statistically significant positive relationship between participants' nature relatedness and ecological attitudes. This suggests that individuals with a stronger psychological and emotional connection to nature tend to adopt more environmentally responsible and ecologically aware perspectives.

Keywords: Nature relatedness, Ecological attitude, Outdoor recreation.

INTRODUCTION

According to data from the Turkish Statistical Institute, 67.9% of the country's population resides in highly urbanized areas, 14.8% in moderately urbanized areas, and 17.3% in rural areas (TUIK, 2023). Urbanization is recognized as one of the major challenges of the 21st century. The high population density observed in urban areas can lead to numerous environmental and social problems, significantly impacting both human health and the natural environment. Nature is particularly vulnerable to the disruptions associated with urban lifestyles and practices. Moreover, urbanization may trigger profound shifts in individuals' daily routines and ways of living. These lifestyle changes can have long-term effects on individual health and may contribute to broader public health issues. More broadly, mental and physical well-being are closely linked to exposure to natural environments (Bratman et al., 2019; Çetinkaya, 2013; Hartig et al., 2013; Shanahan, 2016). Engagement with and interest in nature have been shown to positively affect individuals' quality of life. Various benefits are associated with contact with nature, including reduced stress levels (Fan et al., 2011; Stigsdotter et al., 2010), decreased symptoms of depression (Nutsford et al., 2013; Taylor et al., 2015), lower anxiety (Beyer et al., 2014; Song et al., 2015), and enhanced happiness and life satisfaction (Fleming et al., 2016; Larson et al., 2016). These benefits often motivate individuals to spend more time in nature and engage in nature-based recreational activities.

Outdoor recreation encompasses a wide range of activities that bring individuals into direct contact with natural settings. These activities commonly occur in environments such as mountains, national parks, forests, and lakes. Beyond offering opportunities for leisure, such settings also facilitate personal growth and development. Participation in outdoor activities helps individuals become more familiar with nature while improving their skills and knowledge in a meaningful way (D'Amato et al., 2011; Lekies et al., 2015). Involvement in outdoor recreation may also strengthen interest in nature and cultivate more positive ecological attitudes. In this context, examining ecological attitude and nature relatedness—both potential outcomes of outdoor recreation participation—is of particular importance. Interest in nature refers to an individual's curiosity, desire to explore, and voluntary engagement with the natural environment. It encompasses both emotional and cognitive orientation toward nature and is often associated with environmental awareness, pro-environmental behavior, and ecological attitudes (Kals, Schumacher & Montada, 1999; Cheng & Monroe, 2012). Ecological attitude refers to an individual's evaluative tendencies—cognitive, affective, and behavioral—toward nature and the environment. It encompasses sensitivity to environmental issues, a sense of responsibility for ecological preservation, and a predisposition toward sustainable behaviors (Dunlap & Van Liere, 1978; Milfont & Duckitt, 2010).A growing body of research has recently emerged examining the link between outdoor recreation and participants' environmental attitudes (Puhakka, 2024; Vasilaki et al., 2025). Specifically, several studies have explored how outdoor recreation influences nature relatedness and ecological attitudes (Bjerke, 2006; Emmons, 1997; Ewert et al., 2005; Kim et al., 2021; Shin & Van Riper, 2025; Tarrant & Green, 1999; Thapa, 2010).

However, studies focusing on the connection between nature-based recreational activities and levels of nature relatedness and ecological attitude among young adults remain limited. Therefore, this study aimed to examine the relationship between nature relatedness and ecological attitude in young adults who regularly participate in outdoor recreational activities. In line with this aim, the study addressed the following research questions:

- Does gender significantly affect ecological attitude and nature relatedness?
- Do perceived levels of well-being influence ecological attitudes and nature relatedness?
- Are there significant differences in ecological attitudes and nature relatedness based on the type and frequency of outdoor recreation participation?

- Is there a relationship between nature relatedness and ecological attitude among young adults who engage in outdoor recreational activities?

Outdoor Recreation

In its simplest form, outdoor recreation refers to leisure activities carried out in natural environments, though it also encompasses human-made and urban open-air settings. Outdoor recreation contributes to individuals' psychological and emotional renewal, supporting overall well-being. Engaging in outdoor recreational activities allows individuals to socialize and experience cultural enrichment. This broad category includes land-, water-, air-, and sea-based activities such as hiking, sightseeing, paragliding, free diving, scuba diving, swimming, surfing, mountaineering, and climbing (Jenkins & Pigram, 2006; Phipps, 1990).

In recent years, outdoor recreation has become an increasingly popular and prominent area of academic inquiry. Studies on the topic have addressed a variety of themes including well-being (Fagerholm et al., 2021), motivation (Hu & Zhao, 2022; Humagain & Singleton, 2021; Pröbstl-Haider et al., 2023), nature connectedness (Beery et al., 2021), leisure satisfaction (Lee et al., 2023), environmental sensitivity (Chi, 2022), constraints and facilitators (McCormack et al., 2023; Menzies et al., 2021), self-efficacy (Powell et al., 2023), sustainability and ecology (Miller et al., 2022; Morse et al., 2022), destination loyalty (Karagiorgos et al., 2023), climate change (Pröbstl-Haider et al., 2021; Wilkins et al., 2021), accessibility (Ankre & Wall-Reinius, 2024), and physical activity (Derakhshan et al., 2024; Farías-Torbidoni et al., 2024). Accordingly, outdoor recreation has been attracting growing attention within academia and is being explored in increasing depth within the field of recreation science.

While these studies provide important insights, they are largely limited to formal educational settings. Empirical investigations of nature relatedness among students who engage in self-directed outdoor recreation remain scarce, indicating a need for broader contextual exploration, which this study seeks to address.

Nature Relatedness

According to the Turkish Language Association, the term "interest" is defined as "any form of connection between two things, a sense of closeness or preference toward a particular event or activity, or the tendency to prioritize attention toward something" (TDK, 2025). Çakcı and Ekşi (2024) define nature relatedness as "a construct that seeks to explain how individuals form emotional, cognitive, and behavioral connections with their environment." Nature relatedness reflects an individual's curiosity about, enjoyment of, and active engagement with the natural world. This type of interest is often rooted in a desire to develop emotional bonds with nature (Anada et al., 2024). University students reported that spending time in natural environments during sports and leisure activities enhanced their emotional well-being and promoted stronger nature relatedness" (Hekim & Er, 2022).

A review of the literature suggests that empirical studies specifically measuring nature relatedness remain limited. Existing research has primarily focused on student populations. For instance, Saiful (2024) examined the effects of ecomusicology education on students' connection to and interest in nature, finding increased levels of nature relatedness following the educational intervention. Similarly, Saefudin et al. (2025) reported that permaculture education positively affected students' emotional and cognitive nature relatedness, as well as their environmental awareness.

Although these studies provide important findings, they are largely confined to formal educational contexts. Empirical research examining nature relatedness in the context of self-initiated participation in outdoor recreation remains quite limited. This highlights the need for broader, contextually diverse investigations.

Ecological Attitude

The Turkish Language Association defines the term “attitude” as “a stance, demeanor, or behavior,” and “ecology” as “the scientific discipline that studies the relationships between living organisms and their environments, either individually or collectively” (TDK, 2025). Ecological attitude refers to individuals’ behaviors and orientations toward the environment. Such attitudes are shaped by a combination of social and psychological values and are also influenced by personal beliefs and behaviors (Biswas, 2020).

The literature shows that ecological attitude has been examined in relation to a range of topics, including environmental concern (Wu et al., 2024), nature connectedness (Zhao et al., 2025), recreational value (Khalili Ardali et al., 2024), flow experiences (Han, 2023), nature-based tourism (Luzar et al., 1995), sustainability (Simonavičė et al., 2024), global warming (Kosic et al., 2024), and sustainable leisure activities (Zarei et al., 2024).

Nevertheless, empirical studies directly linking ecological attitude to the recreational behaviors of university students—particularly in non-formal, non-touristic outdoor settings—remain sparse. The current research aims to fill this empirical void by focusing on ecological attitudes within the context of voluntary outdoor recreation.

METHOD

Research Design

This study aimed to investigate the relationship between nature relatedness and ecological attitude among individuals who regularly participate in outdoor recreation activities. Therefore, it was designed according to the principles of quantitative research. A correlational survey design was employed, which is defined as a methodological approach used to examine the relationships between two or more variables (Büyüköztürk et al., 2017).

Population and Sample

The study population consisted of undergraduate students enrolled at Necmettin Erbakan University during the Spring Semester of the 2024–2025 academic year, categorized as young adults. During this period, the total number of undergraduate students at the university was 27,321. In order to achieve a 95% confidence level with a 5% margin of error, it was calculated that data should be collected from at least 379 individuals. The study sample comprised students who regularly participated in outdoor recreational activities. A simple random sampling method was used for participant selection. Students who did not engage in such activities were excluded from the study, resulting in a final sample of 461 students who met the participation criteria (see Table 1).

Table 1.

Demographic Characteristics of the Participants

Variables		n	%
Gender	Female	306	66,4
	Male	155	33,6
Perceived Income Level	Low	146	31,7
	Medium	286	62,0
	High	29	6,3
Frequency of Participation in Outdoor Recreation Activities (Monthly)	1-2 times	323	70,1
	3-4 times	100	21,7
	5-6 times	21	4,5

	7 and more	17	3,7
General Type of Participation in Outdoor Recreation Activities	Individual participation	184	39,9
	Group participation	277	60,1

As presented in Table 1, 66.4% of the participants were female. A majority of respondents (62.0%) reported a perceived income level categorized as medium. Most participants (70.1%) stated that they engage in outdoor recreation activities one to two times per month. Furthermore, 60.1% indicated that they generally participate in such activities as part of a group.

Data Collection Instruments

In this study, a demographic information form developed by the researchers was used to collect data on participants' gender, perceived income level, type of participation, and frequency of participation in outdoor recreation activities. In addition, the Nature Relatedness Scale (NRS) was employed to measure participants' levels of nature relatedness, and the New Ecological Paradigm Scale (NEP) was used to assess their ecological attitudes.

Nature Relatedness Scale (NRS): The Nature Relatedness Scale was originally developed by Kleespies et al. (2021) and adapted into Turkish by Çakcı and Ekşi (2024), who verified its validity and reliability. The scale comprises 9 items and consists of three subdimensions: Emotional Connection, Cognitive Connection, and Value. Items 1 to 3 correspond to the Emotional Connection subdimension, items 4 to 6 to the Cognitive Connection subdimension, and items 7 to 9 to the Value subdimension. The instrument is structured as a 5-point Likert-type scale ranging from "1 = Strongly Disagree" to "5 = Strongly Agree." The original version reported a Cronbach's alpha of .93. In the current study, the overall Cronbach's alpha was calculated as .90. For the subdimensions, the reliability coefficients were .86 for Emotional Connection, .66 for Cognitive Connection, and .83 for Value.

New Ecological Paradigm Scale (NEP): The New Ecological Paradigm Scale was developed by Dunlap et al. (2000) and adapted into Turkish by Demirel, Gürbüz, and Karaküçük (2009), who conducted the necessary validity and reliability analyses. The scale consists of 12 items and utilizes a 5-point Likert-type response format ranging from "1 = Strongly Disagree" to "5 = Strongly Agree." In the original development study, the Cronbach's alpha coefficient was reported as .72. In the present study, it was calculated as .76.

Table 2.

Reliability Test Results

Scale	n	Mean	Alpha
New Ecological Paradigm (NEP)	461	3,28	0,76
Nature Relatedness (NRS)		3,76	0,90
NRS – Emotional Connection		3,82	0,86
NRS – Cognitive Connection		3,59	0,66
NRS – Value		3,88	0,83

Data Analysis

The data collected for the study were analyzed using the SPSS 24 statistical software package. To assess the normality of the data distribution, skewness and kurtosis tests were conducted. The results indicated that the values fell within the acceptable range of +1.5 to -1.5, suggesting a normal distribution. According to Tabachnick and Fidell (2013), skewness and kurtosis values within this interval are indicative of normality. Given that the data were normally distributed, parametric test methods were applied. Independent samples t-tests and

one-way ANOVA were used to examine statistically significant differences in the measurement instruments across variables. Additionally, Pearson correlation analysis was performed to explore the relationships between the measurement instruments.

To evaluate the validity of the model used in the study, confirmatory factor analysis (CFA) was conducted. The overall model fit indices revealed a statistically significant chi-square value ($\chi^2(183) = 611.485$, $p < .001$). This result aligns with findings in the literature indicating that the chi-square test may disproportionately reject model fit in large samples (Kline, 2016). Other fit indices demonstrated acceptable values: CFI = .891, TLI = .875, RMSEA = .071 (90% CI = [0.064, 0.078]), and SRMR = .070. According to Hu and Bentler's (1999) recommended thresholds, while CFI and TLI fall slightly below the ideal cutoff of .90, the RMSEA and SRMR values fall within acceptable limits. Specifically, an RMSEA below .08 and an SRMR of .08 or lower suggest an acceptable level of model fit. Based on these results, the construct validity of the model can be considered generally adequate.

Ethical approval for this study was granted by the Ethics Committee for Scientific Research in Social and Human Sciences at Necmettin Erbakan University on May 2, 2025, with decision number 2025/365.

FINDINGS

Table 3.

Independent Samples t-Test Results by Gender

Scale	Group	n	x	Sd	t	p	Cohen's *d*
New Ecological Paradigm (NEP)	Female	306	3,28	0,42	0,22	0,83	-0,02
	Male	155	3,27	0,49			
Nature Relatedness (NRS)	Female	306	3,78	0,83	0,76	0,45	-0,08
	Male	155	3,72	0,90			
NRS – Emotional Connection	Female	306	3,82	0,87	-0,09	0,93	-0,14
	Male	155	3,82	0,99			
NRS – Cognitive Connection	Female	306	3,62	1,08	0,79	0,43	-0,08
	Male	155	3,54	0,99			
NRS – Value	Female	306	3,92	0,85	1,37	0,17	0,01
	Male	155	3,80	0,93			

$p<0.05$

As shown in Table 3, participants' scores on the Nature Relatedness Scale (NRS) and the New Ecological Paradigm Scale (NEP) were compared by gender using independent samples t-tests. The analysis revealed no statistically significant differences between genders across the following variables: Emotional Connection ($t(458) = -0.09$, $p = .932$), Cognitive Connection ($t(458) = 0.79$, $p = .431$), Value ($t(458) = 1.37$, $p = .171$), total NRS score ($t(458) = 0.76$, $p = .446$), and NEP score ($t(270.11) = 0.22$, $p = .825$), all at the $p>0.05$ level. Effect size values (Cohen's *d*) were calculated as follows: $d = 0.01$ for Emotional Connection, $d = -0.08$ for Cognitive Connection, $d = -0.14$ for Value, $d = -0.08$ for total NRS, and $d = -0.02$ for NEP. Based on Cohen's (1988) classification, these effect sizes are considered very small.

Table 4.

ANOVA Results by Perceived Income Level

Scale	Group	n	x	sd	df	f	p	Significant Difference
New Ecological Paradigm (NEP)	Low	146	3,23	0,49	2-458	2,92	0,06	-
	Medium	286	3,29	0,42				
	High	29	3,43	0,47				
Nature Relatedness (NRS)	Low	146	3,73	0,88	2-458	0,19	0,83	-
	Medium	286	3,78	0,82				
	High	29	3,74	1,07				
NRS – Emotional Connection	Low	146	3,73	0,97	2-458	1,37	0,26	-
	Medium	286	3,85	0,87				
	High	29	4,00	0,98				
NRS – Cognitive Connection	Low	146	3,61	0,96	2-458	0,17	0,84	-
	Medium	286	3,60	1,08				
	High	29	3,48	1,21				
NRS – Value	Low	146	3,85	0,89	2-458	0,19	0,59	-
	Medium	286	3,91	0,83				
	High	29	3,75	1,19				

$p<0.05$

As shown in Table 4, a one-way analysis of variance (ANOVA) was performed to examine whether participants' perceived income level led to significant differences in scores on the New Ecological Paradigm Scale (NEP) and the Nature Relatedness Scale (NRS). The results indicated that perceived income level did not yield any statistically significant differences in either NEP or NRS scores ($p>0.05$).

Table 5.

One-Way ANOVA Results Based on Monthly Frequency of Participation in Outdoor Recreation Activitie

Scale	Group	n	x	sd	df	f	p	Significant Difference
New Ecological Paradigm (NEP)	1-2 times	323	3,25	0,44	3-457	1,79	0,148	-
	3-4 times	100	3,36	0,44				
	5-6 times	21	3,33	0,49				
	7 and more	17	3,36	0,45				
Nature Relatedness (NRS)	1-2 times	323	3,72	0,86	3-457	1,58	0,194	-
	3-4 times	100	3,89	0,78				
	5-6 times	21	3,95	0,81				
	7 and more	17	3,63	1,15				
NRS – Emotional Connection	1-2 times	323	3,78	0,91	3-457	1,19	0,314	-
	3-4 times	100	3,95	0,85				
	5-6 times	21	3,92	0,88				
	7 and more	17	3,63	1,21				
NRS – Cognitive Connection	1-2 times	323	3,54	1,08	3-457	1,64	0,18	-
	3-4 times	100	3,71	0,91				
	5-6 times	21	3,95	0,86				
	7 and more	17	3,43	1,35				
NRS – Value	1-2 times	323	3,83	0,89	3-457	1,34	0,26	-

3-4 times	100	4,02	0,81
5-6 times	21	3,98	0,78
7 and more	17	3,82	1,01

p<0.05

As shown in Table 5, a one-way analysis of variance (ANOVA) was conducted to investigate whether participants' scores on the New Ecological Paradigm Scale (NEP) and the Nature Relatedness Scale (NRS) differed significantly based on their monthly frequency of participation in outdoor recreation activities. The results indicated that frequency of participation did not result in any statistically significant differences in either NEP or NRS scores (p>0.05).

Table 6.

Independent Samples t-Test Results by Type of Participation in Outdoor Recreation Activities

Scale	Group	n	x	Sd	t	p	Cohen's *d*
New Ecological Paradigm (NEP)	Individual Participation	184	3,25	0,46	-1,01	0,313	0,10
	Group Participation	277	3,30	0,44			
Nature Relatedness (NRS)	Individual Participation	184	3,83	0,87	1,41	0,158	-0,13
	Group Participation	277	3,72	0,84			
NRS – Emotional Connection	Individual Participation	184	3,93	0,93	2,16	**0,031**	-0,03
	Group Participation	277	3,75	0,89			
NRS – Cognitive Connection	Individual Participation	184	3,67	0,98	0,777	0,185	-0,13
	Group Participation	277	3,54	1,10			
NRS – Value	Individual Participation	184	3,89	0,95	0,28	0,777	-0,20
	Group Participation	277	3,87	0,83			

p<0.05

As shown in Table 6, participants' environmental attitudes and levels of nature relatedness were compared based on their mode of participation in nature-based activities—either individually or in groups—using independent samples t-tests. No statistically significant difference was found between individual participants (M = 3.25, SD = 0.46) and group participants (M = 3.30, SD = 0.44) in terms of their scores on the New Ecological Paradigm Scale (NEP) (p >0.05). Similarly, no significant difference was observed in total scores on the Nature Relatedness Scale (NRS), t(459) = 1.41, p = .158, Cohen's d = -0.13. The mean score for individual participants was M = 3.83 (SD = 0.87), while that for group participants was M = 3.72 (SD = 0.84). At the subscale level, however, a statistically significant difference was found only in the Emotional Connection subdimension (p<0.05).

Table 7.

Correlation Between the Measurement Instruments

Scale	NRS – Emotional Connection	NRS – Cognitive Connection	NRS – Value	Nature Relatedness (NRS)	New Ecological Paradigm (NEP)
NRS – Emotional Connection	—				
NRS – Cognitive Connection	0.70***	—			
NRS – Value	0.75***	0.70***	—		
Nature Relatedness (NRS)	0.90***	0.90***	0.90***	—	
New Ecological Paradigm (NEP)	0.50***	0.34***	0.50***	0.49***	—

Note. n = 461. * p < .05, ** p < .01, *** p < .001.

As shown in Table 7, strong positive correlations were found among the subdimensions of the Nature Relatedness Scale (NRS)—namely, Emotional Connection, Cognitive

Connection, and Value. Specifically, the correlation between Emotional Connection and Cognitive Connection was r = .70, p<0.001; between Emotional Connection and Value, r = .75, p<0.001; and between Cognitive Connection and Value, r = .70, p<0.001. Very strong positive correlations were also observed between the total NRS score and its subdimensions: Emotional Connection (r = .90, p<0.001), Cognitive Connection (r = .90, p<0.001), and Value (r = .90, p<0.001). These results suggest that the subdimensions are highly integrated into the overall structure of the scale. In addition, significant positive correlations were found between the New Ecological Paradigm Scale (NEP) and both the total NRS score and its subdimensions. The NEP showed the strongest correlations with Emotional Connection (r = .50, p<0.001) and Value (r = .50, p<0.001), while moderate but statistically significant correlations were observed with Cognitive Connection (r = .34, p<0.001) and the total NRS score (r = .49, p<0.001). (r = .49, p<0.001).

DISCUSSION

In this study, which aimed to examine the relationship between nature relatedness and ecological attitude among individuals who participate in outdoor recreation activities, no statistically significant gender differences were found in scores on the Nature Relatedness Scale (NRS) and the New Ecological Paradigm Scale (NEP). However, the results indicated that, on average, female participants demonstrated higher levels of both nature relatedness and ecological attitude compared to their male counterparts (see Table 3). This outcome may reflect a greater level of environmental and ecological awareness among female participants. Supporting this interpretation, Çelik and Küçük (2022) reported that women displayed higher environmental awareness than men. Similarly, Gyurián Nagy (2025) found that women exhibited higher ecological attitude scores. Several other studies align with these findings (Corraliza et al., 2013; Costache & Sencovici, 2019; Halkos & Matsiori, 2015; Hosseinnezhad, 2017; Reyna, 2018). In contrast, some studies have reported statistically significant gender differences, suggesting results that contradict the current findings (Johnson et al., 2004; Pienaar et al., 2013; Zelezny et al., 2000).

No statistically significant differences were found in participants' NEP and NRS scores based on perceived income levels (see Table 4). Nonetheless, participants who reported medium or high income levels generally exhibited higher scores on both scales. Individuals with higher financial means may develop stronger ecological attitudes due to greater access to natural environments. Supporting this explanation, several studies have shown that higher income levels are associated with more positive environmental attitudes (Alam & Zakaria, 2021; Du et al., 2024; Franzen & Meyer, 2010). However, conflicting evidence also exists. For instance, some studies report that income level significantly influences ecological attitudes and interest in nature (Hosseinnezhad, 2017; Marcineková et al., 2024; Ntanos et al., 2019), while others support the present study's findings by reporting no significant differences (Denis & Pereira, 2017; Wiidegren, 1998).

Likewise, no statistically significant differences were identified in NEP or NRS scores based on participants' monthly frequency of outdoor recreation participation (see Table 5). Nevertheless, the data suggest that participants who engage in such activities 1–2 times per month tend to report higher levels of nature relatedness. This may be due to the emotional, cognitive, and value-based satisfaction derived from moderate, yet consistent, engagement with nature. For instance, a study by Gömülütaş and Gençay (2024) found no relationship between hiking frequency and environmental behavior. In contrast, Ceran (2023) observed that individuals who camp several times a week reported significantly stronger feelings of nature connectedness and integration with the natural environment. These findings partially align with the present study.

Regarding the type of participation, no significant difference was observed in NEP scores between individuals who engaged in outdoor recreation activities individually and those who participated as part of a group (see Table 6). However, a significant difference emerged in the Emotional Connection subdimension of the NRS, with individual participants scoring higher. This suggests that individuals who experience nature alone may form a deeper, more personal, and emotionally resonant connection with the natural environment than those who engage in group-based activities. Supporting this, outdoor serious leisure activities participants showed significantly lower levels of aggressive attitudes compared to their indoor counterparts (Kavlak & Aksu, 2023). Finally, results from the correlation analysis indicated a significant positive relationship between nature relatedness and ecological attitude (see Table 7). Specifically, increases in individuals' emotional connection to and valuation of nature appear to correspond with stronger ecological attitudes. These findings highlight the potential of fostering nature relatedness as a means to promote more environmentally conscious attitudes and behaviors. In this context, the Biophilia Hypothesis (Wilson, 1984), which posits that humans have an innate tendency to seek connections with nature and other life forms, provides a useful theoretical lens to interpret the observed relationship between emotional connection and ecological concern. Similarly, the concept of Environmental Identity (Clayton, 2003) may help explain how deeply rooted connections with nature influence pro-environmental attitudes.

In terms of practical implications, these findings can inform the development of university-based programs and recreational planning efforts aimed at strengthening students' connection with nature. For instance, higher education institutions may promote solo or small-group nature immersion experiences that emphasize emotional and reflective engagement with natural environments. Recreation planners can also design outdoor activities that facilitate personal interaction with nature, thereby potentially enhancing ecological attitudes among young adults.

Conclusion

Based on the findings of this study, it can be concluded that women who participate in outdoor recreation activities exhibit higher levels of nature relatedness and ecological attitude. Furthermore, individuals with higher perceived income levels and those who engage in outdoor recreation individually tend to report a greater interest in nature.

Overall, an increase in individuals' connection to nature may positively contribute to the development of ecological attitudes. In particular, the dimensions of valuing nature and forming an emotional bond with the natural world may help individuals adopt a more holistic and responsible perspective toward the environment.

Recommendation

Various projects can be designed to encourage young adults who regularly participate in outdoor recreation activities to develop a deeper connection with nature. Awareness-raising programs may be implemented to enhance participation in outdoor activities among this demographic. Future research could involve larger sample sizes and focus on specific types of outdoor recreation activities (e.g., mountaineering, trekking). The relationship between outdoor recreation and nature could also be investigated using alternative measurement models. Additionally, mixed-method research designs may be employed to gain deeper insight into the underlying factors influencing the observed results.

Limitations

The sample group of this study was limited to students from Necmettin Erbakan University who regularly participate in outdoor recreation activities. Moreover, the study did not focus on any specific type of outdoor recreation, and all participants were university students categorized as young adults. These factors constitute the primary limitations of the

research. Expanding the sample in future studies could enable a more comprehensive understanding of the relationship between nature relatedness and ecological attitude. Broadening the scope of the research may also enhance understanding of the broader concepts of outdoor recreation and the human–nature connection.

REFERENCES

Alam, M. M., & Zakaria, A. F. M. (2021). A Probit Estimation of Urban Bases of Environmental Awareness: Evidence from Sylhet City, Bangladesh. arXiv preprint arXiv:2107.08342. https://doi.org/10.48550/arXiv.2107.08342

Ananda, F., Sastria, E., & Zebua, D. R. Y. (2024). Nature ınterest: Comparison between students of science-related study programs and non-science-related study programs at the Kerinci State Islamic Institute. *Journal of Science and Science Education,* 5(2), 88-99. https://jppipa.unram.ac.id/index.php/jossed/article/view/8968

Ankre, R., & Wall-Reinius, S. (2024). Nature for everyone? Planning perspectives on accessibility, disability and participation in the Swedish outdoors. *Planning Practice & Research,* 39(5), 793-812. https://doi.org/10.1080/02697459.2024.2358281

Beery, T., Olsson, M. R., & Vitestam, M. (2021). Covid-19 and outdoor recreation management: Increased participation, connection to nature, and a look to climate adaptation. *Journal of Outdoor Recreation and Tourism,* 36, 100457. https://doi.org/10.1016/j.jort.2021.100457

Beyer, K. M., Kaltenbach, A., Szabo, A., Bogar, S., Nieto, F. J., & Malecki, K. M. (2014). Exposure to neighborhood green space and mental health: evidence from the survey of the health of Wisconsin. *International Journal of Environmental Research And Public Health*, 11(3), 3453-3472. https://doi.org/10.3390/ijerph110303453.

Biswas, A. (2020). A nexus between environmental literacy, environmental attitude and healthy living. *Environmental Science and Pollution Research,* 27(6), 5922-5931. https://doi.org/10.1007/s11356-019-07290-5

Bjerke, T., And, C. T., & Kleiven, J. (2006). Outdoor recreation interests and environmental attitudes in Norway. *Managing Leisure,* 11(2), 116-128. https://doi.org/13606710500520197

Bratman, G. N., Anderson, C. B., Berman, M. G., Cochran, B., De Vries, S., Flanders, J., ... & Daily, G. C. (2019). Nature and mental health: An ecosystem service perspective. *Science Advances*, *5*(7), eaax0903. https://doi.org/10.1126/sciadv.aax0903

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2017). *Bilimsel araştırma yöntemleri.* Ankara: Pegem Akademi.

Ceran, E. (2023). Serbest Zamanlarında Doğa ve Macera Kampı Yapan Bireylerin Psikolojik İyi Oluş Düzeyleri ve Doğaya Bağlılıkları Arasındaki İlişkinin İncelenmesi: İzmir İli Örneği. T.C. Manisa Celal Bayar Üniversitesi Sosyal Bilimler Enstitüsü Rekreasyon Anabilim Dalı, Manisa.

Cheng, J. C.-H., & Monroe, M. C. (2012). Connection to nature: Children's affective attitude toward nature. *Environment and Behavior,* 44(1), 31–49. https://doi.org/10.1177/0013916510385082

Chi, N. T. K. (2022). Environmentally responsible behaviour in outdoor recreation: The moderating impact of COVID-19 related risk perception. *Journal of Tourism Futures.* 1-16. https://www.emerald.com/insight/content/doi/10.1108/jtf-09-2021-0234/full/html

Clayton, S. (2003). Environmental identity: A conceptual and an operational definition. In S. Clayton & S. Opotow (Eds.), *Identity and the Natural Environment* (pp. 45–65). MIT Press.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences (2nd ed.).* Lawrence Erlbaum Associates.

Corraliza, J. A., Collado, S., & Bethelmy, L. (2013). Spanish version of the new ecological paradigm scale for children. *The Spanish Journal of Psychology*, 16, E27. https://doi.org/10.1017/sjp.2013.46

Costache, A., & Sencovici, M. (2019). Age, gender and endorsement of the new ecological paradigm. *International Multidisciplinary Scientific GeoConference: SGEM, 19*(5.1), 11-22. https://www.sgem.org/index.php/elibrary-research-areas?view=publication&task=show&id=5952

Çakcı, E. ve Ekşi, H. (2024). Doğa İlgisi Ölçeğinin Türk kültürüne uyarlanması: Bir geçerlilik ve güvenirlik çalışması. A. Uslu (Ed.). 2. Bilsel Uluslararası Aspendos Bilimsel Araştırmalar Kongresi Kongre Kitabı içinde. (s. 614-627). Astana Yayınları.

Çelik, A., & Küçük, A. (2022). Toplumsal cinsiyet açısından çevre duyarlılığı: Şanlıurfa örneği. *Dicle Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi,* 12(24), 386-406. https://doi.org/10.53092/duiibfd.1142665

Çetinkaya, Ç. (2013). Eko-kentler: kent ve doğa ilişkisinde yeni bir sistem tasarımı. *Türk Bilimsel Derlemeler Dergisi*, (1), 12-16. https://dergipark.org.tr/en/pub/derleme/issue/35088/389238

D'Amato, L. G., & Krasny, M. E. (2011). Outdoor adventure education: Applying transformative learning theory to understanding instrumental learning and personal growth in environmental education. *The Journal of Environmental Education,* 42(4), 237-254. https://doi.org/10.1080/00958964.2011.581313

Demirel, M., Gürbüz, B. ve Karaküçük, S. (2009). Rekreasyonel aktivitelere katılımın çevreye yönelik tutum üzerindeki etkisi ve yeni ekolojik paradigma ölçeği'nin geçerliği ve güvenirliği. *Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi,* 7(2), 47-50. https://dergipark.org.tr/en/download/article-file/602567

Denis, H. D., & Pereira, L. N. (2017). Measuring the level of endorsement of the new environmental paradigm: A transnational study. *Dos Algarves: Tourism, Hospitality & Management Journal,* (23), 4-26. https://dosalgarves.com/index.php/dosalgarves/article/view/18/134

Derakhshan, P., Miller, W. C., Bundon, A., Labbé, D., Bolt, T., & Mortenson, W. B. (2024). Adaptive outdoor physical activities for adults with mobility disability: a scoping review. Frontiers in Rehabilitation Sciences, 4, 1331971. https://doi.org/10.3389/fresc.2023.1331971

Du, S., Cao, G., & Huang, Y. (2024). The effect of income satisfaction on the relationship between income class and pro-environment behavior. *Applied Economics Letters,* 31(1), 61-64. https://doi.org/10.1080/13504851.2022.2125491

Dunlap, R. E., & Van Liere, K. D. (1978). The "New Environmental Paradigm": A proposed measuring instrument and preliminary results. Journal of Environmental Education, 9(4), 10–19. https://doi.org/10.1080/00958964.1978.10801875

Dunlap, R., E., Van Liere, K., D., Mertig, A., G. & Jones, R., E. (2000). Measuring endorsement of the new ecological paradigm: A revised nep scale. *Journal Of Social Issues,* Vol.56, No:3, 425-442. https://doi.org/10.1111/0022-4537.00176

Emmons, K. M. (1997). Perceptions of the environment while exploring the outdoors: A case study in Belize. *Environmental Education Research,* 3(3), 327-344. https://doi.org/10.1080/1350462970030306

Ewert, A., Place, G., & Sibthorp, J. (2005). Early-life outdoor experiences and an individual's environmental attitudes. *Leisure Sciences,* 27(3), 225-239. https://doi.org/10.1080/01490400590930853

Fagerholm, N., Eilola, S., & Arki, V. (2021). Outdoor recreation and nature's contribution to well-being in a pandemic situation-Case Turku, Finland. *Urban Forestry & Urban Greening,* 64, 127257. https://doi.org/10.1016/j.ufug.2021.127257

Fan Y., Das, K. V., & Chen Q. (2011). Neighborhood green, social support, physical activity, and stress: Assessing the cumulative impact. *Health Place* 17(6):1202–1211. https://doi.org/10.1016/j.healthplace.2011.08.008

Farías-Torbidoni, E. I., Monserrat-Revillo, S., & Soler-Prat, S. (2024). Comparing the gendered nature of visits, recreation and physical activities in two Catalan (Spain) protected natural areas: natural and peri-urban parks. *Journal of Sport & Tourism,* 28(4), 173-196. https://doi.org/10.1080/14775085.2024.2448938

Fleming, C. M., Manning, M., & Ambrey, C. L. (2016). Crime, greenspace and life satisfaction: An evaluation of the New Zealand experience. *Landscape and Urban Planning,* 149, 1-10. https://doi.org/10.1016/j.landurbplan.2015.12.014

Franzen, A., & Meyer, R. (2010). Environmental attitudes in cross-national perspective: A multilevel analysis of the ISSP 1993 and 2000. *European Sociological Review,* 26(2), 219-234. https://doi.org/10.1093/esr/jcp018

Gömülütaş, M., & Gençay, S. (2024). Doğa kulüplerine üye rekreasyonel doğa yürüyüşçülerinin çevresel davranışlarının incelenmesi. *International Journal of Social and Humanities Sciences Research (JSHSR),* 11(104), 493-502. https://doi.org/10.5281/zenodo.10737548

Gyurián Nagy, N. (2025). Gender differences in environmental attitudes: An analysis using the NEP Scale. *Gender Issues,* 42(1), 5. https://doi.org/10.1007/s12147-024-09349-1

Halkos, G. & Matsiori, S. (2015). Environmental Attitude, Motivations and values for Marine

Han, G. S. (2023). Relationships between outdoor recreation-associated flow, pro-environmental attitude, and pro-environmental behavioral intention. *Sustainability,* 15(13), 10581. https://doi.org/10.3390/su151310581

Hartig, T., Mitchell, R., De Vries, S., & Frumkin, H. (2014). Nature and health. *Annual Review of Public Health,* 35(1), 207-228. https://doi.org/10.1146/annurev-publhealth-032013-182443

Hekim, Ö. & Er, Y. (2022). Examination of University Students' Reasons to Participate in Nature-Based Sports Leisure Activities and Leisure Constraints. *Journal of Education and Recreation Patterns (JERP), 3 (2),* 100-113. https://doi.org/10.53016/jerp.v3i2.60

Hosseinnezhad, F. (2017). A study of the new environmental paradigm scale in the context of Iran. *European Journal of Sustainable Development Research*, 1(2), 14. https://doi.org/10.20897/ejosdr.201714

Hu, B., & Zhao, J. (2022). Factors promoting nature-based outdoor recreation during the daytime and evening. *Journal of Outdoor Recreation and Tourism,* 40, 100572. https://doi.org/10.1016/j.jort.2022.100572

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal,* 6(1), 1–55. https://doi.org/10.1080/10705519909540118

Humagain, P., & Singleton, P. A. (2021). Exploring tourists' motivations, constraints, and negotiations regarding outdoor recreation trips during COVID-19 through a focus group study. *Journal of Outdoor Recreation and Tourism,* 36, 100447. https://doi.org/10.1016/j.jort.2023.100626

Jenkins, J. M., Pigram, J. J. (2006). Outdoor Recreation. In: Rojek, C., Shaw, S.M., Veal, A.J. (eds) *A handbook of leisure studies.* Palgrave Macmillan, London. https://doi.org/10.1057/9780230625181_22

Johnson, C. Y., Bowker, J. M., & Cordell, H. K. (2004). Ethnic variation in environmental belief and behavior: An examination of the new ecological paradigm in a social psychological context. *Environment and Behavior,* 36(2), 157-186. https://doi.org/10.1177/0013916503251478

Kals, E., Schumacher, D., & Montada, L. (1999). Emotional affinity toward nature as a motivational basis to protect nature. *Environment and Behavior,* 31(2), 178–202. https://doi.org/10.1177/00139169921972056

Karagiorgos, T., Lianopoulos, Y., Alexandris, K., & Kouthouris, C. (2023). The role of brand associations on the development of place attachment into outdoor adventure tourism destinations. *Journal of Outdoor Recreation and Tourism,* 42, 100617. https://doi.org/10.1016/j.jort.2023.100617

Kavlak, H.T. & Aksu, H.S. (2023). The effect of attitudes towards physical violence and demographic variables on serious leisure time activity choice. *Journal of Education and Recreation Patterns (JERP), 4 (2),* 495-506. https://doi.org/10.53016/jerp.v4i2.173

Kellert, S. R., & Wilson, E. O. (1993). *The Biophilia hypothesis*. Island Presss.

Khalili Ardali, Z., Amirnejad, H., Mohammadi Limaei, S., & Salehi, S. (2024). assessment of recreational value in a protected forest area considering the new environmental paradigm (Case Study: Helen Forest, Southwestern Iran). *Sustainability*, 16(7), 2771. https://doi.org/10.3390/su16072771

Kim, D., Avenzora, R., & Lee, J. H. (2021). Exploring the outdoor recreational behavior and new environmental paradigm among urban forest visitors in Korea, Taiwan and Indonesia. *Forests,* 12(12), 1651. https://doi.org/10.3390/f12121651

Kleespies, M. W., Doderer, L., Dierkes, P. W., & Wenzel, V. (2021). Nature Interest Scale Development and evaluation of a measurement instrument for individual interest in nature. *Frontiers in Psychology,* 12, Article 774333. https://doi.org/10.3389/fpsyg.2021.774333

Kline, R. B. (2016). *Principles and practice of structural equation modeling (4th ed.).* The Guilford Press

Kosic, A., Passafaro, P., & Molinari, M. (2024). Predicting pro-environmental behaviours in the public sphere: Comparing the ınfluence of social anxiety, self-efficacy, global warming awareness and the NEP. *Sustainability,* 16(19), 8716. https://doi.org/10.3390/su16198716

Larson, L. R., Jennings, V., & Cloutier, S. A. (2016). Public parks and wellbeing in urban areas of the United States. *PLoS one*, 11(4), e0153211. https://doi.org/10.1371/journal.pone.0153211

Lee, K. J., Casper, J., Powell, R., & Floyd, M. F. (2023). African Americans' outdoor recreation involvement, leisure satisfaction, and subjective well-being. *Current Psychology,* 42(31), 27840-27850. https://doi.org/10.1007/s12144-022-03905-2

Lekies, K. S., Yost, G., & Rode, J. (2015). Urban youth′ s experiences of nature: Implications for outdoor adventure recreation. *Journal of Outdoor Recreation and Tourism,* 9, 1-10. https://doi.org/10.1016/j.jort.2015.03.002

Luzar, E. J., Diagne, A., Gan, C., & Henning, B. R. (1995). Evaluating nature-based tourism using the new environmental paradigm. *Journal of Agricultural and Applied Economics*, 27(2), 544-555. https://doi.org/10.1017/S1074070800028571

Marcineková, L., Štěrbová, M., Výbošťok, J., Hajdúchová, I., Giertliová, B., Šulek, R., ... & Šálka, J. (2024). Slovakia and its environmental transformation: measuring environmental attitudes using the new ecological paradigm. *Frontiers in Psychology,* 15, 1320451. https://doi.org/10.3389/fpsyg.2024.1320451

McCormack, G. R., Petersen, J., Naish, C., Ghoneim, D., & Doyle-Baker, P. K. (2023). Neighbourhood environment facilitators and barriers to outdoor activity during the first wave of the COVID-19 pandemic in Canada: A qualitative study. *Cities & Health*, 7(4), 643-655. https://doi.org/10.1080/23748834.2021.2016218

Menzies, A., Mazan, C., Borisoff, J. F., Mattie, J. L., & Mortenson, W. B. (2021). Outdoor recreation among wheeled mobility users: Perceived barriers and facilitators. *Disability and Rehabilitation: Assistive Technology,* 16(4), 384-390. https://doi.org/10.1080/17483107.2019.1710772

Milfont, T. L., & Duckitt, J. (2010). The environmental attitudes inventory: A valid and reliable measure to assess the structure of environmental attitudes. Journal of Environmental Psychology, 30(1), 80–94. https://doi.org/10.1016/j.jenvp.2009.09.001

Miller, A. B., Blahna, D. J., Morse, W. C., Leung, Y. F., & Rowland, M. M. (2022). From recreation ecology to a recreation ecosystem: A framework accounting for social-ecological systems. *Journal of Outdoor Recreation and Tourism*, 38, 100455. https://doi.org/10.1016/j.jort.2021.100455

Morse, W. C., Selin, S., Cerveny, L. K., & Blahna, D. J. (2022). Introduction to sustainably managing outdoor recreation and nature-based tourism as social-ecological complex adaptive systems. *Journal of Outdoor Recreation and Tourism,* 38, 100519. https://doi.org/10.1016/j.jort.2022.100519

Ntanos, S., Kyriakopoulos, G., Skordoulis, M., Chalikias, M., & Arabatzis, G. (2019). An application of the new environmental paradigm (NEP) scale in a Greek context. *Energies*, 12(2), 239. https://doi.org/10.3390/en12020239

Nutsford, D., Pearson, A. L., & Kingham, S. (2013). An ecological study investigating the association between access to urban green space and mental health. *Public Health,* 127(11), 1005-1011. https://doi.org/10.1016/j.puhe.2013.08.016.

Phipps, M. L. (1990). Definition of Outdoor Recreation and Other Associated Terminology. In: *National conference of outdoor leaders, public*, Commer Non-Profit Partnerships 1990 Conference Proceedings https://eric.ed.gov/?id=ED335189.

Pienaar, E. F., Lew, D. K., & Wallmo, K. (2013). Are environmental attitudes influenced by survey context? An investigation of the context dependency of the New Ecological Paradigm (NEP) Scale. *Social Science Research,* 42(6), 1542-1554. https://doi.org/10.1016/j.ssresearch.2013.07.001

Powell, S. M., Carpenter, K. E., Novik, M. G., & Gibson, H. M. (2023). Exploring the Influence of Self-Efficacy and Autonomy on Outdoor Recreation Behaviors during the COVID-19 Pandemic. *Journal of Outdoor Recreation, Education, and Leadership,* 15(2). https://js.sagamorepub.com/index.php/jorel/article/view/11212

Pröbstl-Haider, U., Gugerell, K., & Maruthaveeran, S. (2023). Covid-19 and outdoor recreation–Lessons learned? Introduction to the special issue on "Outdoor recreation and Covid-19: Its effects on people, parks and landscapes''. J*ournal of Outdoor Recreation and Tourism,* 41, 100583. https://doi.org/10.1016/j.jort.2022.100583

Pröbstl-Haider, U., Hödl, C., Ginner, K., & Borgwardt, F. (2021). Climate change: Impacts on outdoor activities in the summer and shoulder seasons. *Journal of Outdoor Recreation and Tourism,* 34, 100344. https://doi.org/10.1016/j.jort.2020.100344

Puhakka, R. (2024). Effects of outdoor adventures on emerging adults' well-being and connection with nature. *Journal of Adventure Education and Outdoor Learning,* 24(4), 719-734. https://doi.org/10.1080/14729679.2023.2220836

Reyna, C. (2018). Validating the structure of the New Ecological Paradigm Scale among Argentine citizens through different approaches. *Pensamiento Psicológico*, 16(1), 12-12.https://revistas.javerianacali.edu.co/index.php/pensamientopsicologico/article/view/352

Saefudin, S., Suwandi, T., Baharudin, R., & Rachman, H. T. (2025). Integration of permaculture to reinvent students' interest in nature and environmental awareness for quality education under SDG-4. *Jurnal Pendidikan IPA Indonesia*, 14(1). https://doi.org/10.15294/jpii.v14i1.22122

Saiful, J. A. (2024). Chirping symphony of nature in the digital art world: How ecomusicology cultivates EFL students' nature connectedness and ınterests. *Tell: Teaching of English Language and Literature Journal*, 12(1), 1-17. https://doi.org/10.30651/tell.v12i1.21678

Shanahan, D. F., Bush, R., Gaston, K. J., Lin, B. B., Dean, J., Barber, E., & Fuller, R. A. (2016). Health benefits from nature experiences depend on dose. *Scientific Reports*, 6(1), 28551. https://doi.org/10.1038/srep28551

Shin, S., & van Riper, C. J. (2025). childhood outdoor recreation and environmental education shape pro-environmental behavior among adults: A study of residents in Illinois, USA. *Society & Natural Resources,* 1-24. https://doi.org/10.1080/08941920.2024.2449048

Simonavičė, S., Shevchuk, V., & Bordun, O. (2024). Pro-environmental behaviour and sustainable development: Evidence from a Survey of Lithuanian and Ukrainian students. *Regional Formation & Development Studies*, 44(3), 37-48. https://doi.org/10.15181/rfds.v44i3.2636

Song, C., Ikei, H., Igarashi, M., Takagaki, M., & Miyazaki, Y. (2015). Physiological and psychological effects of a walk in urban parks in fall. *International Journal of Environmental Research and Public Health*, 12(11), 14216-14228. https://doi.org/10.3390/ijerph121114216

Stigsdotter, U. K., Ekholm, O., Schipperijn, J., Toftager, M., Kamper-Jørgensen, F., & Randrup T. B. (2010). Health promoting outdoor environments - associations between green space, and health, health-related quality of life and stress based on a Danish national representative survey. *Scand J Public Health,* 38(4):411 https://doi.org/10.1177/1403494810367468

Tabachnick, B. G., & Fidell L. S. (2013). *Using multivariate statistics (6. ed.).* Boston: Pearson,

Tarrant, M. A., & Green, G. T. (1999). Outdoor recreation and the predictive validity of environmental attitudes. *Leisure Sciences,* 21(1), 17-30. https://doi.org/10.1080/014904099273264

Taylor, M. S., Wheeler, B. W., White, M. P., Economou, T., & Osborne, N. J. (2015). Research note: Urban street tree density and antidepressant prescription rates—A cross-sectional study in London, UK. *Landscape and Urban Planning,* 136, 174-179. https://doi.org/10.1016/j.landurbplan.2014.12.005.

TDK. (2025). Türk Dil Kurumu: Güncel Türkçe Sözlük. https://sozluk.gov.tr/ Accessed 10 May 2025.

Thapa, B. (2010). The mediation effect of outdoor recreation participation on environmental attitude-behavior correspondence. *The Journal of Environmental Education,* 41(3), 133-150. https://doi.org/10.1080/00958960903439989

TUİK (2023). Kent-Kır Nüfus İstatistikleri, 2022. https://data.tuik.gov.tr/Bulten/Index?p=Kent-Kir-Nufus-Istatistikleri-2022-49755

Vasilaki, M. M., Zafeiroudi, A., Tsartsapakis, I., Grivas, G. V., Chatzipanteli, A., Aphamis, G., ... & Kouthouris, C. (2025). Learning in nature: A systematic review and meta-analysis of outdoor recreation's role in youth development. *Education Sciences,* 15(3), 332. https://doi.org/10.3390/educsci15030332

Wiidegren, Ö. (1998). The new environmental paradigm and personal norms. *Environment and Behavior,* 30(1), 75-100. https://doi.org/10.1177/0013916598301004

Wilkins, E. J., Chikamoto, Y., Miller, A. B., & Smith, J. W. (2021). Climate change and the demand for recreational ecosystem services on public lands in the continental United States. *Global Environmental Change,* 70, 102365. https://doi.org/10.1016/j.gloenvcha.2021.102365

Wilson, E. O. (1984). *Biophilia.* Harvard University Press.

Wu, X., Zhong, C., Chen, H., & Zou, X. (2024). Assessment on the environmental concern level and driving mechanism of beach recreationists based on the new ecological paradigm scale. *Sustainability,* 16(8), 3292. https://doi.org/10.3390/su16083292

Zarei, I., Ehsani, M., Moghimehfar, F., & Aroufzad, S. (2024). Fostering sustainable leisure activities: a behavioural insight into eco-friendly intentions in Mount Damavand. *World Leisure Journal*, 1-24. https://doi.org/10.1080/16078055.2024.2423399

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. https://doi.org/10.1111/0022-4537.00177

Zhao, D., Meng, J., Wang, H., Liu, J., Jiao, L., Zhao, J., & Yang, Z. (2025). Does the benefit in pro-environmental behavior from nature exposure depend on the greenness of an individual's surroundings? *Current Psychology,* 1-12. https://doi.org/10.1007/s12144-025-07611-7

Author(s)' statements on ethics and conflict of interest

Ethics statement: We hereby declare that research/publication ethics and citing principles have been considered in all the stages of the study. We take full responsibility for the content of the paper in case of dispute.

Conflicts of Interest: There are no conflicts of interest declared by the authors.

Funding: None