



Turkish Adaptation of the Eco-Spirituality Scale: Its Association with Emotional Connectedness to Nature, Positive Future Expectation, and Mental Well-being

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eISSN: 2458-9675

Received: 04.08.2025

Revision: 06.09.2025

Accepted: 08.09.2025

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Abstract

This research includes two separate studies focusing on eco-spirituality in Turkish adults (N1=413, N2=399). Data were collected through convenience sampling, allowing us to reach 812 participants aged 18-78. In Study 1 [325 (78.7%) females and 88 (21.3%) males], Confirmatory factor analysis, Item Response Theory, validity and reliability analyses were conducted in the adaptation study of the Eco-spirituality Scale. In Study 2 [294 (73.7%) female and 105 (26.3%) male], the mediating role of positive future expectation in the relationship between eco-spirituality and mental well-being was tested. Research findings suggest that the Turkish version of the Eco-spirituality Scale is a valid and reliable measurement tool and can be used to measure eco-spirituality in adults. In addition, the results demonstrate that positive future expectation mediates the relationship between eco-spirituality and mental well-being. These findings confirm the strong psychometric properties of the scale, supporting its use in future research on eco-spirituality.

Keywords:

Eco-spirituality • emotional connectedness to nature • positive future expectation • mental well-being • scale adaptation.

Citation: Satıcı S. A., Taşkın, S., Kütük, H., Okur, S., Satıcı, B., Yılmaz, F. B., & Türkdoğan, E. N. (2025). Turkish adaptation of the Eco-Spirituality Scale: Its association with emotional connectedness to nature, positive future expectation, and mental well-being. *Spiritual Psychology and Counseling*, 10(3), 405–420. <http://doi.org/10.37898/spiritualpc.1758470>

Introduction

Nature is a variable that is associated with human health in various ways. When considering the mental health of individuals, it is suggested that nature and the changes that occur in nature have varying effects on the person. It is recognized that changes in nature have both short-term and long-term effects on social well-being, mental health, and physical health (Nawrath et al., 2022). Climate change, which is an important public issue worldwide, has a significant impact on the general well-being and mental health of individuals (Vergunst & Berry, 2022). Research examining the changes in climate and the effects of these changes on mental health is increasing. Studies demonstrate that differences in weather events due to changing climate can trigger post-traumatic stress disorder, major depressive disorder, anxiety, depression, substance abuse, and suicidal thoughts (Bourque & Cunsolo Willox, 2014; Doherty & Clayton, 2011).

Evidence that changes in nature influence individuals' mental health has led to several practices in terms of prevention and intervention. Eco-psychological practices, which have recently emerged in the field of psychology, can be given as an example of these practices. These practices aim to strengthen individuals' connection with nature through structured interventions that promote psychological well-being. Examples include nature-based therapies such as "Shinrin-Yoku" (forest bathing), which involves immersing oneself in a natural environment to reduce stress and enhance emotional regulation, and "Green Exercise," where physical activity in nature positively impacts mental health (Hansen et al., 2017). Additionally, nature prescriptions, where healthcare professionals recommend outdoor activities to patients, have been increasingly recognized as an effective intervention (Robinson & Breed, 2019). The concept of eco-psychology addresses the concepts of ecology and psychology together and states that individuals who isolate themselves from nature will be negatively affected mentally (Roszak, 1992). Weaver (2015) also states that for individuals to have a healthy body and a healthier psychological structure, in addition to their need for social relationships, they also need lifestyles close to nature and intertwined with nature. At the same time, the individual whose connection with nature is broken by urbanization and industrialization activities both adversely influence the environment and is negatively impacted by the environment (Kütük & Canel, 2024). It has been stated that eco-psychological practices contribute to skills such as unhappiness, restlessness, and emotion management (Weaver, 2015).

One of the current concepts that explores the connection between ecology and psychology is eco-spirituality. Eco-spirituality simply refers to spiritual aspects or approaches related to the environment (Bonfiglio, 2012; Crowe, 2011). Wheeler (2022) defined eco-spirituality as a concept that explains how the individual relates to the sacred in the context of natural, global, and ecosystems. The common point of these definitions is their emphasis on the spiritual dimension of ecology (Vaughan-

Lee, 2013). Eco-spirituality has been associated with various aspects of mental health, as it involves establishing a spiritual connection with nature. This approach helps individuals develop a sense of wholeness in harmony with the environment, which may contribute to reductions in stress, anxiety, and depression.

Research indicates that interaction with nature and spiritual practices can increase psychological resilience and strengthen mental health (Cloud & Redvers, 2023; Keaulana et al., 2021). Eco-spiritual practices can support mental clarity and emotional balance by creating a nature therapy effect in individuals. From these perspectives, eco-spirituality can support the protection of the environment and the health of individuals. At the same time, this approach can have a greater impact, enabling larger populations to achieve global health goals. The literature review defined eco-spirituality, and a scale adaptation study was designed to measure the spiritual dimension of feeling emotionally and spiritually connected to nature. It has been stated that when people accept and respect nature, it can sharpen their senses and help them develop new skills (Franco et al., 2017). Taking into account ecological, psychological, and spiritual aspects, the scale will reveal the relationship that exists between the individual and nature. This research is important as research in this area will help individuals and policymakers to take measures against environmentally damaging issues and promote the well-being of individuals.

Eco-spirituality has garnered increasing attention in recent years due to its potential positive effects on mental health. Recent studies have highlighted the benefits of nature-based therapies, such as forest bathing (Shinrin-Yoku), in reducing stress and enhancing mood (Hansen et al., 2017). Additionally, research indicates that individuals who engage in eco-friendly activities, such as gardening, experience improved mental well-being and a greater sense of purpose. Therefore, there is a need for measurement tools to reveal the effects of eco-spirituality on individuals' mental health. Billet et al. (2023) developed a valid and reliable self-report instrument to assess the relationships between eco-spirituality and mental health variables. However, there is no measurement tool for the assessment of eco-spirituality in Türkiye. In this context, this study aims to adapt the Eco-spirituality Scale into Turkish and to investigate the relationships between eco-spirituality, positive future expectations, and mental well-being. Based on these purposes, answers are sought to the following research questions:

RQ1. Is the Turkish version of the Eco-Spirituality Scale valid and reliable?

RQ2. Does positive future expectations mediate the relationship between eco-spirituality and mental well-being?

Method

Study I

Participants and Procedure

In the first phase of the study, a total of 413 participants were reached. Among the participants, 325 were female (78.7%) and 88 were male (21.3%), with ages ranging from 18 to 54 ($M_{age} = 24.13$ years, $SD = 5.73$). The majority of the participants reported having an undergraduate level of education ($n = 222$, 53.8%). Regarding their socioeconomic status, most participants identified themselves as being in the middle class ($n = 301$, 72.9%).

The sample group of this study was formed using a convenience sampling method. Data were collected through an online form link, which was shared across various social media platforms. To be eligible for the study, participants had to be over 18 years old and willing to participate voluntarily. Before data collection, all participants were informed about the study, and they were notified that they could withdraw from the online form at any time if they wished. Additionally, informed consent was obtained from all participants. Anonymity and confidentiality of participants' responses were ensured in the study. Throughout the research process, no financial compensation or rewards were provided to participants.

Measures

The Ecospirituality Scale. This scale was developed by Billet et al. (2023) to assess individuals' evaluations and experiences related to the spiritual qualities of nature. The scale is a seven-point Likert-type measure, ranging from “*strongly disagree (1)*” to “*strongly agree (7)*”. It consists of eight items (e.g., “*Nature contains sacredness*”) and does not include any reverse-scored items.

The Emotional Connectedness to Nature Scale. This scale was developed by Kals et al. (1999) to determine an individual's emotional closeness to nature. The scale is a six-point Likert-type measure, ranging from “*applies not at all (1)*” to “*applies absolutely (6)*”. It consists of six items (e.g., “*Whenever I am in nature, I feel a sense of security*”) and does not include any reverse-scored items. Higher scores indicate a higher level of emotional attachment to nature. The scale was adapted into Turkish by Kiral Ucar et al. (2021), demonstrating a good factor structure with a Cronbach's alpha coefficient of .95.

The Spiritual Well-being Scale. This scale was developed by Bredle et al. (2011) to assess an individual's level of spiritual well-being. The scale is a five-point Likert-type measure, ranging from “*not at all (0)*” to “*very much (4)*”. It consists of five

items (e.g., “*I feel at peace*”) and includes one reverse-scored item. Higher scores indicate higher levels of spiritual well-being. The scale was adapted into Turkish by Arslan and Yıldırım (2021), demonstrating a good factor structure, a strong model fit (μ range = .55 – .85), and a reliable latent structure ($H = .89$).

The Life Satisfaction Scale. This scale was developed by Diener et al. (1985) to assess an individual’s life satisfaction level. The scale is a seven-point Likert-type measure, ranging from “*strongly disagree (1)*” to “*strongly agree (7)*”. It consists of five items (e.g., “*The conditions of my life are excellent*”) and does not include any reverse-scored items. Higher scores indicate higher levels of life satisfaction. The scale was adapted into Turkish by Durak et al. (2010), showing a good factor structure with a Cronbach’s alpha coefficient of .80.

The Connectedness to Nature Scale. This scale was developed by Mayer and Frantz (2004) to assess individuals’ level of connection to nature. The scale is a five-point Likert-type measure, ranging from “*strongly disagree (1)*” to “*strongly agree (5)*”. It consists of eight items (e.g., “*I think of the natural world as a community to which I belong*”) and does not include any reverse-scored items. Higher scores indicate a stronger sense of connectedness to nature. The scale was adapted into Turkish by Bektaş et al. (2017), demonstrating a good factor structure with a Cronbach’s alpha coefficient of .81.

Data Analysis

In line with the first objective of the study, the construct validity of the Eco-spirituality Scale was examined using confirmatory factor analysis. As part of this assessment, the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Goodness of Fit Index (GFI), Normed Fit Index (NFI), Incremental Fit Index (IFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) fit indices were analyzed. According to the widely accepted view in the literature, CFI, TLI, GFI, NFI, and IFI values should be above .90, while RMSEA and SRMR values should be below .08 (Hoyle & Panter, 1995). Following confirmatory factor analysis, Item Response Theory analysis was conducted to better understand how participants responded to the items in the scale (Baker, 2001). Subsequently, criterion validity was assessed through correlation analysis, examining the relationships between eco-spirituality and related constructs such as spiritual well-being, emotional connectedness with nature, connectedness to nature, and life satisfaction. Additionally, reliability was evaluated using Cronbach’s alpha (α), McDonald’s omega (ω), and Guttman’s lambda (λ_6) coefficients. Lastly, network analysis was conducted to further clarify the relationships among the variables.

Study II

Participants and Procedure

In the second phase of the study, a total of 399 participants were reached. Among them, 294 were female (73.7%) and 105 were male (26.3%), with ages ranging from 18 to 78 ($M_{age} = 23.51$ years, $SD = 7.29$). The majority of participants reported having an undergraduate level of education ($n = 205$, 51.4%). Regarding their socioeconomic status, most participants identified themselves as middle class ($n = 317$, 79.4%).

Similar to Study I, the sample for this study was selected using a convenience sampling method. Data were collected via an online survey link, which was shared on various social media platforms. To be eligible for the study, participants had to be over 18 years old and willing to participate voluntarily. Before data collection, as in Study I, all participants were informed about the study, and they were notified that they could withdraw at any time before completing the online form. Additionally, informed consent was obtained from all participants. To ensure data quality, responses were carefully screened for completeness and consistency before analysis. Throughout the research process, no financial compensation or rewards were provided to participants.

Measures

The Positive Future Expectation Scale. This scale was developed by Imamoğlu (2001) to measure the degree of optimism in individuals' expectations about their future. The scale is a five-point Likert-type measure, ranging from “*strongly disagree (1)*” to “*strongly agree (5)*”. It consists of five items (e.g., “*I am quite optimistic about my personal future*”) and includes one reverse-scored item.

The Warwick-Edinburgh Mental Well-being Scale. This scale was developed by Tennant et al. (2007) to assess mental well-being levels in adults. The scale was adapted into Turkish by Demirtaş and Baytemir (2019). It is a self-report measure consisting of seven items (e.g., “*I feel relaxed*”). The scale follows a five-point Likert-type format, ranging from 1 (*never*) to 5 (*always*). Higher scores indicate higher levels of mental well-being.

Data Analysis

All data collected for Study II were organized and prepared for analysis. Initially, correlation tests were conducted to examine the relationships between variables. Following this, mediation analyses were performed using structural equation modeling. During the analyses, all scales were divided into two parcels to enhance measurement reliability. Parceling was performed using an item-to-construct balance approach to ensure an equal distribution of item variances across parcels. Within the

established structural model, the mediating role of positive future expectation in the relationship between eco-spirituality and spiritual well-being was examined. Model fit was evaluated based on standard fit indices, including χ^2/df , CFI, TLI, RMSEA, and SRMR to ensure the adequacy of the proposed model. Additionally, bootstrap analysis was used to assess the significance of the indirect effect. A bias-corrected bootstrap method with 5,000 resamples was applied to test the indirect effects, providing confidence intervals for significance testing. All analyses were conducted using IBM SPSS Statistics version 26 and AMOS Graphics version 22.

Results

For the adaptation of the Eco-spirituality Scale into Turkish, the first analysis conducted was construct validity through confirmatory factor analysis. The fit indices obtained from the confirmatory factor analysis indicated an acceptable model fit ($\chi^2 = 110.157$; $df = 19$; CFI = .95; TLI = .92; GFI = .93; NFI = .94; IFI = .95; SRMR = .044). The factor loadings of the Turkish version of the Eco-spirituality Scale ranged between .722 and .836, suggesting a statistically significant and strong distribution. Additionally, the item analysis results for the Turkish Eco-spirituality Scale are presented in Table 1.

Table 1.
Factor Loadings, Descriptive Statistics and Item-Total Correlations

Item	Factor Loadings	Mean	SD	Item Total Correlations
1. There is a spiritual connection between human beings and the natural environment. <i>1. İnsanoğlu ve doğa arasında manevi bir bağ vardır.</i>	.722	5.96	1.21	.777
2. There is sacredness in nature. <i>2. Doğa içinde kutsallık barındırır.</i>	.757	5.72	1.39	.742
3. Everything in the natural world is spiritually interconnected. <i>3. Tabiattaki her şey manevi olarak birbirine bağlıdır.</i>	.836	5.85	1.37	.794
4. Nature is a spiritual resource. <i>4. Doğa manevi bir kaynaktır.</i>	.828	5.98	1.24	.806
5. I feel intense wonder towards nature. <i>5. Doğaya hayranlık duyuyorum.</i>	.816	6.26	1.09	.784
6. When I am in nature, I feel a sense of awe. <i>6. Doğadayken hıuşu içinde olurum.</i>	.799	5.76	1.34	.788
7. Sometimes I am overcome with the beauty of nature. <i>7. Kimi zaman doğanın güzelliğı karşısında büyülenirim.</i>	.760	6.19	1.07	.734
8. There is nothing like the feeling of being in nature. <i>8. Doğada olmak gibisi yoktur.</i>	.755	5.62	1.37	.758

Note. N = 413

Following the confirmatory factor analysis, an Item Response Theory analysis was conducted. In order to justify the choice of the IRT model, both the Graded Response Model (GRM) and the Generalized Partial Credit Model (GPCM) were tested. The comparison of fit indices indicated that the GRM provided a superior fit to the data ($ll = -3767.791$, $AIC = 7645.583$, $BIC = 7866.872$) compared to the GPCM ($ll = -3859.240$, $AIC = 7828.481$, $BIC = 8049.770$). Therefore, the GRM was retained as the most appropriate model for further analyses. The results indicated that all items on the scale were classified at a very high level. The discrimination power values of the items ranged between 2.12 and 3.14, suggesting that all scale items demonstrated high discriminative power. These findings confirm that the scale items effectively differentiate between individuals with varying levels of eco-spirituality. The detailed results of the Item Response Theory analysis are presented in Table 2 and Table 3.

Table 2.*Item Response Theory Results for the Turkish Ecospirituality Scale*

Item	<i>a</i> coefficient	SE	Confidence interval	<i>z</i>	$p > z $
Item 1	2.64	.24	2.17-3.11	10.99	.001
Item 2	2.16	.19	1.77-2.55	10.95	.001
Item 3	2.68	.24	2.20-3.17	10.80	.001
Item 4	2.94	.27	2.40-3.49	10.62	.001
Item 5	3.14	.32	2.51-3.77	9.74	.001
Item 6	2.48	.22	2.04-2.92	11.17	.001
Item 7	2.43	.24	1.96-2.90	10.14	.001
Item 8	2.12	.19	1.75-2.50	11.06	.001

Table 3*Item Response Theory parameter estimates for the Turkish Ecospirituality Scale*

Item	<i>a</i>	b_1	b_2	b_3	b_4	b_5	b_6
Item 1	2.64	-3.13	-2.59	-2.15	-1.40	-0.60	0.09
Item 2	2.16	-2.93	-2.43	-1.85	-1.19	-0.50	0.31
Item 3	2.68	-2.66	-2.28	-1.79	-1.17	-0.64	0.12
Item 4	2.94	-2.86	-2.50	-2.02	-1.30	-0.64	0.03
Item 5	3.14	-2.98	-2.47	-2.05	-1.62	-0.96	-0.25
Item 6	2.48	-2.79	-2.37	-1.89	-1.21	-0.47	0.27
Item 7	2.43	-3.52	-2.74	-2.42	-1.68	-0.95	-0.10
Item 8	2.12	—	-2.31	-1.79	-1.06	-0.35	0.45

To assess the criterion validity of the Turkish Eco-spirituality Scale, the normality assumption was examined through skewness and kurtosis values, which ranged between -.235 and -1.087 for skewness and -.626 and 1.158 for kurtosis, indicating normal distribution (Tabachnick & Fidell, 2013). Pearson's correlation analysis demonstrated that the Turkish Eco-spirituality Scale had significant positive relationships with emotional connectedness with nature ($r = 0.666$, $p < .001$), spiritual well-being ($r = 0.225$, $p < .001$), life satisfaction ($r = 0.115$, $p < .05$), and connectedness to nature ($r = 0.436$, $p < .001$), supporting its criterion validity (see Table 4).

Table 4.
Relationship of the Ecospirituality Scale with the Variables

	Mean	SD	Skewness	Kurtosis	Correlation with Ecospirituality	
					<i>r</i>	<i>p</i>
1. Ecospirituality	47.34	7.82	-1.087	1.158	-	-
2. Emotional connectedness with nature	29.19	5.96	-.885	.695	.666**	< .01
3. Spiritual wellbeing	12.79	3.80	-.485	-.016	.225**	< .01
4. Life satisfaction	21.34	6.96	-.235	-.626	.115*	< .05
5. Nature connectedness	28.54	4.82	-.468	1.149	.436**	< .01

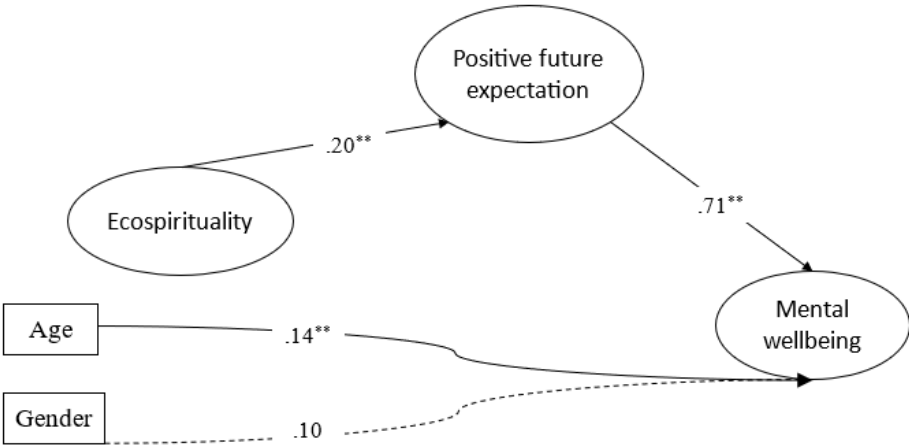
Note. * $p < .05$, ** $p < .01$

The reliability analysis of the Turkish Eco-spirituality Scale was conducted using Guttman's lambda, McDonald's omega, and Cronbach's alpha. The results indicated high reliability, with Guttman's lambda = .908, McDonald's omega = .902, and Cronbach's alpha = .903, confirming that the scale is a reliable measurement tool (Nunnally & Bernstein, 1994).

Following the psychometric evaluations, the hypothetical model was tested using data collected from a different sample, and correlation and structural equation modeling analyses were conducted. The mediating role of positive future expectation in the relationship between eco-spirituality and mental well-being was examined, with gender and age included as covariates. Correlation analysis revealed significant positive relationships between eco-spirituality and positive future expectation ($r = 0.150$, $p < .05$), eco-spirituality and mental well-being ($r = 0.144$, $p < .05$), and positive future expectation and mental well-being ($r = 0.640$, $p < .001$).

Within the structural equation modeling analyses, the partial mediation effect of positive future expectation in the relationship between eco-spirituality and mental well-being was examined, and the model demonstrated acceptable fit indices ($\chi^2/\text{df} = 3.609$; CFI = .97; TLI = .94; GFI = .97; NFI = .96; IFI = .97; SRMR = .051; RMSEA = .081). However, as the direct path from eco-spirituality to mental well-being was not statistically significant, the model was retested to examine the full mediation effect of positive future expectation, which also yielded acceptable fit indices ($\chi^2/\text{df} = 3.369$; CFI = .97; TLI = .94; GFI = .97; NFI = .96; IFI = .97; SRMR = .051; RMSEA = .077), with path coefficients within an acceptable range (see Figure 1). The bootstrapping analysis further confirmed that the indirect path coefficient was significant (bootstrap coeff = .124, 95% CI = [.047, .215]). These findings indicate that positive future expectation fully mediates the relationship between eco-spirituality and mental well-being.

Figure 1.
Standardized factor loading for the fully mediated structural model.



Note. $N = 413$, ** $p < .01$

Discussion

Measuring eco-spirituality in adults plays an important role in better understanding the spiritual connection between nature and individuals. Eco-spirituality is also an important concept for individuals' mental health. Measuring eco-spirituality makes important contributions to understanding the link between individuals' mental health and their relationship with nature. This study aims to adapt the Eco-spirituality Scale to Turkish culture. The results obtained from the research are discussed below.

According to the results of the confirmatory factor analysis conducted in Study 1, the adapted Eco-spirituality Scale has acceptable goodness of fit indices (Baumgartner & Hamburg, 1996; Browne et al., 2002; Browne & Cudeck, 1992; Hooper et al., 2008), and the standardized factor loadings are significant. Confirmatory factor analysis results confirmed the unidimensional structure of the original scale and the eight-item form (Billet et al., 2023). After confirmatory factor analysis, Item Response Theory was used to investigate the relationship between item responses. With Item Response Theory, the discrimination of the items in the Eco-spirituality Scale was evaluated according to Baker's (2001) standards. According to these standards, the discrimination levels of the items are evaluated as very low (0.01-0.34), low (0.35-0.64), medium (0.65-1.34), high (1.35-1.69), and very high (>1.70). Therefore, it can be stated that all items have very high discriminative power. Determining the properties and validity of the scale items through Item Response Theory analysis helped the scale to be more powerful in terms of statistics.

In the criterion-related validity study in Study 1, the relationships between eco-spirituality and attachment to nature, emotional attachment to nature, life satisfaction, and spiritual well-being were investigated. The findings indicated that eco-spirituality had positive relationships with attachment to nature, emotional attachment to nature, life satisfaction, and spiritual well-being. Related literature supports these research findings (Cervinka et al., 2012; Howell et al., 2011; Navarro et al., 2020; Trigwell et al., 2014). These results suggest that individuals who perceive a spiritual connection with nature are more likely to develop a sense of attachment to their natural surroundings, which can enhance their overall well-being. Eco-spirituality enables individuals to feel themselves as a part of nature by establishing a connection with nature. This sense of connectedness may contribute to an increased appreciation for the environment and foster behaviors that promote ecological sustainability. In this direction, it is meaningful that eco-spirituality is positively correlated with attachment to nature and emotional attachment to nature. Attachment to nature has been linked to psychological resilience, suggesting that individuals with higher eco-spirituality may have greater coping resources in the face of stress and adversity. Based on this information, it can be stated that the research findings and criterion-related validity are consistent with the literature. Furthermore, the alignment of these findings with previous studies underscores the role of eco-spirituality as a potential psychological resource that supports both individual well-being and environmental consciousness.

In Study 2, the incremental validity of the Eco-spirituality Scale was tested. A model was created to examine the mediating role of positive future expectations in the relationship between eco-spirituality and mental well-being. The study results demonstrate that positive future expectation mediates the relationship between eco-spirituality and mental well-being. In other words, individuals with higher eco-spirituality have more positive future expectations, leading to higher mental well-being. Bratman et al. (2020) indicated that being related to nature is linked to various positive outcomes. Accordingly, one of these positive effects is thought to be positive future expectations. Research shows that positive future expectation positively influences well-being (Çalışkan & Dilmaç, 2021; Ehtiyar et al., 2017). At the same time, research results in the literature align with the results obtained from this study (Villani et al., 2019).

Lastly, the reliability coefficients of the Eco-spirituality scale were examined. The results obtained from the study showed that the reliability coefficients were Cronbach's α .90, McDonald's ω .90, and Guttman's λ_6 .90 for Study 1; Cronbach's α .91, McDonald's ω .91, and Guttman's λ_6 .91 for Study 2. In this study, the criterion of having reliability coefficients above .70 was met (Nunnally & Bernstein, 1994). As a result, the Eco-spirituality Scale, which was adapted to Turkish culture within the scope of this study, is a valid and reliable measurement tool that can be used to determine eco-spirituality in adult individuals.

Implications

The findings of this study offer valuable implications for both researchers and mental health professionals in the fields of nature-based therapy and sustainability education. The validity of the Turkish-adapted version of the Eco-Spirituality Scale provides a reliable tool for assessing the spiritual connection of Turkish-speaking individuals with nature. This scale contributes to the environmental psychology and eco-psychology literature by providing the opportunity to investigate the complex interactions between eco-spirituality, emotional attachment to nature, positive future expectations, and spiritual well-being.

For mental health professionals, the mediating role of positive future expectations in the relationship between eco-spirituality and spiritual well-being highlights the therapeutic potential of integrating nature-based interventions into clinical practice. Practices that encourage clients to establish a spiritual connection with nature may improve their overall mental health by increasing their levels of optimism. This approach is consistent with eco-therapy principles that emphasize the healing effects of exposure to nature. Methods such as guided nature walks, community gardening, and wilderness therapy can effectively complement traditional therapy techniques by developing a holistic understanding of well-being.

In the context of sustainability education, the findings of this study highlight the importance of integrating eco-spirituality into educational curricula to encourage individuals to develop a deeper emotional and spiritual connection with the environment. Such an approach can increase students' sense of responsibility towards nature, as well as develop environmentally friendly attitudes and behaviors. Educational programs that include experiential learning processes in natural environments can strengthen students' connections with nature, supporting both their mental well-being and environmental protection awareness. In addition, policy makers and urban planners can take steps to integrate green spaces into urban planning to support urban residents' mental health and strengthen their eco-spiritual connections. The presence of accessible natural areas in cities can increase social well-being and promote ecological awareness by providing common areas for nature-based activities.

In conclusion, this study demonstrates the positive effects of establishing a spiritual connection with nature on mental health and the potential to promote sustainable behaviors. The findings support an interdisciplinary approach that integrates psychological well-being with environmental sustainability, providing applicable solutions in the fields of therapy, education and urban planning.

Limitations and Future Research

The Eco-spirituality Scale, which is important in terms of its psychometric properties, has some limitations. The first limitation of this study is that the non-clinical research was conducted with adults living in Türkiye. Since the sample was selected using a convenience sampling method, the findings may not be fully generalizable to other populations. Future studies could employ more diverse and representative sampling methods to enhance generalizability. In addition, the data obtained for the study were collected using self-report questionnaires. Self-report measures are subject to biases such as social desirability and common method variance, which may affect the accuracy of the responses. Employing mixed-method approaches, including qualitative interviews or behavioral assessments, could provide deeper insights into eco-spirituality. Another limitation of the study is that it was designed with a cross-sectional design. Cross-sectional designs make it difficult to reach causal conclusions. Longitudinal studies could be conducted in the future to examine the stability of eco-spirituality over time and its potential long-term effects on mental well-being. Additionally, experimental or intervention-based studies may help establish causal relationships between eco-spirituality, positive future expectations, and mental well-being. Future research could examine possible contamination issues in scales in more detail. This is because it is seen as an important concern that mental health indicators may create unintended or misleading effects in measurement tools (Bambling, 2024; Koenig & Carey, 2024). Moreover, cultural factors may influence the way individuals perceive and express eco-spirituality. Comparative studies across different cultural contexts could provide a more nuanced understanding of how eco-spirituality functions within diverse societies.

Conclusion

The findings of this study indicate that the Turkish version of the Eco-spirituality Scale is a valid and reliable tool for assessing eco-spirituality in adults. Although some limitations exist, the psychometric properties of the Turkish form of the Eco-spirituality Scale appear satisfactory for measuring eco-spirituality. This adaptation provides a culturally relevant tool that allows researchers to explore eco-spirituality within the Turkish context, which has been previously understudied. Additionally, the results highlight the significant mediating role of positive future expectations in the relationship between eco-spirituality and mental well-being. By demonstrating this mediation effect, the study offers new insights into the psychological mechanisms through which eco-spirituality may influence mental well-being, adding to the existing body of knowledge. These findings contribute to the growing literature on eco-spirituality by providing a psychometrically sound measurement tool. Moreover, this study uniquely contributes to the literature by integrating eco-spirituality into a broader psychological framework, emphasizing its potential role in fostering positive psychological outcomes and well-being.

Ethical approval. This research was conducted in accordance with ethical standards, following the 1964 Declaration of Helsinki. Additionally, the Scientific Research and Ethics Committee of Yıldız Technical University approved this study as ethically appropriate (Reference Number = 31.20.2024, Verification Code = 2024.10).

Authors' contribution. SAS was responsible for the conceptualization, methodology, and preparation of the original draft. ST contributed to data curation and review and editing of the manuscript. HK supervised the study, validated the analyses, administered the project, and conducted part of the statistical analyses. SO contributed to the investigation, resources, and performed part of the formal analyses. BS contributed to methodology, visualization, and review and editing.

FBY assisted with data curation and software. ENT contributed to the investigation and resources. All authors read and approved the final version of the manuscript.

Peer-review. This article has been externally peer-reviewed.

Funding. This study is supported by Yıldız Technical University Scientific Research Project Unit (SBG-2024-6244).

Disclosure statement. The authors declare that they have no conflicts of interest with respect to the research, authorship, or publication of this article.

Data Availability Statements. The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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