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Turkish Validity and Reliability Study of the Nature Connectedness Parental Self-Efficacy Scale

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Abstract

In this study, it was aimed to adapt the "Nature Connectedness Parental Self-Efficacy Scale Nature Connectedness Parental Self-Efficacy Scale" into Turkish and to conduct a validity and reliability study. For this purpose, a scale adaptation study was designed using the survey model. In the study, the scale developed by Barnes, Harvey, Holland & Wall (2021) and translated into Turkish as the "Nature Connectedness Parental Self-Efficacy Scale" was used. The scale consists of four subscales: "Access to Nature, Communicating about Nature, Overcoming Personal Barriers, and Overcoming Situational Barriers". The scale, whose original form consists of 22 Likert-type items, was applied in England. The study group consisted of 370 volunteer parents. Within the scope of the analysis, exploratory factor analysis, confirmatory factor analysis (CFA), descriptive statistics related to scale factor environments, Pearson correlation analysis to determine the relationship between scale factors, and Cronbach Alpha coefficient to determine the reliability level of scale factors were used. As a result of the study, it was determined that the Turkish version of the "Commitment to Nature Parental Self-Efficacy Scale" is valid and reliable.

Keywords: Nature, Nature Attachment, Parent, Self-efficacy, Social Learning.

Introduction

Today, with the increasing stress and chaos in city life, people prefer to spend time in nature. The concretization of cities, sedentary life, people's longing for natural life, and difficulties in business life explain people's orientation towards nature. Every day, it is seen that people, parents, children, and therefore societies spend time in nature to relax, focus, breathe, exercise, explore, learn, experience, and learn by doing. With this awareness, the ideas of parents, who are the role models of their children, about nature gain importance. Studies on nature-based education represent a growing field in early childhood education. In addition to affecting children's cognitive, physical, social, and emotional development, nature-based environments provide an engaging environment for children to learn and interact with each other to learn the subject (Yiğit Gençten & Gültekin, 2022).

It is thought that parents' commitment to nature will affect their children's ideas about nature in their future lives. In this direction, parents' experiences related to attachment to nature may positively affect their perceptions of parenting self-efficacy. Self-efficacy refers to an individual's belief in exerting control over challenging demands and reflects confidence in one's abilities. The level of self-efficacy shows how a person is most likely to behave, i.e. whether or not to undertake a task, how much effort he/she puts into it, and how long he/she perseveres when faced with obstacles and negative experiences (Bandura, 1997). Self-efficacy is generally understood as domain-specific, meaning that beliefs vary according to the domain of functioning (Anderman & Gray, 2015). Accordingly, parental self-efficacy is defined as parents' beliefs in their ability to influence the child and his/her environment to promote development and success (Ardelt & Eccles, 2001). In general, parents with strong self-estimates of parental efficacy also exhibit positive parenting behaviors (Coleman & Karraker, 2000). Numerous empirical studies explain the decisive role of parental self-efficacy on child functioning and adjustment (Jones & Prinz, 2005). In this context, parental self-efficacy functions as an umbrella term that differs from study to study and can cover various aspects of the parental role and task fulfillment (Wittkowski et al., 2017).

Parental self-efficacy is a fundamental determinant of parenting practices and child development (Gessulat et al.,

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2023). Parental self-efficacy refers to the state of believing that an individual has effective and adequate parenting skills toward his/her child during pregnancy and after birth. Many philosophers and environmental psychologists agree that society becoming more ecologically conscious depends on individuals developing a sense of connectedness to nature. However, some feel that without an understanding of how this engagement develops, such an understanding may have limited benefits. Philosophers, environmentalists, and psychologists argue that making nature a concern is a critical step toward building a more environmentally responsible society. Therefore, people need to make nature part of something or someone that they consider important enough to deserve attention and protection (Leopold, 1949; Naess, 1987; Stern et al., 1999; Schultz, 2002; Crimston et al., 2016). Definitions of nature attachment found in psychological literature emphasize the fusion of self and nature (Schultz, 2002) and a sense of unity or oneness with nature (Mayer & Frantz, 2004). The fusion of both self and nature and a sense of unity are also consistent with individuals' descriptions of what connectedness means to them (Unsworth et al., 2016). These two points of emphasis are also consistent with engagement being seen as a form of self-transcendence (Lengieza et al., 2021). Specifically, self-transcendence is characterized by "a reduction in the salience of the self, accompanied by a softening or complete dissolution of conceptual boundaries between self and others, involving a sense of oneness with others and one's environment" (Yaden et al., 2017; Lengieza et al., 2021). Given these considerations, it is possible to express connectedness as the psychological unification of the self that emerges as a sense of oneness with nature. There is also some evidence to suggest that genuine contact with nature can facilitate connectedness.

As a result, many studies investigating the impact of contact with real nature on engagement conclude that it has a positive effect. Despite the large number of studies identifying contact with nature as a predictor of engagement, few studies have failed to find an effect of contact with nature on engagement (Bruni & Schultz, 2010; Clayton et al., 2011; Unsworth et al., 2016: Bruni et al., 2017; Lengieza & Swim, 2021). These studies, which are generally retrospective, conclude that childhood contact with nature is a determinant of engagement (Hinds & Sparks, 2009; Cheng & Monroe, 2012; Beery, 2013; Tam, 2013; Pensini et al., 2016; Rosa et al., 2018). Accordingly, this study aimed to adapt the "Nature Connectedness Parental Self-Efficacy Scale" into Turkish and to conduct a validity and reliability study.

Present Study

When the studies in the literature are examined, it is seen that awareness and commitment to nature is an emerging issue. This research is a scale adaptation study conducted to evaluate parents' commitment to nature with their children. The Nature-Connectedness Parental Self-Efficacy Scale (NCPSE), which was adapted to Turkish and validity and reliability studies were conducted within the scope of this study, provides an opportunity to determine in which activities parents feel less effective and to evaluate the effectiveness and impact of nature-based interventions on parents' self-efficacy. This is achieved through 4 subscales of the Nature Engagement Parental Self-Efficacy Scale consisting of 22 items. The first subscale, Access to Nature, consists of 7 items related to parents' access to nature-related contexts. The second subscale, Communicating about Nature, consists of 3 items related to the moments when parents convey information about nature to their children. The third subscale, Overcoming Personal Barriers, consists of 6 items related to being able to go out in nature. The fourth subscale, Overcoming Situational Obstacles, consists of 6 items related to situational obstacles encountered to go out in nature (Barnes et al., 2021). With the Nature Connectedness Parental Self-Efficacy Scale (NCPSE), the attitudes and awareness of parents towards going out into nature with their children can be determined and the points that need attention or support can be identified. In this respect, this study aimed to conduct a scientifically accurate Turkish adaptation, validity, and reliability study of the Nature Commitment Parental Self-Efficacy Scale (NCPSE). According to Hambleton and Patsula (1999), when the adapted test is intended for cross-cultural or international assessment, it is considered the most effective way to produce an equivalent test in a second language. In this respect, this study will provide guiding information for national-scale development.

Method

Participants

The sample of the study was determined by the appropriate case study group, which is also one of the purposeful study groups, which enables the easy selection of individuals on whom research is planned to be conducted (Sönmez & Alacapınar, 2018, p.175). Based on this, 370 parents living in the Konya city center and volunteering to participate in the study were included in the study group. The sample size for factor analysis is accepted as 100=poor, 200=adequate, 300=good, 500=very good, and 1000 and above excellent. In addition, the method of applying as many applications as the number obtained by multiplying the number of items by 5 or 10 can also be used (Çokluk et al. 2018). Therefore, the sample in this study was determined as 370 parents. Descriptive statistics about the personal characteristics of

the parents in the study group are presented in Table 1, and descriptive statistics about the parents' participation in nature are presented in Table 2.

Table 1 shows that 370 people participated in the study. Of the parents who participated in the study, 179 (48.4%) had a son, and 191 (51.6%) had a daughter. There are 64 (17.3%) parents with one child, 155 (41.9%) parents with two children, 109 (29.5%) parents with three children, and 42 (11.4%) parents with 4 or more children. 50 (13.5%) mothers aged 29 years and younger, 112 (57.3%) mothers aged 30 to 39 years, 103 (27.8%) mothers aged 40 to 49 years, and 5 (1.4%) mothers aged 50 years and older participated in the study. Fourteen (3.8%) fathers aged 29 years and younger, 173 (46.8%) fathers aged 30 to 39 years, 158 (42.7%) fathers aged 40 to 49 years, and 25 (6.8%) fathers aged 50 years and older participated in the study.

Table 2 shows that 91 (24.6%) of the parents live in a house with a garden. Regarding the time parents spend quality time in nature, 61 (16.5%) parents answered at least 1 hour a day, 237 (64.1%) parents answered 1-2 hours a week, and 72 (19.5%) parents answered 3-4 hours a week. Regarding the evaluation of the existence of an environmentally friendly consumption approach, 302 (81.6%) parents answered yes, and 68 (18.4%) parents answered no.

Table 1. Descriptive statistics about the personal characteristics of parents (N=370)

	Statistics
Gender of your child, *n (%)*	
Male	179 (%48.4)
Girl	191 (%51.6)
Number of children, *n (%)*	
Only child	64 (%17.3)
Two children	155 (%41.9)
Three children	109 (%29.5)
4 children and more	42 (%11.4)
Socioeconomic level, *n (%)*	
Low	28 (%7.6)
Middle	304 (%82.2)
High	38 (%10.3)
Age of mother, *n (%)*	
29 years and below	50 (%13.5)
30-39 years	212 (%57.3)
40-49 years	103 (%27.8)
50 years and older	5 (%1.4)
Age of father, *n (%)*	
29 years and below	14 (%3.8)
30-39 years	173 (%46.8)
40-49 years	158 (%42.7)
50 years and older	25 (%6.8)

Descriptive statistics are given as number (n) and percentage (%) values.

Table 2. Descriptive statistics about parents' participation in nature (N=370)

	Statistics
Living in a house with a garden, n (%)	
Yes	91 (%24.6)
No	279 (%75.4)
Duration of spending quality time in nature, n (%)	
At least 1 hour a day	61 (%16.5)
1-2 hours a week	237 (%64.1)
3-4 hours a week	72 (%19.5)
Presence of an environmentally friendly consumption approach, n (%)	
Yes	302 (%81.6)
No	68 (%18.4)

Descriptive statistics are given as number (n) and percentage (%) values.

Data collection tools

Personal Information Form

In the study, the "Personal Information Form" prepared by the researcher was used to determine the demographic characteristics of the parents. This form consists of multiple-choice information on the number and gender of children, parents' age, socio-economic level of the family, parents' occupation, parents' education level, parent's employment status, living in a house with a garden, spending quality time in nature, and the existence of a nature-friendly consumption approach.

Nature Connectedness Parental Self-Efficacy (NCPSE) Scale

The Nature Engagement Parental Self-Efficacy Scale is a scale developed by Barnes et al. (2021) and administered to parents. This scale provides an opportunity to determine in which activities parents feel less effective and to evaluate the effectiveness and impact of nature-based interventions on parents' self-efficacy. The scale consists of four sub-dimensions: "Access to Nature, Communicating about Nature, Overcoming Personal Barriers, and Overcoming Situational Barriers". The development study of the scale, whose original form consists of 22 Likert-type items, was conducted in England with the participation of 362 parents. The analyses

revealed that the original form of the scale had a Cronbach's alpha coefficient of 0.87, the test-retest coefficient of r=0.89, a Kaiser-Meyer-Olkin Measure of Sampling Adequacy of 0.89, and a four-factor structure explaining 64.94% of the variance. The scale score is obtained by summing the scores of each item. There are no reverse-scored items in the scale. A higher score on the scale is considered higher self-efficacy. The scale takes an average of 3-4 minutes to complete and no cut-off score was set in the original development journal article.

Data Collection Method

In the data collection phase of the study, the personal information form prepared on "google forms" and the items of the scale translated into Turkish were sent to the parents as a link and shared with them voluntarily.

Procedure and Data Analysis

In this study, the adaptation study was conducted according to the principles stated by Hambleton and Patsula (1999) that should be followed in the process of adapting the measurement tool. In this respect, firstly, forward and backward translation technique was applied and language equivalence was ensured. Then, field experts were consulted for content evaluation. Then, a pilot study was conducted with a small group. After all the arrangements were made, the application was carried out in the sample group.

The correlation matrix was examined to assess the suitability of the data for factor analysis. Bartlett's test of sphericity was used to statistically test the correlation between the variables in the data matrix (Bartlett, 1950). In addition, the Kaiser-Meyer-Olkin (KMO) criterion obtained from correlation and partial correlation coefficients was used to evaluate the suitability of the data for factor analysis. In the study, the principal components method was used to obtain the factors. In determining the appropriate number of factors, factor selection criteria were taken into consideration as the number of eigenvalues greater than one. In addition, factor rotation was performed to clarify the variables that contribute to the formation of common factors. The Varimax method was applied to this process. The SPSS package program was used for confirmatory factor analysis in the study. Descriptive statistics are given as several units (n), percentage (%), mean (X), standard deviation (SD), median (M), minimum (min), and maximum (max) values. The normal distribution of the data belonging to numerical variables was evaluated by the Shapiro-Wilk normality test and the relationships between numerical variables were evaluated by Pearson correlation coefficient. $p<0.05$ level was considered statistically significant.

Ethical Principles

This research was conducted by the principles of scientific ethics. First of all, the people who developed the scale were contacted and the necessary permissions were obtained. The informed consent form was given to the participants who participated in the study and their participation was voluntary. The study was approved by the KTO Karatay University Pharmaceutical and Non-Medical Device Research Ethics Committee with decision number 2024/022.

Findings

The mean scores and descriptive statistics of the items in the Nature Engagement Parental Self-Efficacy Scale are presented in Table 3 and Table 4, respectively.

Table 3 shows the mean scores of the 22 items in the Parental Self-Efficacy Scale for Commitment to Nature. When the mean score values of the items are examined, item 9 has the highest mean, and item 21 has the lowest mean.

Table 3: Mean scores of the items in the Nature Connectedness Parental Self-Efficacy Scale

Items	***X* ± *SS***	***M* (*min-max*)**
Item 1	5.63 ± 2.88	5
Item 2	5.39 ± 2.71	5
Item 3	5.34 ± 2.91	5
Item 4	4.78 ± 3.01	5
Item 5	6.30 ± 2.92	7
Item 6	4.54 ± 2.94	4
Item 7	5.03 ± 3.07	5
Item 8	5.42 ± 2.79	5
Item 9	6.41 ± 3.06	7
Item 10	6.04 ± 3.20	6
Item 11	5.15 ± 3.02	5
Item 12	5.44 ± 2.92	5
Item 13	5.45 ± 2.84	5
Item 14	4.97 ± 2.88	5
Item 15	5.18 ± 2.79	5
Item 16	4.94 ± 2.89	5
Item 17	4.48 ± 2.85	4
Item 18	4.24 ± 2.84	4
Item 19	4.20 ± 2.80	4
Item 20	3.79 ± 2.73	3
Item 21	3.36 ± 2.76	2
Item 22	4.31 ± 2.97	4

Table 4. Descriptive statistics of the Nature Connectedness Parental Self-Efficacy Scale (N=370)

	X ± SS	*M (min-max)*	*Accessing Nature*	*Communicating about nature*	*Overcoming Personal Barriers*	*Overcoming Situational Barriers*
Accessing Nature	5.29 ± 2.53	5.0	1			
Communicating about Nature	5.96 ± 2.66	6.3	r=0.687 p<0.001	1		
Overcoming Personal Barriers	5.19 ± 2.58	5.1	r=0.820 p<0.001	r=0.715 p<0.001	1	
Overcoming Situational Barriers	4.06 ± 2.43	3.7	r=0.691 p<0.001	r=0.578 p<0.001	r=0.780 p<0.001	1
Total	5.02 ± 2.27	4.9	r=0.920 p<0.001	r=0.794 p<0.001	r=0.943 p<0.001	r=0.871 p<0.001

Pearson Correlation Coefficient (r); Descriptive statistics are given as mean (X), standard deviation (SD), median (M), minimum (min), and maximum (max) value. The bolded sections are statistically significant (p<0.05).

When Table 4 was examined, it was found that the mean of the Access to Nature Subscale was 5.29 ± 2.53 points, the mean of the Communicating about Nature Subscale was 5.96 ± 2.66 points, the mean of the Overcoming Personal Barriers Subscale was 5.19 ± 2.58 points and the mean of the Overcoming Situational Barriers Subscale was 4.06 ± 2.43 points. In addition, there is a statistically significant positive relationship between the Commitment to Nature Parental Self-Efficacy Scale and its subscales (p<0.05).

3.1. Content Validity

For the content validity of the Nature Connectedness Parental Self-Efficacy Scale, expert opinions were obtained from 5 academicians with a doctorate in child development and education. All experts reported that the items on the scale were necessary and appropriate. Therefore, all items in the original form were used in the data collection process.

3.2. Small Group Practice

The Nature Connectedness Parental Self-Efficacy Scale was first administered to 20 parents through face-to-face interviews. Opinions were obtained from the parents about the comprehensibility of the items in the scale. All parents who participated in the small group application stated that the items on the scale were understandable.

Exploratory Factor Analysis

In this study, exploratory factor analysis was conducted to evaluate the construct validity of the Nature Connectedness Parental Self-Efficacy Scale (Table 5).

Table 5 shows that the KMO value to test the adequacy of the distribution for factor analysis is at a very good level. Barlett's test result was obtained as 8676.482 (p<0.05). It can be said that the amount of variance obtained as 79% in the study is at a sufficient level. The factor loads of the Access to Nature Subscale vary between 0.663 and 0.723, the factor loads of the Communicating about Nature Subscale vary between 0.679 and 0.808, the factor loads of the Overcoming Personal Barriers Subscale vary between 0.555 and 0.753, and the factor loads of the Overcoming Situational Barriers Subscale vary between 0.608 and 0.850. Therefore, it can be said that the 4 dimensions of the Nature Connectedness Parental Self-Efficacy Scale measure the sub-features. As a result of the exploratory factor analysis, it is seen that the Commitment to Nature Parental Self-Efficacy Scale is a valid measurement tool.

Confirmatory Factor Analysis

For the construct validity of the Nature Connectedness Parental Self-Efficacy Scale, confirmatory factor analysis was conducted with the data obtained from each subscale. The cut-off values in CFA analysis (Schumacker & Lomax, 2004; Hu & Bentler, 1999; Thompson, 2004; Kline 2015) were evaluated according to Table 6.

Table 7 shows that $\chi 2/df$, RMSEA, SRMR, IFI, TLI, CFI, and GFI were used to evaluate the factor validity of the models within the scope of CFA. In this study, RMSEA≤0.05, IFI, TLI, CFI ≥0.90, and GFI≥0.85 were determined as acceptable. The model ($\chi 2/df$=3.294) obtained for the Nature Connectedness Parental Self-Efficacy scale consists of four dimensions. The fit indices for this model show that the model is compatible at an acceptable level.

Consisting of 22 items and four dimensions, confirmatory factor analysis was applied to the Parental Self-Efficacy in Nature Commitment scale. The model is presented visually in Figure 1. It was found that each of the path coefficients of the dimensions on 22 questions were statistically significant

Table 5. Exploratory factor analysis results of the Nature Connectedness Parental Self-Efficacy Scale

		Factor Loadings						
Factor	*Item No*	*1*	*2*	*3*	*4*	*Total Correlation*	*Explained Variance %*	*Cronbach Alpha*
Accessing Nature	1	0.663				0.813	22.82	0.944
	2	0.711				0.824		
	3	0.723				0.835		
	4	0.721				0.797		
	5	0.658				0.746		
	6	0.789				0.752		
	7	0.722				0.664		
Communicating about nature	8				0.679	0.619	14.84	0.854
	9				0.796	0.707		
	10				0.808	0.670		
Overcoming Personal Barriers	11			0.555		0.780	19.74	0.949
	12			0.592		0.813		
	13			0.646		0.805		
	14			0.753		0.815		
	15			0.717		0.854		
	16			0.680		0.876		
Overcoming Situational Barriers	17		0.608			0.826	21.18	0.930
	18		0.734			0.807		
	19		0.719			0.798		
	20		0.849			0.686		
	21		0.850			0.636		
	22		0.633			0.592		
Scale							78.57	0.970

KMO=0.958 *DF*=231 $\chi 2$=8676.482 p<0.001

KMO: Kaiser-Meyer-Olkin test; Df: Degrees of Freedom

Table 6. Boundary values in CFA analysis

Indexes	*Limit Values*
	Excellent ≤ 3≤ Good ≤ 5
RMSEA	Excellent ≤ 0.05 ≤ Good ≤ 0.08
SRMR	Excellent ≤ 0.05 ≤ Good ≤ 0.08
CFI	Excellent ≥ 0.95 ≥ Good ≥ 0.90
NNFI	Excellent ≥ 0.95 ≥ Good ≥ 0.90
GFI	Excellent ≥ 0.95 ≥ Good ≥ 0.90
AGFI	Excellent ≥ 0.95 ≥ Good ≥ 0.90

(p<0.05). Accordingly, the Access to Nature Subscale consists of questions 1-7, Communicating about Nature Subscale 8-10, Overcoming Personal Barriers Subscale 11-16 and Overcoming Situational Barriers Subscale 17-22. It is also seen that all subscales have a highly statistically significant effect on the items (p<0.05). It was determined that each of the path coefficients of the Access to Nature Subscale, Communicating About Nature Subscale, Overcoming Personal Barriers Subscale, and Overcoming Situational Barriers Subscale on

Tablo 7: Fit values of the model of the Nature Connectedness Parental Self-Efficacy Scale

Scale	*(χ^2/sd)*	*RMSEA*	*SRMR*	*IFI*	*CFI*	*GFI*	*TLI*
Model	3.294	0.079	0.056	0.948	0.947	0.853	0.939

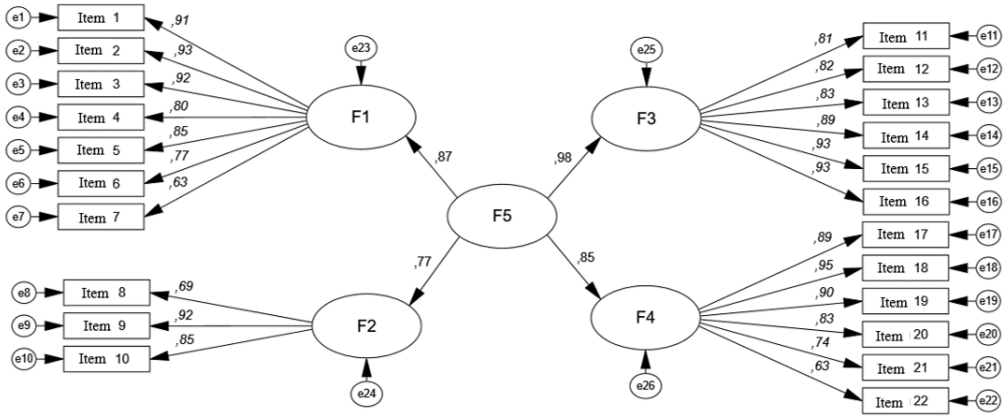

Figure 1: Confirmatory factor analysis model of Parental Self-Efficacy in Nature Commitment scale

Table 8. Evaluation of the effects between the items in the Parental Self-Efficacy Scale of Nature Engagement and the subscales

			β	*se*	*zβ*	*t*	*p*
Item 1	<--	Accessing Nature	1.000		0.909		
Item 2	<--	Accessing Nature	0.966	0.032	0.932	30.646	<0.001
Item 3	<--	Accessing Nature	1.022	0.035	0.921	29.601	<0.001
Item 4	<--	Accessing Nature	0.914	0.043	0.800	21.138	<0.001
Item 5	<--	Accessing Nature	0.944	0.040	0.845	23.859	<0.001
Item 6	<--	Accessing Nature	0.863	0.044	0.768	19.641	<0.001
Item 7	<--	Accessing Nature	0.741	0.053	0.626	14.086	<0.001
Item 8	<--	Communicating about nature	1.000		0.694		
Item 9	<--	Communicating about nature	1.461	0.093	0.924	15.655	<0.001
Item 10	<--	Communicating about nature	1.400	0.094	0.849	14.917	<0.001
Item 11	<--	Overcoming Personal Barriers	1.000		0.813		
Item 12	<--	Overcoming Personal Barriers	0.974	0.052	0.820	18.764	<0.001
Item 13	<--	Overcoming Personal Barriers	0.959	0.050	0.830	19.131	<0.001
Item 14	<--	Overcoming Personal Barriers	1.046	0.049	0.893	21.430	<0.001
Item 15	<--	Overcoming Personal Barriers	1.049	0.046	0.925	22.701	<0.001
Item 16	<--	Overcoming Personal Barriers	1.089	0.048	0.927	22.783	<0.001
Item 17	<--	Overcoming Situational Barriers	1.000		0.887		
Item 18	<--	Overcoming Situational Barriers	1.069	0.036	0.950	29.717	<0.001
Item 19	<--	Overcoming Situational Barriers	1.002	0.038	0.903	26.283	<0.001
Item 20	<--	Overcoming Situational Barriers	0.891	0.041	0.825	21.696	<0.001
Item 21	<--	Overcoming Situational Barriers	0.808	0.045	0.740	17.830	<0.001
Item 22	<--	Overcoming Situational Barriers	0.739	0.053	0.629	13.973	<0.001

β: Regression coefficient, se: Standard error, zβ: Standardized regression coefficient. Bolded sections are statistically significant ($p<0.05$).

Table 9. Evaluation of the effects between the subscales of the Parental Self-Efficacy Scale of Nature Attachment

			β	*se*	*zβ*	*t*	*p*
Accessing Nature	<--	Nature Connectedness Parental Self-Efficacy Scale	1.533	0.130	0.870	11.763	<0.001
Communicating about nature	<--	Nature Connectedness Parental Self-Efficacy Scale	1.000		0.766		
Overcoming Personal Barriers	<--	Nature Connectedness Parental Self-Efficacy Scale	1.618	0.139	0.976	11.608	<0.001
Overcoming Situational Barriers	<--	Nature Connectedness Parental Self-Efficacy Scale	1.446	0.126	0.851	11.482	<0.001

β: Regression coefficient, se: Standard error, zβ: Standardized regression coefficient. Bolded sections are statistically significant (p<0.05).

the Parental Self-Efficacy Scale of Nature Engagement were statistically significant (p<0.05).

Reliability and Item Analyses

Cronbach Alpha coefficients of the Commitment to Nature Parent Self-Efficacy scale (Kartal & Dirlik, 2016). It was calculated as 0.94 for the Access to Nature Subscale, 0.85 for the Communicating about Nature Subscale, 0.94 for the Overcoming Personal Barriers Subscale, and 0.93 for the Overcoming Situational Barriers Subscale. In this case, it can be said that the reliability of the measurements obtained in terms of stability is good and very good.

The effects between the items in the Parental Self-Efficacy Scale of Nature Engagement and the subscales are presented in Table 8.

When Table 8 is analyzed, it is seen that each of the path coefficients of all subscales on 22 items is statistically significant (p<0.05). All subscales have a highly statistically significant effect on the items.

The findings regarding the evaluation of the effects between the subscales of the Nature Connectedness Parental Self-Efficacy Scale are presented in Table 9.

When Table 9 is examined, it is found that the relationships between the subscales of the Parental Self-Efficacy Scale of Commitment to Nature, Access to Nature, Communicating about Nature, Overcoming Personal Barriers, and Overcoming Situational Barriers are statistically significant.

Discussion

In this study, it was aimed to conduct a Turkish adaptation, validity, and reliability study of the Commitment to Nature Parental Self-Efficacy Scale. When the studies in the literature are examined, it is seen that awareness and commitment to nature is an emerging issue. For this reason, it was decided that it would be appropriate to adopt the Commitment to Nature Parental Self-Efficacy Scale to Turkish culture to contribute to the national literature.

Within the scope of the research, the necessary permissions were obtained and the process started with the Turkish translation. Forward-backward translation technique was used to ensure language equivalence. Field experts were consulted. The experts whose opinions were consulted stated that all items were expressed appropriately and were necessary. Then, a pilot study was conducted with a small group of parents to ensure the comprehensibility of the statements.

Açımlayıcı faktör analizinde verilerin faktör analizine uygunluğunun değerlendirilmesi için korelasyon matrisi incelenmiştir. Korelasyon matrisinde yer alan katsayıların 0.30' dan büyük olmaması, maddelerin bulunduğu faktör yapısına uygun olduğunu göstermektedir (Hair vd., 1998). Veri matrisindeki değişkenler arasındaki korelasyonun istatistiksel olarak sınanmasında Bartlett küresellik testi kullanılmıştır (Bartlett, 1950). Bartlett küresellik testinde maddeler arasında oluşturulan matrisin birim matris olup olmadığı test edilmiştir. Bu araştırmada Barlett testi sonucu 8676.482 (p<0.05) olarak elde edilmiştir. Ayrıca korelasyon ve kısmi korelasyon katsayılarından yararlanılarak elde edilen Kaiser-Meyer-Olkin (KMO) ölçütü de verilerin faktör analizine uygunluğunu değerlendirmektedir. Örneklem yeterlilik ölçütü olan KMO, 0-1 arasında değer almaktadır. KMO değerinin 0.5' ten büyük olması yeterli kabul edilmektedir (Cerny & Kaiser, 1997). Bu çalışmada örneklem yeterliğini test etme amacıyla yapılan analizde KMO değeri 0.95 olarak hesaplanmış ve çok iyi olarak değerlendirilmiştir.

In the study, the principal components method was used to obtain the factors. In determining the appropriate number of factors, factor selection criteria were taken into consideration as the number of eigenvalues greater than one. In addition, factor rotation was performed to clarify the variables contributing to the formation of each common

factor. The Varimax method was applied to this process. The item-total correlation coefficient value of 0.20 and above is interpreted as the item is compatible with the overall scale (Crocker & Algina, 2006). In this study, item-total correlation values ranged between 0.592 and 0.876. Therefore, no item was removed from the scale.

The Cronbach's Alpha coefficients of the Parental Self-Efficacy for Nature Engagement scale (Kartal & Dirlik, 2016) were calculated as 0.94 for the Access to Nature Subscale, 0.85 for the Communicating about Nature Subscale, 0.94 for the Overcoming Personal Barriers Subscale, and 0.93 for the Overcoming Situational Barriers Subscale. In this case, it can be said that the reliability of the measurements obtained in terms of stability is good and very good. These results are interpreted as the measurement tool is reliable.

Within the scope of CFA, $\chi 2/df$, RMSEA, SRMR, IFI, TLI, CFI, and GFI were used to assess the factor validity of the models. In RMSEA, a cut-off value close to 0.06 or 0.08 is generally considered acceptable. IFI, TLI, CFI, and GFI fit indices exceeding 0.90 are considered evidence of adequate model fit. In this study, RMSEA≤0.05, IFI, TLI, CFI ≥0.90, and GFI≥0.85 were determined as acceptable (Schumacker & Lomax, 2004; Hu & Bentler, 1999; Thompson, 2004; Kline 2015). The model ($\chi 2/df=3.294$) obtained for the Nature Engagement Parental Self-Efficacy Scale consists of four dimensions. The fit indices for this model also show that the model is compatible at an acceptable level.

The findings of this study are in line with the findings of previous studies and support the positive relationship between attachment to nature and parenting self-efficacy (Capaldi et al., 2019; Engen & Sæther, 2021; Hansmann et al., 2020). This study shows that the Turkish-adapted Nature Attachment and Parental Self-Efficacy Scale is a valid and reliable measurement tool. This scale provides an important tool for the development and evaluation of nature-connected parenting programs and interventions.

Conclusions and Recommendations

In this study, it was aimed to adapt the "Nature Connectedness Parental Self-Efficacy Scale" into Turkish and to conduct a validity and reliability study. The Nature Connectedness Parental Self-Efficacy Scale is seen as a valid measurement tool that measures the characteristics collected under four dimensions. The results of the study show that the path coefficients for all dimensions are statistically significant. In addition, it was determined that the Nature Connectedness Parental Self-Efficacy Scale formed a four-dimensional model. The fit indices of this model show that the model is compatible at an acceptable level. These results show that the relationship between attachment to nature and parental self-efficacy is important and that parents' attachment to nature may have an impact on their children's development. For the study, it is seen that the Commitment to Nature Connectedness Parental Self-Efficacy Scale is suitable for adaptation into Turkish. In line with this suitability, it is thought that studies to increase parents' attachment to nature may be an important factor in the healthy development of children. In future studies, it is recommended to examine this relationship in more depth and to determine the effects of parents' commitment to nature on children's development.

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