

Analysis of Prospective Teachers' Environmental Identities in terms of Some Variables

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Abstract

This study examines how environmental identity of prospective teachers studying in different departments of faculty of education has changed in some variables (such as their departments, gender, hometown, families' place of residence, enrollment to courses about the environment, activities about the environment, and their membership to non-governmental organizations about the environment). The survey method was used in the current study. The sample comprised 644 prospective teachers. In this study, Environmental Identity Scale was used to collect the data. The data were analyzed using independent samples t-test and one-way ANOVA. The results showed that the prospective teachers studying social studies teaching programs had a significantly lower environmental identity than those studying in other departments (i.e., science teaching, Turkish teaching, early childhood teaching, and elementary school teaching). Additionally, prospective teachers' environmental identity levels did not differ according to their gender and whether they are members of an environmental non-governmental organization. Furthermore, it was observed that prospective teachers who grew up in rural areas and whose families lived in rural areas had a higher environmental identity than those who grew up in urban areas and whose families lived in urban areas. Moreover, the results showed that the prospective teachers who took environmental courses and who participated in environmental activities had a high environmental identity.

Keywords: Environmental identity, prospective teachers, environmental education.

Introduction

Although many environmental threats such as decrease in biodiversity, global climate change, and damage to the natural environment are constantly increasing, the behavior of individuals does not proceed in the expected direction and speed regarding the measures to be taken against them. In recent years, communication with nature has been gradually decreasing, especially as children spend more time indoors than outdoors (Soga & Gaston, 2016). However, pro-environmental behavior, attitudes, and social norms of individuals are highly related to their experiences in nature.

Although environmental attitudes and behaviors are often associated with social, political, and economic contexts, they also depend on individual identities and values (Kollmuss & Agyeman, 2002). Loving nature and living in nature also bring responsibilities toward nature. In this context, one of the definitions that expresses the relationship and loyalty of the individual with the environment is environmental identity (Nisbet, Zelenski, & Murphy, 2009). Environmental identity is a perception of the world that adds characteristics of nature to the concept of self in connection with nature

(Clayton, 2003; Schultz & Tabanico, 2007). Having a high environmental identity is associated with greater attention and concern for environmental issues and pro-environmental behavior (Prévot, Clayton, & Mathevet, 2018). Clayton (2003) argued that environmental identity gives a person a sense of belonging toward a group, such as ethnic identity or national identity. Some researchers have investigated environmental identity within the concept of underlying frameworks (Blatt, 2013; Clayton, 2003). Meanwhile, some research has been conducted to provide a relationship between environmental identity and diverse variables such as race, age, and classes (Holmes, 2003; Payne, 2001; Wells & Lekies, 2006).

The relationship of individuals with nature and the activities they perform to protect and beautify nature reveal whether they consider themselves separate from nature (Nisbet et al., 2009). Working together to reduce and prevent environmental problems requires gathering around a common environmental identity. To create a common and substantial environmental identity among adults, it is necessary to increase the number of studies on individuals who are in advanced educational circumstances and whose feelings and thoughts on environmental issues or the natural world could have an impact on other groups. As Zavestoski (2003) mentioned, environmental identities make significantly more sense when others recognize and support them. Previous studies on environmental identities have been conducted through nature-based programs involving early childhood (Williams & Chawla, 2016), suburban elementary school students describing positive experiences in the natural world (Tugurian & Carrier, 2017), affirming/disconfirming high school students' identities and behavior during environmental science classroom activities (Blatt, 2013; Blatt, 2014;), young children's environmental identity development in rural settings (Green, 2017), roles of environmental education at universities (Prévot et al., 2018), shifting priorities and evolving sense of identity of adolescents who have enthusiastically and knowledgeably embraced environmental principles and practices (Eames, Barker, & Scarff, 2018), and teens who participated in global, environmentally focused programming (Stapleton, 2015).

Attention and awareness of individuals toward the environment can be significantly increased through education (Brewer, 2002). In this context, Sauv e and van Steenberghe (2015) have emphasized that education plays an important role in changing self-perception, behavior, and attitude. Among the previous studies, the role of education about young adults' identity against environment has been merely investigated. According to the research about education of environment, if individuals communicate directly with nature, their behaviors and attitudes are influenced in a better manner (Duerden & Witt, 2010). However, most studies in this field have focused on lower levels of education, including primary and secondary school grades. The increasing sense of environmental identity among adults highly depends on providing and taking consideration of research studies, especially in advanced degree programs that are related to environmental issues or the natural world. Therefore, this study aims to determine the environmental identities of prospective teachers, which is one of the most important sources of power for adults of the future generations, and the factors that affect environmental identities (such as their departments, gender, hometown, families' place of residence, enrollment to courses about environment, activities about environment, and their membership to foundations about environment). The research questions of these studies are as follows.

- a) Is there a significant difference between prospective teachers' environmental identities and their department?
- b) Is there a significant difference between prospective teachers' environmental identities and their gender?

- c) Is there a significant difference between prospective teachers' environmental identities and their hometown?
- d) Is there a significant difference between the environmental identities of prospective teachers and their families' place of residence?
- e) Is there a significant difference between prospective teachers' environmental identities and their enrollment in courses about the environment?
- f) Is there a significant difference between prospective teachers' environmental identities and their participation in activities about the environment?
- g) Is there a significant difference between prospective teachers' environmental identities and their membership to foundations about the environment?

Methodology

Research Design

Quantitative methods are a good fit for deductive approaches, wherein a theory or hypothesis justifies the variables, purpose statement, and direction of narrowly defined research questions. The hypothesis being tested and the phrasing of the research questions govern how data will be collected (i.e., a locally developed survey, commercial instrument, or final course grades) as well as the method of statistical analysis used to examine the data (Creswell, 2009). Thus, in this quantitative study, a survey method has been used. Survey methods are surveying designs conducted on the whole universe or on a group or sample taken from that universe to arrive at a conclusion about that universe, which comprises several elements (Büyüköztürk et al., 2012; Tabachnick, & Fidell, 2015).

Sampling

The sampling of this study comprised 644 prospective teachers in a state university. The demographic properties of the sampling are presented in Table 1.

Table 1.

Demographic characteristics of the sampling

Gender	Frequency	Percentage (%)
Female	477	74.07
Male	167	25.93
Total	644	100

Department	Frequency	Percentage (%)
Elementary Education	112	17.39
Early Childhood Education	114	17.70
Social Science Education	129	20.03
Turkish Education	136	21.12
Science Education	153	23.76
Total	644	100

Data Collection Tool

In this study, the Environmental Identity Scale is used. This scale, developed by Clayton (2003), primarily comprised 24 items with a 5-point Likert scale to evaluate the "extent to which the natural environment plays an important part in a person's self-definition" (Clayton, 2003). Higher environmental identity scores indicated a more nature-connected identity. Thereafter, a Turkish version of the instrument was adapted by Clayton and Kiliç (2013). Twenty-four items in this scale were related to the understanding and identification of individuals toward the natural environment. Participants were to rate the items by utilizing a 7-point Likert-type scale ranging from 1 (completely wrong) to 7 (completely true). The scores of the categories were scaled as follows: "24-52 points: very weak"; "53-81 points: weak"; "82-110 points: moderate"; "111-139 points: strong"; and "140-168 points: very strong." Based on the reliability analysis of the test, the reliability coefficient was found as 0.91, indicating a reliable scale.

Analysis of Data

SPSS 22.0 statistical program is used for data analysis. Percentages of participants are given according to selected variables as mentioned in the research questions. The descriptive statistics of Environmental Identity Scale total points are presented in Table 2.

Table 2.

Descriptive statistics of Environmental Identity Scale total points

N	644
\bar{X}	127.398
σ	22.672
Skewness	-.690
Kurtosis	.384
Minimum	32
Maximum	168
Range	136

Table 2 shows that the coefficient of skewness is -0.690 and of kurtosis is 0.384 . These coefficients are enough to determine that these points obey the normal distribution as Field (2009) stated that coefficients reveal more reliable results than Kolmogorov-Smirnov and Shapiro-Wilk test results for the normality of data. As parametric test assumptions, as presented in Table 2, are provided in the analysis of the data, a t-test is used for independent groups, and one-way ANOVA test is used for related research questions. The significance level of .05 is taken as a criterion in the interpretation of whether the findings are significant.

Findings

In this section, the findings about the environmental identities of prospective teachers in relation to some variables are presented.

- *Environmental identities of prospective teachers with respect to their departments*

To determine whether there is a significant difference between prospective teachers' environmental identities and their department, one-way ANOVA is used.

As seen in Table 3, the total mean of environmental identity score of all prospective teachers has been found as $\bar{x} = 119.357$ ($\sigma = 23.172$). The prospective teachers that are enrolled in early childhood education have the highest mean ($\bar{x} = 130.325$; $\sigma = 23.424$),

whereas the prospective teachers that are enrolled in social science education have the lowest mean ($\bar{x} = 119.357$; $\sigma = 23.172$).

Table 3.

Descriptive statistics of Environmental Identity Scale of prospective teachers with respect to their departments

Department	N	\bar{x}	σ
Social Science Education	129	119.357	23.172
Turkish Education	136	127.926	21.296
Elementary Education	112	129.580	23.324
Science Education	153	129.929	21.044
Early Childhood Education	114	130.325	23.424
Total	644	127.398	22.672

As seen in Table 4, there is a statistically significant difference between the Environmental Identity Scale scores of prospective teachers with respect to their departments ($F_{(4-639)} = 5.432$, $p < 0.05$).

Table 4.

One-way ANOVA test results for the Environmental Identity Scale scores of prospective teachers with respect to their departments

	<i>Sum of Squares</i>	<i>df</i>	<i>Mean of Squares</i>	<i>F</i>	<i>p</i>
Between Groups	10869.971	4	2717.493	5.432	.000
Within Groups	319648.708	639	500.233		
Total	330518.679	643			

The post hoc Gabriel test is used to reveal among which groups the difference exists as there are different numbers of participants in each group. The test results presented in Table 5 reveal that the Environmental Identity Scale scores of social science prospective teachers are different than those in other departments. However, no significant difference is evident among the Environmental Identity Scale scores of other prospective teachers.

Table 5.

Post hoc test results for the Environmental Identity Scale scores of prospective teachers with respect their departments

		(I) Department	Mean Difference	Std. Error	p.
Gabriel	Science Education	Social Science Education	10.57290*	2.67344	.001
		Early Childhood Education	-.39507	2.76722	1.000
		Turkish Education	2.00302	2.63584	.997
	Social Science Education	Primary Education	.34913	2.78134	1.000
		Early Childhood Education	-10.96797*	2.87503	.001
		Turkish Education	-8.56988*	2.74881	.019
	Early Childhood Education	Primary Education	-10.22377*	2.88862	.004
		Turkish Education	2.39809	2.84010	.994
		Primary Education	.74420	2.97563	1.000
	Turkish Education	Primary Education	-1.65389	2.85386	1.000

- *Environmental identities of prospective teachers with respect to their gender*

To determine whether there is a significant difference between prospective teachers' environmental identities and their gender, independent samples *t*-test is used.

As seen in Table 6, the mean of environmental identity score of female prospective teachers has been found as $\bar{x} = 127.319$ ($\sigma = 22.619$). The score for one of the male prospective teachers has been found as $\bar{x} = 127.623$ ($\sigma = 22.889$). The *t*-test result reveals that there is no significant difference between prospective teachers' environmental identities and their gender ($t_{(642)} = 0.149$, $p > 0.05$).

Table 6.

Independent samples t-test results for the Environmental Identity Scale points with respect to gender

	N	\bar{X}	σ	df	t	p
Female	477	127.319	22.619	642	.149	.882
Male	167	127.623	22.889			

- *Environmental identities of prospective teachers with respect to their hometown*

To determine whether there is a significant difference between prospective teachers' environmental identities and their hometown, independent samples *t*-test is used.

As seen in Table 7, the mean of environmental identity score of prospective teachers who has an urban hometown has been found as $\bar{x} = 124.328$ ($\sigma = 23.613$). One of the

prospective teachers who has rural hometown has been found as $\bar{x} = 130.468$ ($\sigma = 21.288$). The t -test result reveals that there is a significant difference between prospective teachers' environmental identities and their hometown ($t_{(642)} = -3.466$, $p < 0.05$).

Table 7.

Independent samples t-test results for the Environmental Identity Scale points with respect to hometown

	<i>N</i>	\bar{X}	σ	<i>df</i>	<i>t</i>	<i>p</i>
Urban	322	124.328	23.613	642	-3.466	.001
Rural	322	130.468	21.288			

- *Environmental identities of prospective teachers with respect to their families' place of residence*

To determine whether there is a significant difference between prospective teachers' environmental identities and their families' place of residence (urban-rural), independent samples t -test is used.

As seen in Table 8, the mean of environmental identity score of prospective teachers who have urban place of residence has been found as $\bar{x} = 124.863$ ($\sigma = 23.766$). One of the prospective teachers who has a rural place of residence has been found as $\bar{x} = 130.112$ ($\sigma = 21.143$). The t -test result reveals that there is a significant difference between prospective teachers' environmental identities and their families' place of residence ($t_{(642)} = -2.953$, $p < 0.05$).

Table 8.

Independent samples t-test results for the Environmental Identity Scale points with respect to families' place of residence

	<i>N</i>	\bar{X}	σ	<i>df</i>	<i>t</i>	<i>p</i>
Urban	333	124.863	23.766	642	-2.953	.003
Rural	311	130.112	21.143			

- *Environmental identities of prospective teachers with respect to their enrollment in the courses about environment*

To determine whether there is a significant difference between prospective teachers' environmental identities and their enrollment in courses about the environment, independent samples t -test is used.

As seen in Table 9, the mean of environmental identity score of prospective teachers who enrolled in an environmental course has been found as $\bar{x} = 130.691$ ($\sigma = 21.041$). One of the prospective teachers who did not enroll has been found as $\bar{x} = 125.005$ ($\sigma = 23.523$). The t -test result reveals that there is a significant difference between prospective teachers' environmental identities and their enrollment in the courses about the environment ($t_{(642)} = 3.164$, $p < 0.05$).

Table 9.

Independent samples t-test results for the Environmental Identity Scale points with respect to enrollment in courses about environment

	<i>N</i>	\bar{X}	σ	<i>df</i>	<i>t</i>	<i>p</i>
Enrolled	271	130.691	21.047	642	3.164	.002
Not Enrolled	373	125.005	23.523			

- *Environmental identities of prospective teachers with respect to their participation in activities about the environment*

To determine whether there is a significant difference between prospective teachers' environmental identities and their participation in activities about the environment, independent samples *t*-test is used.

As seen in Table 10, the mean of environmental identity score of prospective teachers who participated in activities about the environment has been found as $\bar{x} = 131.145$ ($\sigma = 23.998$). One of the prospective teachers who did not participate in activities about the environment has been found as $\bar{x} = 125.426$ ($\sigma = 21.713$). The *t*-test result reveals that there is a significant difference between prospective teachers' environmental identities and their enrollment in courses about the environment ($t_{(642)} = 3.062, p < 0.05$).

Table 10.

Independent samples t-test results for the Environmental Identity Scale points with respect to participation to activities about environment

	<i>N</i>	\bar{X}	σ	<i>df</i>	<i>t</i>	<i>p</i>
Participated	222	131.145	23.998	642	3.062	.002
Not Participated	422	125.426	21.713			

- *Environmental identities of prospective teachers with respect to their membership to a foundation about environment*

To determine whether there is a significant difference between prospective teachers' environmental identities and their membership to a foundation about the environment, independent samples *t*-test is used.

As seen in Table 11, the mean of environmental identity score of prospective teachers who are members of a foundation about the environment has been found as $\bar{x} = 130.539$ ($\sigma = 22.811$). One of the prospective teachers who are not a member of any foundation about the environment has been found as $\bar{x} = 126.736$ ($\sigma = 22.609$). The *t*-test result reveals that there is no significant difference between prospective teachers' environmental identities and their membership to a foundation about environment ($t_{(642)} = 1.615, p > 0.05$).

Table 11.

Independent samples t-test results for the Environmental Identity Scale points with respect to membership to a foundation about environment

	<i>N</i>	\bar{X}	σ	<i>df</i>	<i>t</i>	<i>p</i>
Member	112	130.539	22.811	642	1.615	.107
Not Member	532	126.736	22.609			

Conclusion and Discussion

According to the results of the research, it can be concluded that prospective teachers from different programs may differ in their environmental identity. The study conducted with 644 college students also showed a significant difference in the levels of environmental identity in terms of their academic programs. The current research concluded that the prospective teachers studying in the social studies teaching department had a significantly lower environmental identity than those studying in other departments. In the context of prospective teachers included in the sample, the department with the most discipline regarding environmental issues is social studies teaching; however, achieving this result supports that the differences between individuals in certain programs do not always reflect the effect of the program, as stated by Arnocky and Stroink (2011). Prévot et al. (2018) indicated significant differences in the environmental identity level of students in different academic curricula (i.e., ecology, other sciences and political sciences).

When the literature is analyzed, recent studies have revealed that women tend to report stronger environmental attitudes, anxieties, and behaviors than men (Luchs & Mooradian, 2012; Scannell & Gifford, 2013; Tikka, Kuitunen, & Tynys, 2000). On the other hand, results of this study indicated no significant difference between the environmental identity levels of female and male teacher candidates. Literature reviewing studies of gender differences in environmental attitudes and behaviors indicated that the results were inconsistent; that no clear differences in gender could be discerned (Gifford & Nilsson, 2014). Our result coincides with that of similar studies investigating environmentally friendly behaviors and environmental concerns of women and men (Schultz & Tabanico, 2007; Tindall, Davies, & Mauboulès, 2003).

The current study has also indicated that prospective teachers growing up in rural areas have a significantly higher environmental identity than those growing up in urban areas. According to the literature, childhood habitat experiences and current environmental identity are closely related, and adult environmental identity may have been influenced by experiences of nature during childhood (e.g., Chawla, 1999). As environmental identity is closely related to childhood upbringing, it is expected that people living in rural areas will have a high environmental identity because of the possibility of regular communication with nature (Prévot et al., 2018). Additionally, there are studies that state environmental identity is mostly shaped by an individual's early experiences of environmental problems and nature (Arnold et al., 2009; Chawla, 1999; Prévot et al., 2018). Literature regarding the effectiveness of environmental education yields that direct experiences in nature are important in influencing attitudes and behaviors, and, in fact, experiences in nature may serve to create (or activate) a link between knowledge and behavior (Duerden & Witt, 2010). The positive relationship between living in rural areas and the existing environmental identity reveals the importance of experiencing nature in childhood (Chawla, 1999).

The data obtained in this research shows that prospective teachers whose families reside in rural areas have a significantly higher environmental identity than those whose families reside in urban areas. According to the social learning theory of Bandura (1977), children's actions are influenced by the behavior and thinking of adults. Parents' attitudes toward the environment, the time they spend in nature, and their interaction with nature, that is, the relationship of their environmental participation together with environmental identity, are important. It is expected that people who connect with the natural environment will have a positive pro-environmental attitude and an intense participation in environmental activities. Small cities and villages provide more opportunities for people to connect with natural areas such as parks, agricultural lands, and forests that metropolitan cities cannot protect. Children whose parents are more involved with nature tend to interact more with nature (Hammond, McFarland, Zajicek, & Waliczek, 2011; McFarland, Zajicek, & Waliczek, 2014).

The results of this research reveal that the environmental identity of prospective teachers who participated in environmental activities and/or who enrolled in the courses regarding environment is higher than the environmental identities of prospective teachers who did not have these chances. Environmental identity develops with the increase in loyalty to the natural world through activities such as playing in nature during childhood, exploring natural areas in youth and adulthood, gardening, hunting, and fishing (Williams & Chawla, 2016). One of the objectives of environmental education is to provide every person with the opportunity to gain the commitment, skills, knowledge, value, and attitude required to protect and improve the environment (UNESCO, 1978). Moreover, some studies also indicated that undergraduate students who complete environment related courses provided responsive attitudes towards environmental issues and possessed higher level of environmental identity (Smith-Sebasto, 1995; Ewert & Baker, 2001).

The current study implies that the opportunities for children and young adults to experience nature can be increased to develop environmental identity that forms the basis of environmentally friendly behaviors. Moreover, a strong environmental identity can be difficult to maintain without social support (Zavestoski, 2003). Therefore, outdoor activities can be organized in groups, especially in rural areas, with prospective teachers. Additionally, college-level courses with environmental content can contribute to environmental awareness and development of environmental identities.

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Öğretmen Adaylarının Çevre Kimliklerinin Farklı Değişkenler Açısından İncelenmesi

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Özet

Bu çalışmada, eğitim fakültesinin farklı bölümlerinde öğrenim gören öğretmen adaylarının çevre kimliklerinin bazı değişkenler (öğrenim gördükleri bölümler, cinsiyetleri, büyüdüğü yer, ailelerinin ikamet ettiği yer, çevre eğitimi dersi alıp-almama durumları, çevre ile ilgili etkinliklere katılıp-katılmama durumları, çevresel bir sivil toplum kuruluşlarına üye olup-olmama durumları) açısından nasıl değiştiğinin ortaya konması amaçlanmıştır. Araştırmada tarama modeli kullanılmıştır. Araştırmanın örneklemini 644 öğretmen adayı oluşturmaktadır. Araştırmada veri toplama aracı olarak Clayton ve Kılınc (2013) tarafından uyarılma çalışması yapılan “Çevre Kimliği Ölçeği” kullanılmıştır. Verilerin analizinde bağımsız gruplar t testi, tek yönlü varyans analizi kullanılmıştır. Araştırma sonuçlarına göre, Sosyal Bilgiler öğretmenliği bölümünde öğrenim gören öğretmen adaylarının diğer bölümlerde (Fen Bilgisi öğretmenliği, Türkçe öğretmenliği, Okul Öncesi öğretmenliği, Sınıf öğretmenliği) öğrenim gören öğretmen adaylarından anlamlı olarak daha düşük bir çevre kimliğine sahiptir. Ayrıca öğretmen adaylarının çevre kimlik düzeyleri cinsiyetlerine ve çevresel bir sivil toplum kuruluşuna üye olup olmama durumlarına göre farklılaşmamaktadır. Kırsal bölgelerde büyüyen ve aileleri kırsal bölgelerde ikamet eden öğretmen adaylarının kentsel bölgelerde büyüyen ve aileleri kentsel bölgelerde ikamet eden öğretmen adaylarından daha yüksek bir çevre kimliğine sahip olduğu görülmüştür. Çevre dersi alan, çevre ile ilgili etkinliklere katılan öğretmen adaylarının da yüksek bir çevre kimliğine sahip olduğu sonuçları elde edilmiştir.

Anahtar Kelimeler: Çevre kimliği, öğretmen adayları, çevre eğitimi.