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Öğretim Elemanlarının Çevreye Karşı Tutumları: Bir Q Metot Çalışması

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Makale Bilgisi	ÖZET
<i>Geliş Tarihi:</i> 19.11.2019	Bu çalışmanın amacı öğretim elemanlarının çevre ile ilgili tutumlarını ortaya çıkarmak ve bu tutumların altında yatan nedenleri anlamaktır. Bu çalışmanın örneklemini Türkiye'de bir eğitim fakültesinde çalışan on dört öğretim üyesi oluşturmaktadır. Çalışma sübjektif görüşleri ortaya çıkarmak için tanımlanan Q yöntemi kullanılarak tasarlanmıştır. Veriler her ne kadar görüşmeler yoluyla toplanmış ve çoğunlukla nicel bir şekilde analiz edilmiş olsa da, sonuçlar genellikle nitel olarak yorumlanmıştır. Tüm katılımcılar için Q sıralama verileri PQMethod isimli yazılıma girilmiş ve Q yöntemi çalışmalarında sıklıkla kullanılan bir faktör çıkarma yöntemi olan centroid faktör analizinde, veriler Q rotasyonu ve Varimax rotasyonun da döndürülerek faktörlerin anlamlılığı ortaya koyulmuştur. Yapılan Q analizine göre, katılımcılar kapsamlı bir faktörün yanı sıra, koruyucu, fayda merkezli ve fayda karşıtı faktörler olarak gruplandırıldı. Katılımcıların çoğunluğu genel olarak çevre merkezli bir tutuma sahipken, bazıları ise çevreye karşı insan merkezli bir tutuma sahiptir. Öğretim elemanlarının tutumları ağırlıklı olarak anketteki kısıtlayıcı, öznel veya genel ifadelerden, kendi duygusal yapılarından, çalışma alanlarından ve dini inançlarından etkilenmiştir. Çalışmadan elde edilen bulgular, eğitim çalışmalarında pek rastlanmayan metodolojisi ile gelecekteki araştırmalar için önemli bir potansiyele sahip olabilir. Anahtar Kelimeler: Q metot, çevre eğitimi, çevresel tutumlar, çevresel değerler
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Faculty Members' Attitude towards Environment: A Q Method Study

Article Information	ABSTRACT
<i>Received:</i> 19.11.2019	The aim of this study is to reveal the attitudes of faculty members about the environment and to understand the reasons underlying these attitudes. The sample of this study consists of fourteen faculty members who work at an education faculty in Turkey. This study was designed by using Q method, which is defined as revealing subjective views. Although the data collected through interviews and were mostly analyzed quantitatively, the results were interpreted predominantly in qualitative ways. The Q sorting data for all participants were entered into the PQMethod software. Through using "centroid factor analysis", which is a factor extraction method that is frequently used in the Q method studies, "Q rotation" and "Varimax rotation" were used to determine the significance of the factors. After the analysis, the participants were grouped as comprehensive, protective, utilitarian-centered, and anti-benefit factors. The majority of the participants generally have an ecocentric attitude, while some have anthropocentric attitude towards environment. Faculty members' attitudes were predominantly influenced by restrictive, subjective or general expressions in the survey, their own emotional structures, their fields of the study, and their religious beliefs. The findings of this study may have a potential significance for the future research with its unique methodology.
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1. INTRODUCTION

Increasing the population, industrialization, distorted urbanization, and irresponsible consumption of people's natural resources causes serious environmental problems (Çimen and Yılmaz, 2014; Karatekin, 2013). The increasing environmental problems brought various natural disasters and diseases, and thus reaching the dimensions that threaten human health, led

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the people who tried to take the sovereignty of nature to take various precautions against environmental deformation (Sönmez, 2018). The most effective interventions to protect the environment is to transform people's destructive attitudes and behaviors that cause environmental problems into environment-friendly attitudes and behaviors by providing more sensitive and conscious people (Uzun and Sağlam, 2006). This is only possible with a qualified environmental education, which helps individuals to develop eco-friendly attitudes and sensitive behaviors towards environment (Erten, 2004; Yıldız, 2014). In a qualified environmental education, it is very important to have sufficient understanding of people's current knowledge levels, attitudes and behaviors about the environment and the factors that affect their attitudes and behaviors (Cardeiro and Sayler, 1994).

Ethical understanding towards environment is one of the factors affecting people's environmental attitudes and behaviors (Benton and Benton, 2006; Bozdemir and Faiz, 2018; Erten and Aydoğdu, 2011; Gerçek, 2016). Behind people's behavior and attitudes, there are various value judgments that guide them. Environmental ethics is the value judgments that people have about the environment (Özdemir, 2016; Özer, 2015). The value judgments towards the environment are one of the determinants of people's ethical approaches to the environment (Özdemir, 2016). In the literature, there are two basic environmental ethics approaches, namely anthropocentrism (human centered) and ecocentrism (environment centered), which have been put forward (Kortenkamp and Moore, 2001). Anthropocentrism expresses an ethical understanding that the environment is not valuable on its own, but that the value of the environment is determined according to its benefits to human beings and how it affects people (MacKinnon and Fiala, 2014; Thompson and Barton, 1994). In other words, human interests are prioritized in this approach and it is normal for human to take the environment and other living things under the control for the needs, and the environment should be protected for the continuation of the human generation. On the other hand, ecocentrism represents an ethical approach that states that the environment is a stand-alone value with living and inanimate beings (Amerigo et al., 2007; Casey and Scott, 2006; Kortenkamp and Moore, 2001; Thompson and Barton, 1994). In this approach, it is argued that the environment should be protected without having any consideration of the interests of the people or continuation of the human generation (Dunlap and Van Liere, 1978; MacKinnon and Fiala, 2014). Thompson and Barton (1994) added antipathetic attitudes, as a third category, which include individuals' antipathies towards the environment (the unpleasant attitudes or the lack of interest towards environmental issues). Antipathetic attitudes are thought to have been developed mainly against intensive environmental protection activities (Atlı, Uzun, Saraç, Sağlam, and Sağlam, 2015; Erten and Aydoğdu, 2011).

The literature has examined the environmental attitudes of students, teachers and teacher candidates at K-12 levels in the context of environmental ethics for a long time. (Atlı et al., 2015; Casey and Scott, 2006; Karahan, 2009; Surmeli and Saka, 2013; Yurttas and Çağlar, 2019). These studies were mostly conducted with teacher candidates (Alpak, 2016; Cappellaro, 2016; Erten and Aydoğdu, 2011; Sönmez, 2018). Kim and Fortner (2006) found that teacher candidates' environmental attitudes are an important factor that affect their level of interest to environmental issues. Alpak-Tunç and Yenice (2017) found out that teacher candidates' environmental ethical attitudes were related to their attitudes towards sustainable environment. Fernández - Manzanal, Rodríguez - Barreiro and Carrasquer (2007) in their study of undergraduate students' attitudes towards the environment, found that the attitude scores of the girls were higher than the boys and that the attitude scores of the senior students were higher than freshman. Tuncay (2010), in her study, examined the ethical reasoning patterns exhibited by science teacher candidates against environmental problems. She revealed that the ethical reasoning patterns of teacher candidates differ significantly according to class level. Similarly, Bozdemir and Faiz (2018) found that when the teacher candidates' grade level increased, their ecocentric attitude scores increased and antipathetic attitude scores decreased.

1.1. Statement of the Problem

Considering the studies in the literature, it might be said that the environmental attitudes of teacher candidates are mostly shaped during their undergraduate education. In this sense, it is important to examine the environmental attitudes of the faculty members who work in the education department when it is considered that the environmental attitudes of the teacher candidates may be affected by the attitudes of the faculty members. Also, the lack of studies that investigate the environmental attitudes of faculty members in the context of environmental ethics makes this study important.

It is also seen that, in the most of the environmental studies, the data have been collected with quantitative surveys and the findings were interpreted quantitatively. Therefore, it is assumed that this study might add a valuable insight into existing literature in terms of its method. The most important feature of the Q method is that the participants sort the statements instead of specifying the extent to which they agree with each statement, as in the case of classical Likert-type scales. In a q method study, participants generally sort the statements according to their own perspective from the most agree one to the least agree one. During the sorting process, participants are asked to think aloud and explain the reasons for their sorting. In this respect, it is focused on the different perspectives of the participants and the underlying causes of these different perspectives.

1.2. Purpose of the Study

The aim of this study is to reveal the attitudes of faculty members towards the environment and to understand the reasons underlying these attitudes. In this context, the following research questions guide the study:

1.3. Problem of the Study

The following research questions guide the study:

1. What is the attitude of faculty members towards the environment?
2. What are the underlying causes of faculty members' attitudes towards the environment?

2. METHODOLOGY

This study was designed by using Q method, which is defined as revealing subjective opinions (Stephenson, 1955). Q is known to be a powerful method for understanding complex situations involving human subjects (McKeown and Thomas, 1988; Zabala, 2014). Despite its mathematical structure, the aim of the Q method is to understand people's views, attitudes, and perspectives on a topic by sorting the statements (Q samples) (McKeown and Thomas, 1988). In this study, although the data is collected through interviews and were mostly quantitatively analyzed, the results were predominantly interpreted qualitatively.

2.1. Participants

The participants of this study are 14 faculty members (6 males, 8 females; average age: 34) who are working at the same education faculty at a State University in the North Eastern of Turkey. The demographic information of the faculty members and their field of study are given in the table below (Table 1). Since the purpose of a Q study is to identify typical representations of different perspectives rather than to find the proportion of individuals with specific perspectives (Simons, 2013), the small number of participants does not make any disadvantage because it is important to understand how different perspectives are represented in this method (Akhtar-Danesh, Batunann and Cordingley, 2008; Zabala, 2014).

Table 1.

Demographic Information of the Participants

Code	Title	Department	Gender	Field of the Study
A1	Teaching Asst.	Pre-School Ed.	Female	Early childhood ed., environmental ed. in pre-school, values ed.
A2	Associate Prof.	Pre-School Ed.	Male	Environmental ed.
A3	Assistant Prof.	Lifelong Learning Ed.	Female	Motivation, self-efficacy, and social science ed.
A4	Research Asst.	Computer and Tech. Ed.	Male	Curriculum, modular design
A5	Research Asst. (Dr.)	Mathematics Ed.	Female	Pedagogical content knowledge, mathematics ed.
A6	Research Asst.	Pre-School Ed.	Male	Digital story, reading story, family ed.
A7	Assistant Prof.	Psychological Counseling and Guidance Ed.	Female	Gender, marriage, family ed.
A8	Assistant Prof.	Science Ed.	Male	Mental models, astronomy ed., physics ed.
A9	Assistant Prof.	Science Ed.	Female	Pedagogical content knowledge, nature of science, environmental ed.
A10	Assistant Prof.	Science Ed.	Male	Student-teacher interaction, inquiry-based teaching
A11	Assistant Prof.	Primary Ed.	Female	Science ed., primary ed., astronomy, environmental ed., mental models.
A12	Assistant Prof.	Turkish Ed.	Male	Turkish literature ed., values ed.
A13	Research Asst. (Dr.)	Educational Curriculum	Female	Socio-scientific theories, nature of science
A14	Assistant Prof.	Social Science Ed.	Female	Social identity, values ed., social science ed.

2.2. Data Source

The Q samples used in the study were taken from an environmental attitude scale firstly developed by Thompson and Barton (1994) and adapted to Turkish by Erten (2007). The scale consists of three factors: ecocentric, anthropocentric and antipathetic attitudes. The environmental attitude scale consists of 27 items, 12 of which are ecocentric, 8 anthropocentric and 7 antipathetic. In the general 7-point likert scale, the items are graded from 1 to 7, from "completely disagree" to "completely agree". The Cronbach's alpha reliability coefficient of ecocentric, anthropocentric, and antipathetic attitudes was reported as .77, .78, .92 respectively (Erten, 2007).

2.3. Data Collection Procedure

In its most common use, the Q approach consists of selecting a series of statements and asking the participants to sort them on a scale from the most agreed to the most disagreed (see Figure 1 for the scale example). In this study, in the interviews conducted with each faculty member, they were asked to sort the 27-statements (Q sample from environmental attitude scale) from the most agreed statement (+4) to the least agreed statement (-4). The statements were shown in the form of separately and randomly numbered cards. Each interview was conducted individually in the meeting room of the education faculty and lasted approximately 45 minutes.

-4	-3	-2	-1	0	+1	+2	+3	+4
24	18	21	13	14	9	8	12	7
	27	25	26	20	6	10	3	
	23	19	22	16	4	15	11	
			17	1	2			
				5				

Figure 1. Example of a classification scheme for a Q sorting technique with 27 statements

While the faculty members sorted the statements, the researcher (first author) asked the participants to explain the statements they put in each range and asked why the statement was included in that sorting and tried to reveal the underlying reason(s). All interviews were audio recorded for Q analysis. The sorting process shows subjectivity in such a way that each statement is processed over the other statements.

2.3. Data Analysis

The Q sorting data for all participants was entered into the PQMethod (Schmolck, 2014), a program designed specifically for Q analysis. After the Q sorts obtained, the data were sent to factor analysis. The factors were obtained by using "centroid factor analysis method", which is a factor extraction method that is frequently used in the Q method studies (Brown, 1980; Schmolck, 2008; Stephenson, 1955). After centroid factor analysis, "Q rotation" and "Varimax rotation" were used to determine the significance of the factors.

As a result of the analyzes, a series of tables were created for each factor. Among these tables, there is a representative Q sorting for each factor. In these tables, the Q-sorting values (columns indicated by Q) indicate the extent to which the faculty members in the relevant factor participated in the corresponding statement within the range of -4 (strongly disagree) to +4 (strongly agree); The Z-score values (columns indicated by Z) indicate the standardized score of the respective Q values. In addition, the ratio of statements representing consensus and disagreement among the factors was reported in the outputs of Q analyzes (values expressed by "explanatory variance (%)") in Table 2 and Table 4) (Brown, 1980; McKeown and Thomas, 2013). Although each Q sorting is subjective, the factors identified in Q are based on concrete behavior and are typically reliable and repeatable (Brown, 1980). The transcribed data from the interview were analyzed by using content analysis for interpreting the factors obtained from the Q analysis. The content analysis consists of coding data, creating categories and themes from codes, and visualizing data (McMillan and Schumacher, 2010). Half of the transcribed data was reviewed by two researchers in order to get a general idea and they were coded separately by the two researchers using the code list prepared. The consistency between the coding made by the researchers was calculated using the reliability formula of Miles and Huberman (1994). The consistency between the coding of the researchers was calculated as 94%.

3. FINDINGS

3.1. Faculty Members' Attitudes towards Environment

Factors obtained by centroid factor analysis were rotated in Q rotation and Varimax rotations to determine the significance of the factors.

3.1.1. Comprehensive factor obtained from Q rotation

According to results of Q rotation analysis, all participants (except A8 and A14) were significantly involved in a single factor, which is called "comprehensive factor". Table 2 shows factor matrix with an X indicating a defining sort in which the participants were loaded in the comprehensive factor together. It was found that the comprehensive factor explained 68% of the common environmental attitudes of the faculty members.

Table 2.

Factor Matrix with an X Indicating a Defining Sort for Q Rotation

Participants	Comprehensive Factor
A1	0.8087X
A2	0.7932X
A3	0.7869X
A4	0.8650X
A5	0.8082X
A6	0.8882X
A7	0.8622X
A8	0.5996
A9	0.9459X
A10	0.8401X
A11	0.8273X
A12	0.8810X
A13	0.9301X
A14	0.6348
% Explanation Variance	68

Mean: 0.00; Standard Deviation: 2.130

The comprehensive factor includes the most and least accepted environmental attitudes that 12 out of 14 faculty members statistically agree on (see Table 3).

Table 3.

The Comprehensive Factor: Four most and least agreed to Statements by All Participants

Item	Attitudes Statements Towards Environment	Range	Z score
7	Nature alone is a valuable being.	+4	1.976
3	I sorrow when I see forests ceasing to exist (cutting, fires, etc.).	+3	1.272
6	I sorrow when I see how much the natural environment is spoiled.	+3	1.108
9	One of the most important reasons to protect nature is to protect nature for its own sake.	+3	1.083
...		...	...
22	It seems to me that most of the environmentalists are pessimistic and some of them are paranoid.	-3	-1.328
26	I am against governmental activities to protect natural life and natural resources against environmental pollution.	-3	-1.419
24	It is difficult for me to tackle environment problems.	-3	-1.480

In general, the faculty members who participated in the study thought that nature is a valuable asset by itself, that nature should not be considered human-oriented, that other living things in nature are just as valuable as humans. Although most faculty members did not think that human beings are more important than other living things, it is seen that some faculty members were undecided about this attitude when they were asked to make a sort between statements.

Yes, in order to sustain human life, nature is very important and must be in good condition, but not only for human being, but also it is very important for nature alone and with the animals and other creatures it contains. (A1)

Human being is just one of the other species in nature. Nothing else. If the natural life is disrupted and becomes a human-oriented world, all other living and inanimate natural life will be affected and the whole world will be destroyed so thus the human life too. For this reason, it is important to think and live with a focus on nature, not human. (A13)

Today, due to the increase in the population and especially the ambition of people to earn more money, nature is being destroyed and the number of buildings and towers is increasing. We remain silent to this destruction both individually and socially. I'm very emotional and very upset about this. (A5)

Faculty members expressed their sorrow due to the destruction of forests, damage and degradation of the natural environment.

I am particularly sensitive to forest fires and the destruction of forests. As a person who witnessed a forest fire, I saw that not only the trees but the animals and all the other creatures inside were burning, and it was very sad that nothing could be done. I had not slept for days. Yes, the forest does not cover the whole nature, but I am sensitive about forests because it contains more species. (A6)

Faculty members argued that in order to preserve the natural environment, both the government, as a government policy and the all individual must do their own job to protect the natural life and natural resources.

Countries all around the world should implement very important policies in order to protect natural life and to raise individual awareness. Only in this way, you can educate and raise the new generation towards nature. Otherwise, only a few people who are conscious and sensitive to nature will protect it, and unfortunately the majority of people will continue to kill it. Well, environmental education should be mandatory; the weight of environmental lessons should be increased, starting from very early ages. (A11)

3.1.2. Factors obtained from Varimax rotation

According to result of Varimax rotation, a model was formed in which the participants were divided into 3 factors (Table 4). According to this rotation, the participants, coded A1, A4, A5, A7, A9, A10, A11 and A12, were loaded in factor 1 (with 38 % explanation variance); the participants, coded A3, A6, A8, A13, and A14, were loaded in factor 2 (with 25 % explanation variance); and the participant, coded A2, was loaded in factor 3 alone (with 15 % explanation variance). The factors were named from categories and themes created by the researchers, which were formed from expressions in which those factors were dominantly represented.

Table 4.

Factor Matrix with an X Indicating a Defining Sort for Varimax Rotation

Participants	Factor 1	Factor 2	Factor 3
A1	0.7154X	0.2708	0.2869
A2	0.4672	0.1668	0.8683X
A3	0.4273	0.6806X	0.2166
A4	0.7588X	0.3648	0.2371
A5	0.5998X	0.4460	0.2584
A6	0.6380	0.6633X	0.1458
A7	0.8402X	0.2095	0.3065
A8	0.0586	0.8470X	0.2309
A9	0.7463X	0.4589	0.3640
A10	0.7919X	0.2217	0.3084
A11	0.6134X	0.2642	0.5338
A12	0.6233X	0.3902	0.4938
A13	0.5928	0.6131X	0.3983
A14	0.3109	0.7106X	0.0101
%Explanation Variance	38	25	15

Mean: 0.00; Standard Deviation: 2.130

3.1.2.1. Factor 1. Protective attitudes towards environment

Eight faculty members were loaded statistically significant in this factor (Table 4). The most and least accepted statements by the faculty members are shown in Table 5.

Table 5.

Factor 1: Four most and least agreed to Statements by the Participants

Item	Attitudes Statements Towards Environment	Range	Z score
7	Nature alone is a valuable being.	+4	2.069
9	One of the most important reasons to protect nature is to protect nature for its own sake.	+3	1.231
10	Humans are not more valuable than other beings in nature.	+3	1.199
11	Protection of animals is at least as important as health of humans.	+3	1.141
...		...	...
24	It is difficult for me to tackle environment problems.	-3	-1.315
22	It seems to me that most of the environmentalists are pessimistic and some of them are paranoid.	-3	-1.328
26	I am against governmental activities to protect natural life and natural resources against environmental pollution.	-3	-1.364
27	Superfluous value is placed on nature.	-4	-1.616

The faculty members within this factor generally thought that nature is a valuable asset alone, as is the common factor, and nature is not given much value in the world. They also believed that people are getting more selfish and human-centered towards to environment.

Countries all around the world should implement very important policies in order to protect natural life and to raise individual awareness. Only in this way, you can educate and raise the new generation towards nature. Otherwise, only a few people who are conscious and sensitive to nature will protect it, and unfortunately the majority of people will continue to kill it. Well, environmental education should be mandatory; the weight of environmental lessons should be increased, starting from very early ages. (A11)

Faculty members in this factor believed that human beings are not more valuable than other beings in nature and that the protection of other living things is as important as the health of people.

I strongly agree that other living things are just as important as humans. Even if everyone has this consciousness, nature can only find the value it deserves. Otherwise, it will continue to be consciously or unconsciously slaughtered by people who are not conscious of nature. However, each of the millions of species living in nature lives for the sake of a purpose, and no one's life is more important than the other. (A9)

In addition, faculty members within this factor stated that conservation of nature and naturalness is important and should be maintained as a government policy.

I encourage the government to work within a program about environment because people are constantly taking a sample of the behaviors of people in the government, and I think that their behavior will set an example for many people massively. For this reason, I think that the behaviors and policies they will make within a program will spread more easily to the whole country. (A12)

Table 6 shows the statements that differentiate the attitudes of the participants in this factor from the participants of the other factors. According to this, it is seen that faculty members, unlike the other factors, generally agree with the statement that one of the most important reasons to protect nature for its own sake.

Table 6.
Distinguishing Statement for Factor 1

Item	Attitudes Statements Towards Environment	Factor 1		Factor 2		Factor 3	
		q	z	q	z	q	z
9	One of the most important reasons to protect nature is to protect nature for its own sake.	+3	1.23*	0	0.31	0	0.00

(p < .05 ; asterisk (*) indicates significance at p < .01)

The Q-sort value (q) and z-score value (z) are shown in the table.

3.1.2.2. Factor 2. Benefit-centered attitudes towards environment

Five faculty members were loaded statistically significant in this factor (Table 4). The most and least accepted statements by these faculty members are shown in Table 7. Table 8 shows the statements that differentiate the attitudes of the participants in this factor from the participants of the other factors.

Table 7.
Factor 2: Four most and least agreed to Statements by the Participants

Item	Attitudes Statements Towards Environment	Range	Z score
13	One of the most important reasons to protect nature is to lengthen the life of the human being.	+4	1.593
7	Nature alone is a valuable being.	+3	1.430
1	One of the worst results of the permanent increased population is continuous occupation of natural areas.	+3	1.381
3	I sorrow when I see forests ceasing to exist (cutting, fires, etc.).	+3	1.261
...		...	...
10	Humans are not more valuable than other beings in nature.	-3	-1.463
26	I am against governmental activities to protect natural life and natural resources against environmental pollution.	-3	-1.531
22	It seems to me that most of the environmentalists are pessimistic and some of them are paranoid.	-3	-1.631
24	It is difficult for me to tackle environment problems.	-4	-1.754

Faculty members within Factor 2 thought that, unlike other factors, one of the most important reasons for protecting nature is extending the life of humanity, and the most important thing in nature is human being.

I believe that for religious reasons, it is a universe in which human is the center, and the whole universe is created for human beings. Therefore, yes, I agree to protect other living things and to provide them with a living space, but

more importantly protecting nature is important because of extending the lives of human beings and make them more comfortable. (A6)

Human may not be more valuable than other creatures in nature, but I think human is the most important being in nature. Well, to be honest, even trying to preserve or protect nature is again the desire of human beings to leave a world to live for future generations. (A6)

Faculty members within this factor showed an attitude towards environment that focuses on human being, however at the same time they thought that the nature is also a valuable being for its own sake.

Even if human being is a very important creature, the main reason for protecting nature should be to protect all living beings. If we have this consciousness, we can protect nature and all living things, and therefore human. For example, cutting trees so that people can live in better homes or facilities comfortably destroys not only those trees but also all living things that those trees and forests host. Nature is a very valuable thing and it must be the greatest aim of all of us to protect it. (A13)

Faculty members also believed that the environmentalists are realistic, not pessimistic, and they stated human beings need to know and fulfill their responsibilities both individually and governmentally.

I've been interested in and enjoyed the environment throughout my life. But unfortunately, people are very bad to nature. No one, not even the governments do their job. I think that the environmentalists are not pessimistic about nature but rather realistic. Environmentalists are making predictions about the future of nature based on the scientific data, and if this goes on, the world will no longer be a place to live. Increased fires, floods, global climate changes and so on. Unfortunately, such situations disrupt the natural balance. Everyone must fulfill their responsibility. (A13)

The faculty members in this factor stated that natural areas are occupied by human beings and thus increased forest fires, floods, and so on.

In a decade ago, we felt much cleaner air when we breathe, but now we see that our respiratory system is badly affected. With the effects of forest fires and the increasing population, we cannot breathe comfortably, and the world is becoming more and more difficult for people to live. (A8)

Table 8.

Distinguishing Statements for Factor 2

Item	Attitudes Statements Towards Environment	Factor 1		Factor 2		Factor 3	
		q	z	q	z	q	z
13	One of the most important reasons to protect nature is to lengthen the life of the human being.	0	-0.31	4	1.59*	-1	-0.47
10	Humans are not more valuable than other beings in nature.	+3	1.20	-3	-1.46*	+2	0.94

(p < .05 ; asterisk (*) indicates significance at p < .01)

The Q-sort value (q) and z-score value (z) are shown in the table.

3.1.2.3. Factor 3. Anti-benefit-centered attitudes toward environment

In this factor, where the A2 coded faculty member alone is statistically significant, the most and least accepted statements are shown in Table 9. This participant is the only Associate Professor and the fact that it carries out studies on the environment is a remarkable detail. The statements that differentiate the attitudes of this participant from those of the other faculty members are shown in Table 10.

Table 9.

Factor 3: Four most and least agreed to statements by the participant

Item	Attitudes Statements Towards Environment	Range	Z score
7	Nature alone is a valuable being.	+4	1.878
3	I sorrow when I see forests ceasing to exist (cutting, fires, etc.).	+3	1.408
6	I sorrow when I see how much the natural environment is spoiled.	+3	1.408
12	Nature must be protected notwithstanding the limitation of human needs.	+3	1.408
...			
15	Nature is important because of its benefits to human health and happiness.	-3	-1.408
17	One of the most important reasons to protect the nature is to guarantee our comfortable life.	-3	-1.408
26	I am against governmental activities to protect natural life and natural resources against environmental pollution.	-3	-1.408
27	Superfluous value is placed on nature.	-4	-1.878

The most important factor that enables this participant to take part in this factor alone is that it considers the natural environment valuable alone and independent of human beings. This participant argued that the protection of nature is more important than anything else.

I feel uncomfortable to think everything human-oriented ... Nature as alone is also very valuable, it hosts millions of living things in it. (A2)

Not respecting nature is a big human problem. Since we do not see nature alone as valuable, natural life has almost reached the point of extinction... Increased fires, cutting trees, filled the seas, gases released into the air, polluted soil and water, etc... It has disturbed the balance and natural cycle of nature. If this cycle breaks down, all living things in nature will be adversely affected. Everyone should have this consciousness. (A2)

Unlike the faculty members in the other factors, he thought that it is important to protect and make the nature sustainable because nature is important, not to increase human health or happiness. He emphasized that if this consciousness does not occur, with the increase of the population, people will see the harm of nature because of the comfort of people.

I think people use nature only to serve them. Enough value is not placed on nature. Unfortunately, with the ever-increasing population, people will continue to ignore nature and disrupt the balance only for their comfort and comfortable living. (A2)

Nature is not important only for human, but to all living and non-living beings. Perhaps in the short term, people may not give up harm to nature by thinking of themselves, but they do not know that in the long term, this harm will bring an end to mankind. Therefore, everyone should aware and get conscious of the protection on nature. (A2)

Table 10.

Distinguishing statements for factor 3

Item	Attitudes Statements Towards Environment	Factor 1		Factor 2		Factor 3	
		q	z	q	z	q	z
15	Nature is important because of its benefits to human health and happiness.	1	0.42	2	0.76	-3	-1.41*

($p < .05$; asterisk (*) indicates significance at $p < .01$)

The Q-sort value (q) and z-score value (z) are shown in the table.

3.2. Reasons Underlying Faculty Members' Attitudes towards the Environment

As a result of the content analysis, it was seen that some of the reasons affect participants' sorting on the environment attitude statements. These factors are summarized in Figure 2.

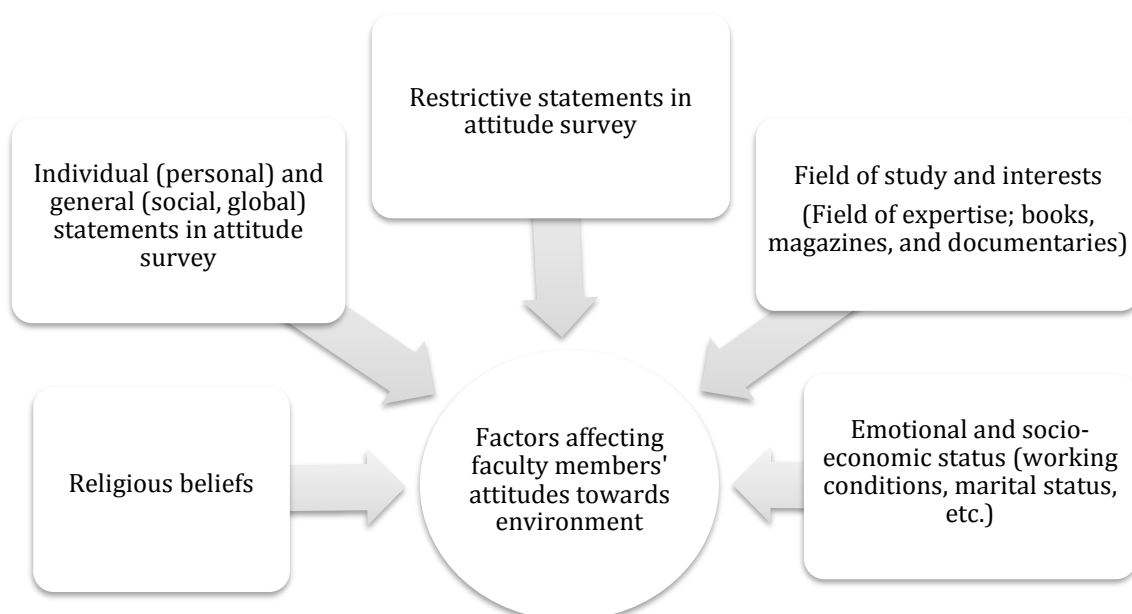


Figure 2. Reasons underlying faculty members' attitudes towards the environment

Although faculty members have agreed on some attitude statements, it was found that they put these statements into undecided section due to restrictive statements like "most" or "only", and sometimes they did not agree with these statements. For example, a faculty member who undecided about an expression was called "the worst side of cutting forests is

destroying the valuable natural resources" explained the reason for this and stated why he was undecided about this expression.

That is one of the bad things about cutting down forests, but it is not the worst part. The word "worst" here make me think again. Destroying by cutting down forests is due to the destruction of natural resources as well as damage to other living things in it and disrupting natural balance. (A1)

Another example is about a statement that "one of the most important aims of recycling is saving money". A faculty member believed that this recycling is an important goal not just for saving money but also protecting the balance of nature and the all-living creatures.

It is possible to save money as a result of recycling, but I do not think that the main purpose of recycling. The main purpose is to protect nature. At least I hope so. (A12)

It was seen that while the faculty members sorted the attitude statements in the survey, the sorting of the attitude statements in the survey were influenced by the emphasis on individual or general (global) attitude statements. It was found that faculty members' expressions showing attitudes on an individual level were listed below the more general statements about nature. All participants frequently mentioned this reason.

Researcher: Although you agree on both statements, why did you least agree on this statement of "on holidays, I spent a lot of my time enjoying nature" than the statement of "nature alone is a valuable being"?

Faculty member: Because the first statement is a more specific situation to me while the other statement is a more general attitude. It concerns all of nature. (A9)

Other faculty members also stated how this issue effect influenced their sorting of attitudes statement towards environment.

I have always preferred to put attitudes that include social expressions at the top. I think the general things about nature are more important. When I did my sorting, I made it from a general to specific logic, I think the important thing is the nature, then the creatures inside, then the human, then me and the last is money. (A3)

In my sorting, I put forward the statements that protecting the pure natural structure of nature are important for maintaining the natural balance. Then I put down the expressions that concern all living things that are inseparable parts of nature, and I put down some more human pleasures and personal expressions as a little importance. (A10)
If we don't give the necessary importance to nature, there will be no nature that I will spend time or vacation or even breathe in. Therefore, the statements about protecting nature are more important than the ones that only concern me. (A13)

It was determined that faculty members are affected by working conditions and marital status while sorting environmental attitude statements. For instance, it is remarkable that a faculty member, who has undecided attitude towards the statement of "on holidays, I spent a lot of my time enjoying nature", put forward his marital status and working conditions for explaining the reason for this.

Before I started working at the university, I was able to have more vacations and often spent my holidays in nature and enjoyed it, but after I married and started to work in here, I can no longer make my decisions alone... My spouse and the kids' wishes are at the forefront. But if I make my own decisions freely, I would definitely prefer a vacation in nature. (A2)

It was seen that faculty members, especially those with more emotional character, care more about nature and are more sensitive to the events that lead to the deaths of living things such as forest fires.

I am very sensitive about forest fires and natural disasters. I even cry when I see it. I feel very sad when I think of dying or agonal creatures. (A4)

The fact that the participants who made studies about the environment and stated that they were interested in environmental science were included in the same factor (Factor 1 and Factor 3) shows that the academic interests of the faculty members affect their environmental attitudes. It was seen that especially the books and documentaries that they read and watched about the environment affect their attitudes towards the environment.

In the last documentary I watched and the articles I read, I think that the ozone layer has started to regenerate itself and there is nothing to be afraid of. I'm undecided about it, it seems to me that some environmentalists are exaggerating. (A2)

The fact that some environmentalists draw too much pessimistic and catastrophic scenarios to say that we are in an irreversible, unrecoverable situation make me sad as a person who studies the environment. I know that nature is an entity that can renew and regenerate itself, as long as people and countries fulfill their duties. Like the countries that have not signed the Kyoto agreement ... most importantly, I think that people should be conscious of the nature and think of nature as nature-oriented rather than human-oriented. Even if we think human-oriented, we understand that we still need all the components in nature. (A12)

Finally, some of the faculty members' religious beliefs were found to be determinative in their attitudes towards the environment.

There is a verse of Koran saying that human is the most glorious of all creation. Of course, human being is more important and valuable because of its ability to think and use the mind rather than other living beings. But this does not mean that other living things are worthless. All that the God has created is very valuable. (A8)

Respect for nature is actually a respect for his great creator, the God. Therefore, nature alone is also very valuable. (A12)

4. RESULTS, DISCUSSION AND RECOMMENDATIONS

In this study, it is aimed to examine the attitudes of the faculty members towards the environment and the possible causes underlying these attitudes. When the comprehensive factor was examined in this study, it was seen that the most of the participants have ecocentric attitudes and the items considered as antipathetic attitude statements in the survey were among the items that faculty members did not mostly agree on. Parallel to the findings of the recent studies (e.g., Amerigo et al., 2007; Bozdemir and Faiz, 2018; Erten and Aydoğdu, 2011), it was seen that there was a negative relationship between faculty members' ecocentric attitude and antipathetic attitude. In other words, it might be said that faculty members with high ecocentric attitude had low antipathetic attitude. In previous studies, it has been stated that the ecocentric environmental attitudes of individuals are in favor of those with higher levels of education (Akgül, Birinci, Göral and Karaküçük, 2017), and living in urban areas (Akgül et al., 2017; Yılmaz, Boone, and Andersen, 2004). In parallel to recent findings in the literature, in this study, the fact that the education level of faculty members is high and the majority of them live in urban areas due to work may have affected their attitudes.

In this Q method study, it was revealed that more than half of the faculty members (n: 8) have protective attitude, some (n: 5) have benefit-centered attitude, and the only one have anti-benefit attitude towards the environment. According to the original grouping of the survey, although most of the participants in this study were accepted to be in the ecocentric attitude group, the results of this study are important in order to express the differences in their attitudes. In the category of protective attitudes towards environment (factor 1), faculty members, who were statistically loaded in this group, generally thought that human beings are not more valuable than nature or other living things in nature, and they were sensitive for protecting all living things in the nature. It was seen that faculty members who were statistically loaded in the category of benefit-centered attitudes (factor 2) generally thought that human being is superior and important than nature and other living things, and that value and protection of nature will ultimately affect the benefit and comfort to human. However, it was interestingly found that these participants also agree on the statements regarding the value of nature alone. Thus, it might not be said that these participants have solely anthropocentric attitudes towards environment. The faculty member who was statistically loaded in the category of anti-benefit attitudes (factor 3) was strongly opposed the idea of protecting nature for just because of thinking human beings and expectation of benefit from nature. It was found that this faculty member has a highly informed environment consciousness and an ecocentric attitude towards the environment. Considering the fact that he is the one who has the highest degree among the participants and study about environment, it might say that this finding is not as much surprising.

One of the most important significance of this study was to reveal the possible reasons underlying the environmental attitudes of the faculty members. In this sense, it was found that the restrictive, subjective or general expressions of attitude survey, participants' emotional and marital status, their fields of the study, and their religious beliefs affected environment attitudes of the faculty members. The restrictive expressions in the attitude survey led the faculty members think and sort the statements in the range of undecided or even disagree. The faculty members tend to sort the subjective expressions and reflecting individual preferences in lower ranks even though they agree on. The fact that some of the survey items are subjective and in general may cause the items of the survey to be grouped independently of the determined factors.

Faculty members, who interest and study about environmental education, have an ethical understanding about the value of nature and other living creatures, that is, they have mainly ecocentric attitude towards the environment. It might be said that conducting more research about the environment and engaging in environmental activities may affect individuals' environmental attitudes because these are the things that increase the level of consciousness towards nature. Considering that individuals who are knowledgeable about the environment exhibit less antipathetic attitudes, it is recommended to increase the practices that will raise the awareness of the people of all ages and educational levels.

In parallel to the findings of some studies (e.g., Keith, 1983, cited in: Alpak-Tunç, 2016; White, 1967) that argued the individuals' anthropocentric attitudes was influenced by religious and philosophical views, it was found that some faculty members' (in factor 2) environment attitudes were affected by their religious beliefs. They mostly adopt the statements grouped in the survey's anthropocentric attitudes factor, which centered human being.

Although the above-mentioned reasons are inferences obtained from the statements of the faculty members who participated in the study, this study is considered to be very important when considering the lack of study in the current literature about which factors have more impact on which environmental attitudes' dimensions. This study can be considered as a first step leading to further studies to fill the existing gap in the literature. It is recommended that future studies should be designed to fill this gap in the literature and to investigate and reveal the underlying reasons of environmental attitudes of individuals from different educational and socio-cultural background. In addition, it is recommended to be deeply examined how sociocultural, religious, and philosophical views affect the individuals' environmental attitudes in the future studies.

The Q method distinguishes this study from similar studies in the literature and makes it valuable. Considering the advantages of Q method and a new approach in environmental education research, it is assumed that this study might add significant value to environmental education research approaches, and it is recommended to use this method in the future environmental education studies.

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Research and Publication Ethics Statement

The authors declare that research and publication ethics are complied with in the study.

Contribution Rates of Authors to the Article

The authors' contribution rates to the research are equal. Data were collected by the first author, analyzes were made together, and responsibilities were shared at the writing stage.

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Statement of Interest

The authors declare that they have no competing interests.

6. GENİŞ ÖZET

Çevre etiği insanların çevresel tutum ve davranışlarının arkasında yatan, çevreye karşı sahip oldukları değer yargılarıdır (Özdemir, 2016; Özer, 2015). İnsanların çevreye karşı taşıdığı etik anlayışları dışarıya ekosentrik ve antroposentrik tutumlar olarak yansımaktadır. Ekosentrik tutumlar çevreyi merkeze alan çevre tutumlarını, antroposentrik tutumlar insanı merkeze alan çevre tutumlarını kapsamaktadır (Kasalak, Yurcu ve Akıncı, 2018). Thompson ve Barton (1994), insanların çevreye karşı tutumlarını belirlemek amacıyla geliştirdiği ölçeğinde üçüncü bir kategori olan antipatik tutumları da eklemiştir. Antipatik tutumlar bireylerin çoğunlukla yoğun çevre koruma faaliyetlerine karşı geliştirilmiş oldukları düşünülen, çevreye karşı antipatilerini (çevre konularının itici gelmesi, çevre konularına karşı ilgisizlik) kapsamaktadır (Atlı vd., 2015; Erten ve Aydoğdu, 2011). Alan yazın incelendiğinde farklı kademelerdeki öğrencilerin, çalışanların ve öğretmen adaylarının çevresel tutumlarının çevre etiği bağlamında incelendiği görülmektedir (Alpak, 2016; Cappellaro, 2016; Erten ve Aydoğdu, 2011; Sönmez, 2018). Alan yazındaki çalışmalardan yola çıkarak öğretmen adaylarının çevresel tutumlarının lisans eğitimleri boyunca şekillendiği söylenebilir (Bozdemir ve Faiz, 2018; Tuncay, 2010). Bu süreçte öğretmen adaylarının çevresel tutumlarının lisans eğitimleri boyunca etkileşim halinde oldukları akademisyenlerin tutumlarından etkilenebileceği ve çevre eğitiminin önemine binaen birçok üniversitede ve bölümde öğretim programlarına dahil edilen çevre eğitimi ile ilgili derslerin bölümün hocaları tarafından verildiği göz önüne alındığında, eğitim fakültelerinde çalışan akademisyenlerin çevresel tutumlarının değerlendirilmesi önemlidir. Ayrıca diğer örneklerle yapılan çalışmaların çoğunda bulguların nicel ölçeklerle toplandığı ve bulgularının nicel olarak değerlendirildiği görülmektedir. Bulguların altında yatan nedenlerin derinlemesine incelendiği çalışmalar yok denecek kadar azdır.

Bu çalışmanın amacı akademisyenlerin çevre ile ilgili tutumlarını ortaya çıkarmak ve bu tutumların altında yatan sebepleri anlamaktır. Bu çalışmanın örneklemini Türkiye’de bir eğitim fakültesinde görev yapan 14 akademisyen oluşturmaktadır. Bu çalışma, karma veya yarı nitel metot olarak kabul edilen Q metodu kullanılarak dizayn edilmiştir. Q metodu öznel görüşlerin ortaya çıkarılması olarak tanımlanmaktadır. Bu çalışmada mülakat yoluyla toplanan veriler, çoğunlukla nicel olarak analiz edilmesine rağmen sonuçlar ağırlıklı olarak nitel yollarla yorumlanmıştır. Araştırmada kullanılan Q örnekleri, ilk olarak Thompson ve Barton (1994) tarafından geliştirilen ve Erten (2007) tarafından Türkçe’ye uyarlanan Çevreye Yönelik Tutum Ölçeğinden alınmıştır. Tüm katılımcılar için Q sıralama verileri, Q analizi için özel olarak tasarlanmış bir program olan PQMethod’a girilmiştir. Elde edilen Q tipleri korelasyon ve faktör analizine gönderildikten sonra, faktörler, Q metodu çalışmalarında sıklıkla kullanılan ve bir faktör çıkarma metodu olan “centroid” faktör analiz metodu kullanılarak elde

edilmiştir. Burada ortaya çıkarılan faktörler “Q rotasyon” ve “Varimax rotasyon” analizleri kullanılarak faktörlerin anlamlılığı ortaya konmuştur.

Çevreye Yönelik Tutum Ölçeğinin içerdiği tutum maddelerinin ekosentrik, antroposentrik ve antipatik tutumlar olmak üzere üç faktör altında gruplandığı bilinmektedir. Q metodolojisinde ifadelerin alındığı ölçekteki tutum maddelerinin kaç faktörde toplandığı değil, katılımcıların yaptıkları sıralamalara göre kaç faktörde toplandığı tespit edilmektedir. Diğer bir deyişle bu çalışmalarda ölçekteki maddeler değil, katılımcılar gruplanmaktadır. Q metodolojisinin kullanıldığı bu çalışmada katılımcıların anlamlı bir şekilde gruplandığı; korumacı (8 akademisyen), fayda merkezli (5 akademisyen) ve fayda karşıtı (1 akademisyen) olmak üzere üç faktör tespit edilmiştir. Korumacı tutumlar kategorisinde anlamlı bir şekilde yığılan akademisyenlerin genel olarak insanın doğadan veya doğadaki diğer canlılardan daha değerli veya daha değersiz olmadıklarını düşündükleri, doğayı ve içindeki insan dâhil tüm canlıları koruma hassasiyeti içinde oldukları görülmüştür. Çevreye karşı baskın olarak korumacı tutuma sahip olan akademisyenlerin ölçekteki tutum maddelerini sıralarken içinde doğayı ve doğa içindeki canlıları korumaya yönelik ifadeleri ön sıralara yerleştirdikleri tespit edilmiştir. Fayda merkezli tutumlar kategorisinde anlamlı bir şekilde yığılan akademisyenlerin ise genel olarak insanın doğadan ve doğa içindeki diğer canlılardan daha üstün ve önemli olduğunu, doğaya değer vermenin ve korumanın eninde sonunda doğanın insana sağladığı faydayı ve konforu etkileyeceğini düşündükleri görülmüştür. Çevreye karşı baskın olarak fayda merkezli tutuma sahip olan akademisyenlerin ölçekteki tutum maddelerini sıralarken içinde doğanın insana sağladığı faydayı ve konforu ön plana tutan ifadeleri ön sıralara yerleştirdikleri tespit edilmiştir. Diğer taraftan fayda karşıtı tutumlar kategorisinde anlamlı bir şekilde yığılan akademisyenlerin genel olarak insanın doğadan fayda ummasına ve kendini düşündüğü için doğayı koruma düşüncesine karşı oldukları görülmüştür. Bu akademisyenlerin ölçeğin insan önceliğine vurgu yapan maddelerden rahatsız oldukları, bu ifadelerle çok keskin bir şekilde katılmadıkları, bu ifadelerin geçtiği maddeleri çoğunlukla en fazla katılmadıkları gruba koydukları tespit edilmiştir. Fayda karşıtı tutuma sahip olan akademisyenlerin doğanın ve doğa içindeki diğer canlıların insandan daha değerli olduğunu düşündükleri ortaya koyulmuştur.

Analiz sonrasında katılımcıların anlamlı bir şekilde gruplandığı; korumacı, fayda merkezli ve fayda karşıtı olmak üzere üç faktör tespit edilmiştir. Katılımcıların tutum ölçeğindeki maddeleri sıralarken; tutum maddelerindeki ‘en’, ‘tek’ vb. sınırlayıcı ifadelerden, tutum maddelerinin öznel veya genel ifadelerden oluşmasından, kendi duygusal ve sosyoekonomik yapılarından, kendi çalışma alanlarından ve dini inançlarından etkilendikleri tespit edilmiştir. Bu çalışma, katılımcıların ölçeği doldururken ki tercihlerinin altında yatan nedenleri ortaya koyması bakımından, aynı ölçek kullanılarak yapılan diğer çalışmalardan ayrılmaktadır. Q metodolojisi kullanılarak benzer çalışmalar yapılması bu alandaki alan yazına farklı bir boyut kazandırabileceği düşünülmektedir.