A STUDY ON TURKISH ELEMENTARY SCHOOL STUDENTS' NATURE RELATEDNESS, ENVIRONMENTALLY RESPONSIBLE BEHAVIORS AND MOTIVE CONCERNS

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ABSTRACT

A STUDY ON TURKISH ELEMENTARY SCHOOL STUDENTS' NATURE RELATEDNESS, ENVIRONMENTALLY RESPONSIBLE BEHAVIORS AND MOTIVE CONCERNS

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Environmental deterioration has reached a critical point in recent years all over the world. Children with their potential in resolution of environmental problems must be equipped with the necessary skills, knowledge, values and attitudes. Thus, this study aimed to assess (1) Turkish elementary students' (N=1774) environmentally responsible behaviors, connections with nature (nature relatedness), and motive concerns and (2) the relationship of elementary school students' environmental responsible behaviors with their environmental motive concerns and nature relatedness. The results indicated that these students reflected an external, nature-related worldview. Regarding their behaviors, it was revealed that the elementary students frequently engaged in some actions linked to physical and economic contribution. However, these students did not demonstrate some actions on political commitment although they were very concerned about the environmental issues. It was found out that their feelings of concern were highly depending on their egoistic motives.

The results of multiple linear regression analysis revealed that elementary school students' environmentally responsible behaviors could be predicted by the motive concerns and nature relatedness.

Keywords: elementary school students, environmental concern, nature relatedness, environmental responsible behavior

ÖZ

İLKÖĞRETİM ÖĞRENCİLERİNİN DOĞAYLA İLİŞKİLERİ, ÇEVREYE YÖNELİK SORUMLU DAVRANIŞLARI VE ÇEVRESEL KAYGILARI ÜZERİNE BİR ÇALIŞMA

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Çevresel bozulmanın dünyanın her yerinde son yıllarda kritik bir noktaya ulaştığı gözlemlenmektedir. Çevre sorunlarının çözümünde önemli değere sahip olan çocuklar gerekli çevresel bilgi, beceri ve değerlerle donatılmış olmalıdır. Bu nedenle çalışmada, (1) ilköğretim öğrencilerinin (N=1774) çevreye yönelik sorumlu davranışları, doğayla ilişkileri ve çevresel kaygıları (2) öğrencilerin çevreye yönelik sorumlu davranışlarının doğayla ilişkileri ve çevresel kaygıları ile bağlantısının incelenmesi amaçlanmıştır. Çalışmanın sonuçlarına göre, ilköğretim öğrencileri dışa dönük doğayla ilişki içerisindedirler. Davranışları incelendiğinde, öğrencilerin fiziksel ve ekonomik eylemlerde sıklıkla aktif oldukları sonucu elde edilmiştir. Fakat öğrencilerin çevresel kaygıları yüksek olmasına rağmen politik eylemlerde aktif olmadıkları sonucuna varılmıştır.

Çoklu doğrusal regresyon analiz sonuçlarına göre, ilköğretim öğrencilerinin çevreye yönelik sorumlu davranışları ile doğayla ilişkileri ve çevresel kaygıları arasında anlamlı bir ilişki bulunmaktadır.

Anahtar Kelimeler: İlköğretim öğrencileri, çevresel kaygı, doğayla ilişki, çevreye yönelik sorumlu davranış

To My Parents

Seyfettin and Zahide BAHAR

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ABBREVIATIONS

NR	Nature Relatedness
ERB	Environmental Responsible Behavior
CREB	Children's Responsible Environmental Behavior
FA	Factor Analysis
Df	Degree of freedom
f	Frequency
N	Sample size
P	Significance level
M	Mean
SD	Standard deviation

CHAPTER I

INTRODUCTION

In recent years, environmental issues have become very crucial since people face many environmental problems all over the world (Aydın & Cepni, 2012). Some of the problems that people could be face are water and air pollution, global warming, growth in population, some environmental disasters, energy shortage etc. (World Commission on Environment and Development, 1987). To overcome these problems, researchers have suggested some solutions according to their studies. According to Feral (1998), if people may realize the importance of connection to nature and understand it, they might make more empathy for all living creatures. They try to understand the meaning of natural environment for them. Thanks to this empathy they need to protect nature and behave more nature friendly toward it. In addition, Schultz (2000) also stated that if people feel good toward nature and understand the natural environment and so care about it, they also tend to behave kindly and protect the nature. In the other point, although people have concerns about the environment, they always do not behave environmentally (Kaplan, 2000; Schultz, 2000). Another perspective is that individuals' relationships with nature may provide some perceptions how people treat the environment (Nisbet, Zelenski & Murphy, 2008). Nisbet et al. (2008) give importance to nature relatedness which views the affective, cognitive, and experiential aspects of individuals' relation with nature.

Ecopsychologists claimed that a child born with the sense of connectedness with the natural environment (Phenice & Griffore, 2003). After that, the socialization and emotional differences lead them to separate from the environment (Liaflander, Fröhlich, Bogner & Schultz, 2012). Louv (2007) claimed that how the children understand and explore the natural world has changed in recent years. The researcher supposed that the children and teenagers become more aware about the environmental threats; however,

their physical relation, being in the nature decreasing. In his research, one of the fifth grader expressed that he/she preferred to stay inside home rather than playing outside because of the technological devices. This idea provides an alternative explanation on why children do not prefer to play in nature. In addition, parents also cited a number of reasons why their children's connection with nature was less than their own connections in their childhood. According to the parents, difficulty to reach natural areas, dangerous traffic, responsibilities of the students in schools like homework and especially fear of danger were the main reasons of why the children live inside (Louv, 2007).

According to Wells and Lekies (2006), if people were in nature in their childhood, their attitudes toward nature were higher and this attitude may lead the individuals behave environmentally in the future. Bruni and Schultz (2010) claimed that children's connections with the nature in the ages 10,11 are high as it can be in environmental activists. However, less connection with nature was viewed in the college level students that Bruni and Schultz (2010) presented that there is a loss of connection with the natural environment in some individuals from childhood to adulthood.

Louv (2009) added a new perspective which was *nature-deficit disorder*, which is not a medical problem but a description of the growing gap between human beings and nature causing adverse consequences pertinent to health and well-being. He also claimed that schools, teachers and parents also have crucial effect on the gap between the child and nature (Louv, 2009). In addition, it can be accepted that awareness about the actions of human which are harmful toward the nature increases (Schultz, Gouveia,Cameron, Tankha, Schmuck, & Franek, 2005), but at the same time behaviors of people have very crucial point in the reasons of environmental deterioration (Nickerson, 2003). Human action especially starting from the children can be improved to protect the nature. In Tbilisi Conference which was the First Intergovernmental Conference in Environmental Education (1977), the objectives of environmental education was defined under the titles namely; awareness, sensitivity, attitudes, skills and participation.

Environmentally responsible citizens described by Hungerford and Volk (1990) according to the conference as the ones who have:

> *(1)an awareness and sensitivity to the total environment and its allied problems (and/or issues), (2) a basic understanding of the environment and its allied problems (and/or issues), (3) feeling of concern for the environment and motivation for actively participating in environmental improvement and protection, (4) skills for identifying and solving environmental problems (and/or issues), (5) active involvement at all levels in working toward resolution of environmental problems (and/or issues).*

Schultz and Zelezny (1999) emphasized that the concerns level of two people toward the environment could me in the same level, on the other hand, the answer of why they concern the environment might be different from each other such as; one give importance to the other people while the other protect the nature for all living things. That information indicated while the students' environmental responsible behavior growing, their concerns toward environment also can be searched and focused on to produce permanent solutions for environmental problems. Since the main problem comes from human being, the most effective solution to protect the environment would be to enlighten the society about the environmental problems and their severe consequences.

1.1 The Main Problems and Sub-Problems

1.1.1 The Main Problems

The aims of the present study are (1) to determine 7^{th} and 8^{th} grade students' connections with nature (nature relatedness), environmentally responsible behaviors, and motive concerns (2) to explore the relationship among these students' nature relatedness, environmentally responsible behaviors and motive concerns.

1.1.2 The Sub-Problems

The sub-problems related to main problem (1) are:

1- What are the 7th and 8th grade students' connections with nature (nature relatedness)?
2- What are the 7th and 8th grade students' environmentally responsible behaviors?
3- What are the 7th and 8th grade students' motive concerns?

The sub-problem related to main problem (2) is:

To what extent could elementary students' self-experiences, perspective related to nature and their motive concerns (egoistic, altruistic and biospheric) predict their environmental responsible behaviors?

1.2 Null Hypothesis

The hypotheses in below was used to test the given problems.

Null Hypothesis

Elementary students' self-experiences, perspective related to nature and their motive concerns (egoistic, altruistic and biospheric) significantly predict their environmental responsible behaviors.

1.3 Definition of Important Terms

Environmental Motive Concern: Environmental motive concern assesses the individuals' level of importance of valued objects which were categorized around themselves, other people and the biosphere regarding environmental threats (Schultz, 2001)

Nature Relatedness (NR): Nature relatedness which assesses the affective, cognitive, and experiential aspects of individuals' connection to nature (Nisbet, Zelenski & Murphy, 2008).

Environmentally Responsible Behavior (ERB): ERB includes acquired or learned behaviors (actions), and does not operate in an isolated environment (Sia, Hungerford & Tomera, 1986).

1.4 Significance of the Study

It has been pointed out that there is an inconsistency between many people's feelings and attitudes about environmental issues and their own actions regarding the environmental quality (Nisbet et al. 2008). Many researchers attempted to find out some ways to shrink the gap between these psychological constructs and transform concern and favorable feelings for the environment into environmentally responsible behaviors (Winter, 2000). Generally it was previously thought that increasing knowledge might strengthen attitudes and also the change in behaviors (Cheng & Monroe, 2010); however, Hungerford and Volk (1990) claimed that pro-environmental attitudes of individuals and lastly their behaviors were not directly connected with the level of environmental knowledge. Therefore, just increasing the environmental knowledge could not be a solution for environmental problems. Furthermore, Nisbet et al. (2008) suggested that nature relatedness could be enhanced which might also contribute to narrow the gap between environmental friendly behaviors and individuals' feelings pertinent to the environment. More specifically, it was revealed that an individual who feels him/herself connected to nature more would have higher tendency and willingness to protect it. Moreover, this high sense of connection may result high predictive power; environmental concern and sustainable behavior toward nature seems to be predicted by nature relatedness although other measures about attitude were controlled (Nisbet et al., 2009). In this aspect, the present study could be regarded as an attempt to examine the power of nature relatedness in predicting environment-related behaviors of elementary school students.

It has been proposed that many children in urban areas do not have a chance to reach the nature easily (Cheng & Monroe, 2010). Furthermore, many parents do not want to give permission to their children to go natural environment and explore it since they also have little familiarity with the nature and so their children. Parents also have concerns about the danger in nature; they think that children would be in a dangerous situation since they cannot trust (Louv, 2005). Many researchers (Chawla, 1998, 2007; Wells & Lekies, 2006) claimed that children who feel relaxed in nature could stay themselves instead of the creatures and make empathy and feel responsibility to protect

the nature which affects their environmental attitudes and behavior in a favorable manner. In addition, Wells and Lekies (2006) found out the individuals who were related with nature in their childhood revealed higher pro-environmental attitudes and kindly behaviors toward nature in their adulthood. However, there are limited research studies conducted on this area since it is a new concept for the researchers in environmental psychology and education. In Turkey, this research can lead researchers to look over the nature relatedness and results can help while developing curriculum in primary schools. For the program developers, understanding and realizing the factors affecting the people' pro-environmental behaviors might be beneficial to encourage the development of pre-environmental behaviors toward nature (Cheng & Monroe, 2010). The solution for the environmental problems is the change in people's behaviors (Gunindi, 2010). In elementary level, the students construct their attitude and behavior toward nature and it affects them in adolescent years (Wells & Lekies, 2006). The results of the current study may contribute to the change in behaviors by the help of developers.

CHAPTER II

REVIEW OF THE LITERATURE

The aim of this chapter is to present a brief review of related literature in three sections: researches on nature relatedness, research on responsible behaviors and lastly researches on environmental motive concerns.

2.1 Research on Nature Relatedness

Environmental deterioration has reached a critical point in recent years all over the world. From water and air pollution, climate change, and shortage of the world's natural resources, environmental issues seem having threats for the individuals, communities, and living organisms on the planet. According to Kavruk (2002); environmental problems are the negative effects of the artificial environment, which is raised by people, on natural environment. Ünal et al. (2001) add that most of the people generally do not realize that they damage the environment or they cannot imagine harms on environment and so global problems rising without realizing it. Environmental problems cannot be solved by the laws or the technology. The solution for the environmental problems is the change in people's behaviors (Günindi, 2010).

Based on evolutionary history, Wilson (1984) argues that humans have an intrinsic tendency to be in a relation with other living things and people born with this sense. He argued people made an innate connection with all life and other living things to get their needs for their health and survive because of the evolution process in nature. By the help of the biophilia hypothesis, researchers make an explanation to people's relation (and the consequences of disconnection) with the natural world. Kellert and Wilson (1993) claimed that the learning and exploring the biodiversity is inside the human biology and so nature is a crucial need for people's health and development.

Kellert (1997) has enlarged the biophilia hypothesis and suggested that people's emotional and psychological developments are related with their biophilic tendencies. In other words, increasing connection with the nature makes people's lives more meaningful. Becoming more nature related could lead people be happier. Keller (1997) suggested that if people feel well because of their relation with nature, this well-being could be a good reason for people to conserve the nature.

Connection with natural environment may help people realize how they behave toward nature. If people disconnect from the natural environment, they could contribute the destruction of our planet destroying (Schultz et al., 2004). People need to understand better why we behave our environment kindly that preventing nature means blocking coming or continuing destroys in environment (Oskamp, 2004). Majority of the researchers highlighted the importance of individual's connection with the nature (Bragg, 1996; Schultz, 2000); however, assessing and measuring that connection is not so easy to do. Millar and Tesser (1986) suggested that, cognitive and affective are two main component of attitude. Cognitive components give importance to the beliefs about specific objects, whereas affective components give importance to the human feelings related to that object. Moreover, Nisbet and collogues proposed a new measurement, nature relatedness (NR), to describe the levels of connectedness of people with the natural world. Nature Relatedness (NR) assesses the affective, cognitive, and experiential aspects of individuals' connection to nature (Nisbet et al., 2008). They especially highlighted that nature relatedness is a different concept from the deep ecology concept. The concept of NR includes the people' willingness to understand the relationship between all living things all over the world (Nisbet et al., 2008). This concept differs from the environmentalism because it consists much more than activism. It does not mean just a simple love of nature or love the natural settings which people enjoy such as sunsets or snowflakes. It includes also understanding the importance of nature, although they do not seem attractive for humans like spiders, or snakes (Nisbet et al., 2008).

Nisbet and her friends (2008) claim that increasing nature relatedness may be one way to overcome environmental problems. The fact that if people do not behave

kindly and friendly toward nature, it cannot be concluded that they do not have concerns about nature (Kaplan, 2000; Schultz, 2000). Actually, people concern about the environment but they need something else to act and behave the nature friendly. Schultz (2000) says that if individuals' environmental concerns are high, that means they see themselves as part of the natural world. If people see themselves as a part of the natural world, they realize that anything they do in nature can turn them in a positive or negative way. Schultz (2000) also adds that when people feel better into their natural environment, they also care about it and it affects their behaviors to conserve the nature.

In the Kossack and Bogner study (2011), they did a one-day education program promoting the connectedness to nature and it was seen that there are varieties of their connectedness with nature after seven weeks. Schultz (2002) also claimed that a feel of closeness with the nature and in which part of the nature the individual identifies her/himself affect her/his contributions to prevent the natural environment.

Nisbet and her collogues (2013) developed a short version of the nature relatedness scale which had 6 items from the "self" and "experience" subscales. They tested the new scale whether it predicted or not. The researchers studied with the students, community members, and business people. To construct the short version of the scale, they preferred the items that was accepted as representative for the nature relatedness construct, from the original scale. They studied with 1200 previous participants and they checked the frequency distributions to see the items differ in low nature-related people and high nature-related people. In the new scale, items were included assessing the self-identification with nature such as "I always think about how my actions affect the environment," "My connection to nature and the environment is a part of my spirituality," and the researchers added two items like "My ideal vacation spot would be a remote, wilderness area" and "I take notice of wildlife wherever I am". The authors advice that, the researchers can gain time using short version of nature relatedness.

Nisbet and collogues (2011) made a research namely, ''Happiness in our Nature: Exploring Nature Relatedness as a Contribution to Subjective Well-being''. They made

3 studies. In the first study, they studied with 184 people to see individual differences in Nature Relatedness are associated with differences in well-being. In Study 2, 145 business people participated to the study and the researchers replicated well-being correlates. In the last study, they studied with 170 people to explore the influence of environmental education on ‘‘Nature Relatedness and Well-being’’, and found the changes. Looking at results, the researchers found that NR is positively correlated with the dimensions namely; ‘‘positive affect, vitality, autonomy, personal growth and purpose in life’’. Moreover, it was found that students who took environment courses had more vitality when compared the ones who did not take the lectures, and it was about the strong connection with the natural environment. In addition, to understand the environmentally sustainable behaviors of people, their personality constructs of subjective connection with nature which was defined as nature relatedness was also useful (Nisbet et al., 2011). The researchers describe the nature relatedness as the differences in personality of people like cognitional, experiences strongly related with their attitudes toward nature and environmental behaviors. The nature-relatedness is also linked with people’s individual connectedness and being happy (Nisbet et al., 2011). Nisbet and her friends (2011) also suggest that NR—emotions, values, attitudes and a self-concept including the natural world, a biospheric orientation—may motivate the people to protect and preserve the nature.

In another study, Nisbet and her collogues (2012) study with 950 participants to assess the match up with nature relatedness and connections individually. The authors made two studies to assess it. In the first study, they adopted a measure of connectedness and applied it to student (n= 331) and community members (n=415) samples along with multiple nature relatedness and happiness indicators. In the Study 2, subjective connections’ measurement were administrated in other community sample (n=204). According to the results of the study, it was suggested that nature relatedness predicted the many happiness indicators, other connections were controlled. In addition, it supported that nature relatedness could be a way to make people happy and environmentally sustainable. There was also surprising detail in the result that the NR_Self and NR_Experience scales predicted high level of happiness; however, the

NR_Perspective scale sometimes predicted unhappiness such as life satisfaction, vitality etc.

In another study, Barthelmess and collogues (2013) made a comparative survey study with South Korean, Swiss, and Czech students to assess their nature relatedness and ecological consciousness. 829 South Korean undergraduate students, 673 Swiss students and 147 Czech students participated to the study. In this study, the researcher tried to find answer of the questions that ‘‘Do the students from 3 different national settings share a similar scale of nature relatedness?’’, ‘‘If there are differences, in which way do they differ?’’. In other words, the aim of the study was to test the ‘‘Nature Relatedness Scale’’ by comparing with the other nations to see whether the scale could be applied in other nations and to what extend the differences in people’s culture affect one’s relation with the natural world. The researchers found out that when it is looked the one’s personal sense of closeness to nature, it was seen East West cultural variation. According to result of the study, it was found that the South Koreans felt closer to the nature when compared with Swiss and Czech students, on the other side, the people living city were high in percentage and so they were less familiar with the natural environment in physical contact. This study also suggested that well-educated youngers revealed a clear individual sense of closeness toward nature.

2.2 Research on Environmental Responsible Behavior

Although people have good feelings and attitudes toward nature, they do not behave environmentally (Nisbet et al., 2008). Researchers made studies and gave advices to solve this problem and try to lead concern for the environment to the environmentally responsible behavior (Winter, 2000). For program developers, understanding the factors which affect the emergence of pro-environmental behaviors might be helpful while making new constructs (Cheng & Monroe, 2010).

It can be accepted that realization about the actions of human which are harmful toward the nature increases (Schultz, Gouveia,Cameron, Tankha, Schmuck, & Franek, 2005), but at the same most of the environmental problems occurred because of the human behaviors. Human action especially starting from the children can be improved to

protect the nature. In Tbilisi Conference which was the First Intergovernmental Conference in Environmental Education (1977), the objectives of the environmental education was defined and environmentally responsible citizens described by Hungerford and Volk (1990, 9) due to these objectives as the ones who have:

> *(1)an awareness and sensitivity to the total environment and its allied problems (and/or issues), (2) a basic understanding of the environment and its allied problems (and/or issues), (3) feeling of concern for the environment and*
>
> *motivation for actively participating in environmental improvement and protection, (4) skills for identifying and solving environmental problems (and/or issues), (5) active involvement at all levels in working toward resolution of environmental problems (and/or issues).*

It is clear that human behavior is no single construct which was limited by a few numbers of variables (Fishbein & Ajzen, 1995). Hines et al. (1986/87) made a meta-analysis by using 128 empirical studies to get the variables strongly related with ERB. The result of the analysis indicated that there are several factors contributing ERB. They analyzed fifteen separate variables contributing ERB and they made categorization of these variables as:

(1) Cognitive Variables, (2) Psycho-social Variables, (3) Demographic Variables, and (4) a category of experimental studies comprised of behavioral intervention approaches and classroom strategies aimed at encouraging responsible environmental behavior.

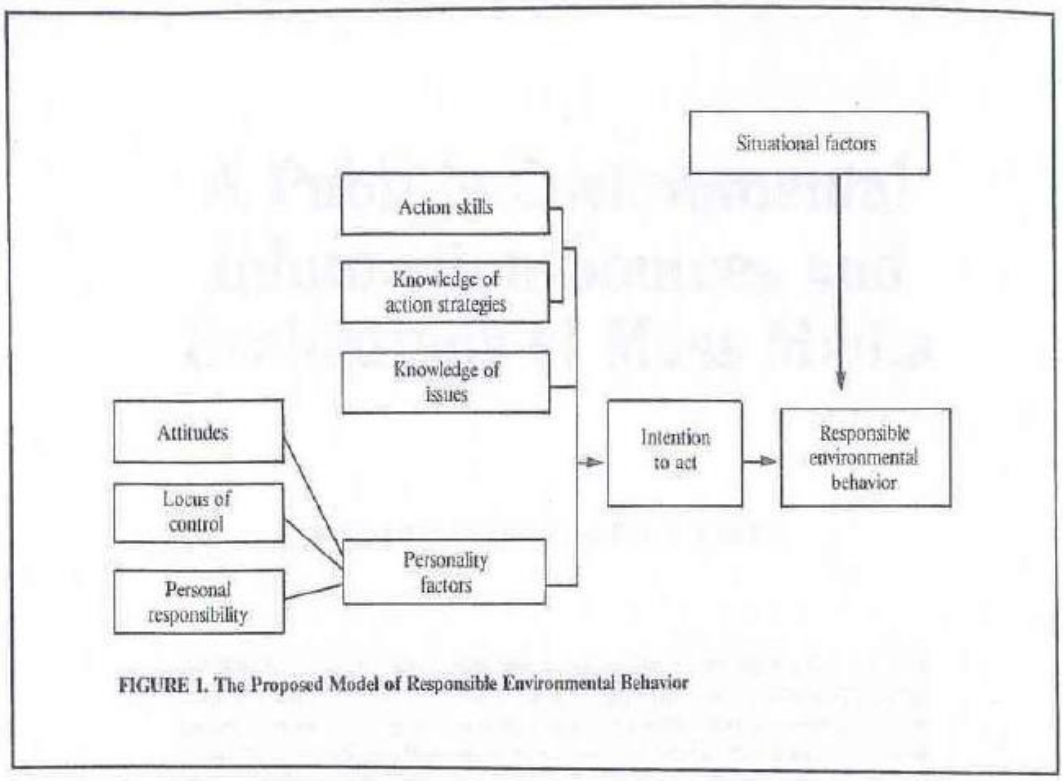


Figure 2.1. The Proposed Model of Responsible Environmental Behavior (Hines et al, 1986/87, p.7)

ERB has been classified into different sub-categories in the existing literature. Hungerford and Peyton (1976, as cited in Smith-Sebasto, 1992) made six categories of ERB as following,

> *(1)Persuasion;a verbal effort to motivate someone to take positive environmental action as a function of modified values such as writing letter (2)Consumerism; an economic threat aimed at modification in business or industry(3)Political Action; an effort aimed at persuading an electorate, legislators, or government agencies to conform the values held by the person or persons who initiated the action (4)Legal Action; any legal/ judicial action aimed at some aspect of environmental law*

enforcement – or, a legal restraint preceding some environmental behavior perceived as undesirable.(5)Eco-management; physical movement with the purpose of improving natural systems like reforestation. (6)Interaction; the associations of two or more any components above

Then, Champeau (1982, as cited in Hsu 1997) revised one of the categories; consumerism to economic action. He defined the economic action as the actions due to response of economic threat, consumptions habits, and monetary contribution. These categorizations were revised recently and the category of 'interaction' was removed (Hsu 1997; McBeth and Volk 1997; Simmons 1995).

(1)Eco-management: refers to those environmental actions in which people work directly with the natural world to help prevent or resolve environmental issues.(2)Consumer/Economic Action: refers to those environmental actions in which people use monetary support or financial pressure to help prevent or resolve environmental issues(3)Persuasion: refers to those environmental actions in which individuals or groups appeal to others help prevent or resolve environmental issues.(4)Political Action: refers to those environmental actions in which people use political means to help prevent or resolve environmental issues.(5)Legal Action: refers to those environmental actions in which people use to support or enforce existing laws which are designed to help prevent or resolve environmental issues.

In Turkey, there are some studies about the behavior. They differ in a way that the researchers have looked different relations with the behavior like attitude, environmental education. Aydın and Kaya (2011) made a research with 394 primary students in Karabük and the result of the study showed that the students have high environmental thinking rate whereas their environmental behavior rates are low.

Özdemir (2010) made his study with 20 primary school second level students to see the effects of nature-based environmental education program on the primary school students' perceptions of and behaviors towards their environments. In this study, Özdemir (2010) found that the students' concrete concerns and reactions about the environmental problems which they are facing make stronger their environmental values and raise their awareness of the destruction of these values.

Some researchers studied with university students in their researches. Yücel Işıldar & Yıldırım (2008) studied with the university students to assess the environmental knowledge and behaviors of the students. The students took environmental courses during their education and the researcher checked whether there is a relationship between the students' environmental knowledge and behavior or not. According to the results of the study, there was no statistically important difference in students' knowledge about the environmental issues. However, environmentally behaviors of the students were subjected ''Environmental Health Program'' showed a difference compared with the ''Social Science Education'' students. In addition, students who were subjected to environmental courses were found behaving more environmentally when compared the students who did not take the courses. The researchers add that knowledge about environment which did not give by environmental education does not contribute the environmental behavior as moderator. Sadık and Çakan (2010) studied with 212 university students who were studying biology. As the result of the study, females' environmental attitudes and behaviors were better than males'. In addition, the students taking environment education had more positive environmental attitudes and behaviors when it is compared with the student who did not take the environmental education. S.Timur, Yılmaz & B.Timur (2013) have studied with 420 pre-service teachers from Primary Education Department to investigate their environmental behaviors. Timur and friends (2013) suggested that the candidates' behaviors towards environment were not affected by their gender, education level of parents and whether taking courses related to environment. However, teacher candidates' behaviors changed due to their subject area, level of curiosity about environment and frequency of visiting natural areas. Günindi (2010) studied with the

135 pre-school teachers in Aksaray in Turkey to look their environmental behaviors. The result of the study suggests that there is a weak positive correlation between the environmental attitudes and behaviors of the pre-school teachers.

There are also abroad studies about the environmental behavior. Wells and Lekies (2006) made a study with 2000 American adults in the age range 18-90 to see whether there is a relationship between individual's experiences in nature during their childhood and people's attitudes and behaviors toward nature. The results of the study revealed that the people who experienced wild nature activities like hiking and domestic nature activities like planting flowers during their childhood were tended to behave environmentally and have pro-environmental attitudes in their adulthood. In addition, people having more nature experiences in their childhood are more likely to have high pro-environmental attitudes in adulthood and so this high attitude may lead them to behave environmentally in the future. Schultz and Zeleny (1998) made a cross-cultural study with 958 college students from different countries to assess the predictors of pro-environmental behaviors such as: recycling, public transportation, water and energy conservation, and safe product purchasing. The result of the study indicated that pro-environmental behavior was significantly correlated with responsibility for Mexican, Spanish and USA samples. Heyl et al, (2013) made a study with 383 engineering students in the 1^{st}, 3^{rd} and 6^{th} level. In the study, the researchers' purpose was determined the differences, if there is, college students' relations with the environment due to their diploma and is it depending their gender and the year in which they are studying. The researchers sent surveys via mail to all students in selected levels (approximately 1,500 students). Looking the results of the study, researchers found out that there are significant difference between students' attitudes and behaviors due to their diploma but no difference was found in year in which the students study. In another study, Erdoğan (2011) made an experimental study with the participation of 64 elementary school students to determine effect of ecologically based nature education on students' environmental knowledge, environmentally responsible behaviors and their environmental sensitivity. The researcher made pre-test before the education and post-test after the education. Erdoğan (2011) found out that ecologically based nature

education made important contributions to elementary school students' environmentally responsible behaviors; however, there is no significant contribution to environmental knowledge and environmental sensitivity. Hsu made a study in 2004. In this study, Hsu (2004) aimed to assess whether the environmental education course effects on college students' responsible environmental behaviors and environmental literacy or not. 121 students participated to the study and they were exposed to 48hour-course emphasizing issue investigation-evaluation and action training. The researcher reached a result that students' responsible environmental behavior, their sense of responsibility toward nature and willingness to act were developed with the help of the course. It was observed that these effects were still maintained although 2 months passed from the conclusion of the course. Mulyadi (2011) made a casual and multidimensional social study with 120 farmers to examine the effect of dimensions namely; ''environmental knowledge, local wisdom, locus of control and farming motivation on responsible environmental behavior''. The result of the study revealed that the farmers' responsible environmental behavior was directly affected by the farmers' knowledge of environment, local of wisdom and locus of control. Many researchers studied in the environmental education field; however, there are small numbers of scales developed to assess especially the children's environmentally responsible behavior (Erdoğan et al., 2009). Erdoğan and his collogues constructed a new scale to assess children's environmental responsible behaviors (CREB). They firstly took the responses of four open-ended items from 229 fourth and fifth grade students. They made pilot test of the initial form with the participation of 673 fourth and fifth graders. Then, they administrated the revised form to 2412 fifth graders. CREBS consists of 23 items measured using a seven-point Likert-type scale in the last version. The scale has four sub-scales namely, political action, eco-management, consumer and economic action, and individual and public persuasion.

Study results revealed that researchers can use CREBS to help prevent and solve environmental problems and issues. According to the traditional thinking, it was accepted that if one knows about the environment more, he tend to engage in responsible behaviors to protect the nature more when compared with the others (Erdoğan, 2009). However, it was revised that increased knowledge on the environment would lead to

increase environmental awareness or attitudes which would then turn into responsible environmental behavior (Ramsey & Rickson, 1977). Despite the variables like environmental knowledge , cognitive skills, environmental attitudes, intention to act, environmental sensitivity, locus of control, environmental responsibility and environmental curiosity; among the demographic variables, age, gender, income, and parent education level were correlated with ERB.

2.3 Research on Environmental Concern

Expressing concern for environmental issues has been increasing around the world. Indeed, most people do not say that they are anti-environmental (Schultz, 2001). As Schultz and Zeleny (1999) claimed, two people may have the same level of concern toward nature but their reason why they should conserve the nature may differ. To illustrate, one supposed that nature should be conserve because of me and my needs and other may give more importance to other living things.

Stern, Dietz and Kalof (1993) suggested that Schwartz' (1977) Norm-Activation model of altruism revealed that if an individual is aware of how big their pro-environmental behaviors are harmful toward nature and if that person take some responsibilities to solve the environmental problems, then that pro-environmental behaviors become more effective. That shows these people are aware of the causes of their behaviors toward nature and consequently the problems. They also proposed that Schwartz' theory just focused on the environmental concern only in terms of one value orientation namely, altruism value orientation. Stern and his colleagues agreed to add two more value orientation such as; egoistic, ''person who conserve the environment because of the concerns for herself/himself'', biocentric, ''person who conserve the environment because of the concerns for all living things'' and also social- altruistic, ''person who conserve the environment because of the concerns for other people''. According to Stern & Dietz's (1994) value basis theory, which was developed from norm-activation model of altruism (Schwartz,1977), People have some values about nature leading them to take some attitudes toward nature and so with these different value orientations, they have different attitudes toward natural environment. In other

words, attitudes about environmental issues depend on that the people give importance level on themselves (egoistic), other people in the world (social-altruistic) and other livings like plants and animals (biospheric) (Stern & Dietz, 1994). They further propose that variables constituting the VBN theory (see Figure 2) may directly affect the next variable in the chain as well as variables farther down the chain.

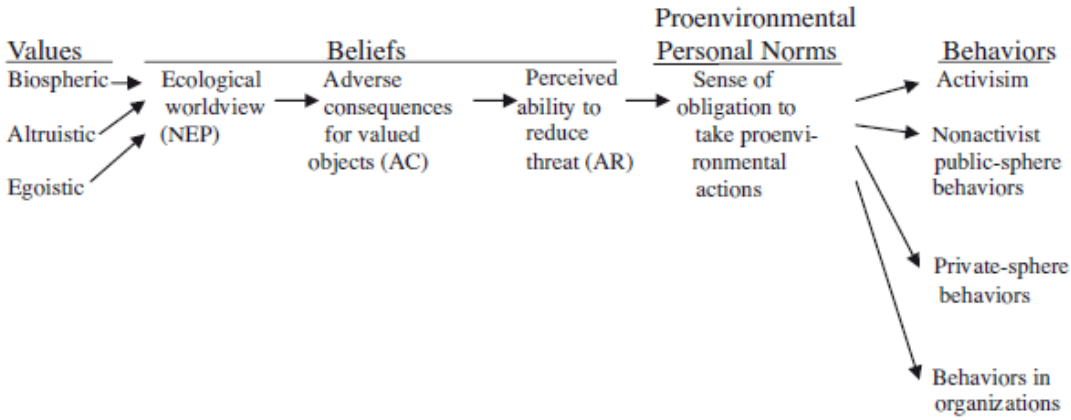


Figure 2.2. VBN theory of environmentalization (Stern, 2000).

According to Thompson and Barton (1994) claimed that there should be at least association of two motives like eco-centric and anthropocentric for people to prevent the nature. Thompson and Barton proposed that although eco-centric and anthropocentric individuals' attitudes were higher toward nature, these people have different motives to support conservation. To illustrate, eco-centric people conserve the environment because of perceiving the nature as worth preserving but they do not consider the economic or their way of lives. Beside this, anthropocentric people consider the environment should be protected because of its value for human life, health and comfort (Thompson & Barton, 1994). They also stated that anthropocentric motives showed some similarities with the egoistic and social-altruistic values (Stern et al., 1993) whereas eco-centric ones showed similarity with the biospheric values.

Stern (2000) stated that VBN approach to pro-environmental behavior presents a good account of causes of the general trend toward nature in his article. Schultz (2000)

made a survey with the participation of 245 undergraduates from the United States. The aim of the study was to see the clusters of environmental concern. The survey had 21 items measuring varied established environmental attitudes. The participants were waited to rate the items from 1 (not important) to 7 (supreme importance). After analyzing the items, there were 3 factors including 12 items in total. These 3 factors were biospheric including the items ‘‘animals, plants, marine life, birds’’; egoistic including the items ‘‘me, my future, my lifestyle, my health’’; and, altruistic including the items ‘‘all people, children, people in community, my children’’ (Schultz, 2000). The result of the study supported the difference between the egoistic, altruistic and biospheric concerns. One year later, Schultz (2001) made other studies. Schultz (2001) made four studies to define the environmental attitudes of people according to Stern & Dietz’ (1994) value-basis theory. Schultz (2001) studied with 1010 U.S. college students in the first study, 1005 U.S. respondents to telephone survey in the second study. In the second study, Schultz checked that the findings of the first study would differ in public sample. He proposed that college students’ ideas may be different from the general public. To see the difference if there is, he reached 1005 California adults by telephone and he applied the same questionnaire but he modified some items slightly. The items of the questionnaire were; ‘‘marine life, plants, birds, animals, children, people in the United States, the human race, people in your community, your health, your future, your lifestyle and your prosperity’’. In both studies, the researcher found out the similar results excluding biospheric concerns. In the result, it was revealed that college students had lower scores in biospheric items when compared with the general public scores. In the third study, he assessed whether there were relationships among three identified types of dimensions namely; ‘‘environmental concern, existing measures of environmental attitudes, empathy and social value orientation’’. In the last study, it was found out that there was a relationship between the three environmental concern and Schwartz’ higher order values. In this research, the subjects were social science students from 10 different countries from different regions like Colombia, Ecuador etc. Results of the study revealed that, self-enhancement was correlated with egoistic in a positive way and correlated with altruistic and biospheric environmental concerns in a negative way. Self-transcendence was related in a positive way with altruistic and biospheric

environmental concerns while related in a negative way with egoistic environmental concern. In addition, conservation was found to be correlated in a negative way with altruistic and biospheric concerns. Schultz (2001) suggested that the degree of people's concerns about themselves, others or living beings was related with the degree of connection of people with them. According to Schultz (2001), when the results are combined it is seen that there is a strong findings for the discriminations between egoistic, altruistic and biospheric environmental concerns. The researcher explains the concerns like egoistic concerns consist the items; ''my health, my future, my lifestyle and me''; altruistic concerns consist the items; ''people in my community, all people, children, my children''; and biospheric concerns consist the items; ''plants, animals, marine life and birds''. The researcher developed a scale namely; ''The Environmental Motives Scale'' to assess the individuals' concerns toward nature.

Dienes (2014) made a study to assess the people' concern about climate changes and what are people's activeness' to decrease the dangerous effects on changes in climate. The participants from 35 countries were reached via survey. The result of the study indicated that the participants whose concern about climate changes is high are also more tended to behave environmentally and being in activities to protect the nature.

In other study, Fransson and Garling (1999) claimed that people should be aware of the causes of the environmental destroying for future generations. They reviewed the studies to show the correlations between determinants such as ''socio-demographic and/or psychological factors'' and an impact of environmental concern on environmental responsible behavior. In other words, they aimed to review and analyze previous researches to assess whether the environmental concern plays an important role on behaviors. In the result, they found out that ''knowledge, internal locus of control (positive control beliefs), personal responsibility and perceived threats to personal health'' are the affecting determinants on behaviors.

In another study, Onur and her collogues (2012) studied with 952 elementary students (448 boys, 492 girls and 12 of them who failed to report their gender). Their goal was to investigate Turkish elementary school students' value orientations, attitudes

and concerns toward the environment. Looking at results, participants were highly concerned toward the environment and held favorable ecocentric attitudes. Moreover, it was found that students having higher levels of anthropocentric attitudes also have high environmental apathy, and students who have biospheric concerns also have low levels of egoistic concerns. According to the results of the study, it was found out that boys were less concerned when it is compared with girls and girls also seem having more tendency to value nature for own sake.

De Groot and Steg (2008) proposed that value orientations which were useful to assess the environmental concern were not correlated strongly with the people's beliefs about environment. In details, it was found out that the egoistic value orientations of people made contributions to explain the variance in awareness of consequences while biospheric value orientation of people made contributions to explain the variance responsibility.

Milfont, Duckitt and Cameron (2006) made a study to assess the motive concerns of people to conserve the nature and their pro-environmental behavior. They investigated whether there are differences between European New Zealanders and Asian New Zealanders in their environmental concerns and assessed these differences. An anonymous questionnaire was applied to 658 undergraduate students. In the study, there were 474 European New Zealanders and 184 Asian New Zealander students in different ages. According to the results of the study, Asian New Zealander had higher egoistic concern than European New Zealanders, whereas European New Zealander had higher biospheric concern. It was found out that biospheric concern affect European New Zealanders' proenvironmental behaviors positively whereas egoistic affects in a negative way. In contrast, for Asian New Zealanders' concerns on biospheric and altruistic concerns contributed their pro-environmental behaviors in a positive way

Özdemir & Yapıcı (2010) made a study to assess the awareness and concern levels oriented of the prospective teachers towards environmental problems and whether it changes or does not change according to academicals fields and degree of closeness to nature. There were 240 students who were senior class students in the study. Results of

the study revealed that Geography and Physics teacher candidates stated that soil pollution was one of the crucial problems in the environment when they are compared with science teacher candidates. The degree of taking responsibility of teacher candidates due to their concerns toward nature were found out higher in the candidates who told that they were related with nature more.

In another study, Schultz and his collogues (2012) made a study to measure the children's environmental motive concerns. The participants were primary and elementary school students in different ages. Three hundred and five students participated to the study and 130 of them were boys while 175 of them were girls. The researcher made small modifications and applied the scale to the students. The results of the confirmatory factor analysis indicated an acceptable fit for the sample.

CHAPTER III

METHOD

Study context, population and sampling, description of variables, measuring instruments, data collection and statistical techniques utilized in the analysis of data, assumptions and limitations of the study were presented in this chapter.

3.1 Study Context

Samsun is a city with a population over a million people on the north coast of Turkey. Samsun is the biggest metropolitan city in the middle Black Sea area. The growing city has two universities, several hospitals, and a lot of manufacturing industries, and sports facilities. Samsun province is one of the sectors that make up the economic structure of the agricultural sector, though industrial, livestock, and tourism also occupy an important place. The city center has a population of 317.085 people. There are 52 public primary schools (http://samsun.meb.gov.tr/).

Samsun is located in the middle part of the Black Sea coast line lying between the deltas where Yeşilırmak and Kızılırmak rivers flow into the sea. Looking at landforms, Samsun shows three characteristics. First one is the highlands in the south, the second one is the plateaus between the highlands and the coastal line and the third one is the coastal plains between the plateaus and the coastal line.

Samsun has a humid subtropical climate like most of the eastern Black Sea coast of Turkey. The climate classification is a borderline marine due to summer temperature meaning that it is above the 22 °C (72 °F) isotherm. The temperature varies 10 degrees from one day to the next in springs. Summers are generally warm and humid whereas winters are cool and damp.

3.2 Population and the Sample

This research was desired to be a regional study, and as the target population, all seventh and eighth grade public school students in the middle part of Black Sea Region of Turkey were identified. However, studying with target population was difficult for the researcher, the accessible population was determined. All 7^{th} and 8^{th} grade public school students in the city center of Samsun were defined as the accessible population for this study. As sampling method, convenient sampling method was used in the study. The data was collected from seven public primary schools which were convenient for the researcher to reach because some schools were so far like in the village lasting hours to go, although they appeared to be located in the city center with respect to the categorization declared by Ministry of Education (http://samsun.meb.gov.tr/).

There were 1774 seventh and eighth grade public school students participating in the study. Among them, 859 students were 7^{th} graders (48.4%), 802 students were 8^{th} graders (45.2%), and 113 students (6.4%) did not label their grade level. Regarding the gender distribution, 820 students (46.2%) were female while 824 students (46.4%) were male and 130 students (7.4%) did not label their gender.

The range of age distribution for that sample was 12 to 15 years with a mean of 13.41 (SD=0.651). Moreover, information about the students' mothers' and fathers' educational level, mothers' work status and fathers' work status were obtained for the current study as indication of socioeconomic status (see Table 3.1). As it is presented in the table, 28.8 % of mothers graduated from primary school, 20.6% graduated from middle school, and 29.7% graduated from secondary school. In addition, 13.1% of mothers reported to have graduated from university, 2.9% had MS degree and 0.7 had PhD degree while 2.0% of them reported that they never went school. 18.8% of fathers graduated from primary school, 20.9% graduated from middle school, and 32.8% graduated from secondary school. Moreover, 19.4% of fathers reported to have graduated from university, 4.6% had MS degree and 0.8% had PhD degree while 0.4% of them reported that they never went school. 2.2% of mothers' and 2.3% of fathers'

education levels were not labeled by the students. In brief, fathers' educational level was higher than mothers' educational level. When it is looked the work status of parents, majority of students reported their mothers (64.4%) as housewife, about 14.0% was indicated as white-collar worker, and 14.5% was worker while 3.0% were self – employment. On the other hand, only 2.3% of fathers were reported to be unemployment. Of the working fathers, 22.7% were white-collar worker, 46.3 % were worker, 15.4 were self –employment. As revealed statistically, majority numbers of mothers did not have job but on the other side most of the fathers had job. All details about the sample characteristic were presented in the Table 3.1.

Table 3.1 Demographic Characteristics of Sample

VARIABLE		***PERCENTAGE (%)***
Gender	Girl	46.2
	Boy	46.4
	Not labeled	7.4
Age	12	5.5
	13	43.1
	14	37.2
	15	2.5
	Not labeled	11.7
Grade level	7	48.4
	8	45.2
	Not labeled	6.4
Mother Education Level	Illeterate	2.0
	Primary School	28.8
	Elementary School	20.6
	Secondary School	29.7
	University	13.1
	M.S	2.9
	Ph.D	0.7
	Not labeled	2.2

Table 3.1 (Continued)

Father Education Level	Illeterate	0.4
	Primary School	18.8
	Elementary School	20.9
	Secondary School	32.8
	University	19.4
	M.S	4.6
	Ph.D	0.8
	Not labeled	2.3
Mother Work Status	White-Collar Worker	14.0
	Worker	14.5
	Retired	1.9
	Employer	3.0
	No Work	64.4
	Not labeled	2.2
Father Work Status	White-Collar Worker	22.7
	Worker	46.3
	Retired	9.8
	Employer	15.4
	No Work	2.3
	Not labeled	3.5
Monthly Income of Family	0-1000	15.6
	1000-1500	29.1
	1500-3000	31.0
	More than 3000	20.8
	Not labeled	3.5

3.3 Variables

In this study, independent and dependent variables were defined.

3.3.1 Independent Variables

The variables which are controlled or manipulated to investigate were called as independent variables (Fraenkel & Wallen, 2006). In this study, Nature Relatedness_self_experience, Nature Relatedness_perspective, egoistic, altruistic and

biospheric motive concerns of the students are the independent variables. Independent variables are continuous variables measuring as followings,

NR_Self_Experience: This variable measures the physical familiarity with the natural world and an internalized identification with nature of individuals.

NR_perspective: This variable includes the items about the external, nature-related worldview of students and individual human actions and their impact on all living things (Nisbet et al., 2008).

Egoistic motive concern: This variable includes the items about environmental concerns of the individuals for themselves, their future and so on.

Altruistic motive concern: This variable includes the items about environmental concerns of the individuals for others.

Biospheric motive concern: This variable includes the items about environmental concerns of the individuals for nature like plants, marine life and so on.

3.3.2 Dependent Variable

The measure of the effect of the independent variable was described as dependent variable (Fraenkel & Wallen, 2006). This study includes children's responsible environmental behavior (CREB) as dependent variable.

Responsible Environmental Behavior: This variable includes acquired or learned behaviors (actions), and it does not operate in an isolated environment (Sia, Hungerford, and Tomera 1985/1986).

3.4 Instruments

In this study the instruments was used to collect data including four parts.

3.4.1 Demographic Questionnaire

The Demographic Questionnaire includes seven questions, which was designed to provide information about students' grade level, gender, age, parents' education level, parents' work status and their income.

3.4.2 Nature Relatedness Scale (NR)

The scale measuring the affective, cognitive and physical connections of individuals with the natural environment was developed by Nisbet, Zelenski and Murphy in 2009. There are 21 items and 3 factors which are categorized as NR-Self, NR-Perspective and NR-Experience. The first factor, NR-Self refers an internalized identification like thoughts, feelings of individuals toward nature. The second factor, NR-Perspective, represents an external, nature-related worldviews of subjective human actions and their effects on other living things like plants and animals. The last factor, NR-Experience, represents a physical familiarity with the natural world (Nisbet et al., 2009). The Nature Relatedness Scale was adapted into Turkish by Çakır and colleagues (2015). The researchers took into consideration the characteristics of Turkish language, social, cultural and environmental structures and backgrounds while adapting the scale to Turkish. After the scale was translated into Turkish, the researchers administered the scale to university students. According to the results of the study, the instrument was reliable and valid in Turkish version, explaining well three factors.

The elementary school students participating in this study were expected to rate the items on a 5- point Likert-type scale in which the alternatives ranged from 1 to 5. Five points were assigned to ‘‘strongly agree’’, 4 to ‘‘agree’’, 3 to ‘‘undecided’’, 2 to ‘‘disagree’’ and 1 to ‘‘strongly disagree’’. The scale was also pilot tested with 200 elementary school students. First, in order to test whether the scale factors to leave the appropriate structure, the Kaiser-Meyer-Olkin (KMO) and Barrlett's test was used. The value of KMO is 0.90 and Barlett test significance value was determined to be smaller than 0.05. The value of KMO and Bartlett's test for factor analysis of the data to be statistically significant over 0.70 suggests that it is appropriate (Reynolds, 2010). Then, factor analysis to collect some validity evidences, and reliability analysis to be able to

see internal consistency of the instrument were employed. The results of the principal component factor analysis showed that items were loaded on two factors which differ from the original scale. In the original scale, items were loaded on three factors namely, self, experience and perspective. However, in the present study, it was observed that items originally found on the factors of NR-self and NR-experience were loaded in the same factor while perspective items were loaded in one factor as it was displayed in the Table 3.2. It may be inferred that the internalized identification of elementary students with nature are linked to their physical familiarity with the natural world. It was also found out that r value of NR_Self_Experience factor ranging from 0.40 to 0.70 and NR_Perspective ranging from 0.51 to 0.63 which are in an accepted interval. Three items were deleted since they loaded different factors from the original scale.

Table 3.2 Factors of Nature Relatedness Scale

ITEMS	FACTOR1	FACTOR2
NR1	0.519	
NR2		0.511
NR3		0.528
NR4	0.402	
NR5	0.536	
NR6	0.510	
NR7	0.705	
NR8	0.614	
NR9	0.627	
NR11		-0.528
NR12	0.624	
NR15		0.634
NR16	0.616	
NR17	0.694	
NR18		0.566
NR19	0.401	
NR20	0.450	
NR21	0.650	

According to the reliability analysis results, the reliability coefficient value was higher than 0.7, indicating that there are no other measured concepts irrelevant to the original scale (Field, 2005). The internal consistency of NR_Self_Experience and NR_Perspective factors was found to be 0.83 and 0.56 respectively assessed with Cronbach's alpha. Reliabilities below .70 could be acceptable since the sample size is large and the items are in small number (Bacon, 2004). The reliability coefficient value for the whole scale was found as 0.79 by using Cronbach's alpha.

3.4.3 Children's Responsible Environmental Behavior Scale (CREBS)

In this study Children's Responsible Environmental Behavior Scale (CREBS) developed by (Erdogan et al. 2012) in Turkish was used to assess the students' responsible behaviors on environment. CREBS includes 23 seven-point scale items, which have been designed as four sub-scales: political action (six items), physical action (six items), consumer and economic action (five items), and individual and public persuasion (six items). The first factor, political action, represents the environmental actions in which individuals seek for governmental and political means, and also persuade government agencies to take action to protect environment. The second factor physical action refers to environmental actions in which individuals involve directly in natural world to prevent the environment. The third factor consumer and economic action refers to environmental actions in which individuals use monetary support or financial pressure to prevent the environment. The last factor, individual and public persuasion represents the being active environmentally to encourage others to protect the environment (Erdogan et al. 2012).

The participants of the present study were asked to rate the items with respect to the number of times they engaged in the mentioned action in 2 years. Thus, the participants rated the items on a 7- point scale in which the choices ranged from 0 to 6. Six points were assigned ''6'' to ''more than five'', ''5'' to ''five times'', 4 to ''four times'', 3 to ''three times'' and 2 to ''twice'', 1 to ''ones'', 0 to ''never''. In order to test whether the scale factors to leave the appropriate structure, the Kaiser-Meyer-Olkin (KMO) and Barrlett's test was used. The value of KMO is 0.94 and Barlett test

significance value was determined to be smaller than 0.05. The value of KMO and Bartlett's test for factor analysis of the data to be statistically significant over 0.70 suggests that it is appropriate (Reynolds, 2010).

To come up with construct related validity evidence, principle component factor analysis was implemented to analyze the collected data in the present study. According to the results of this analysis, Children's Responsible Environmental Behavior Scale (CREBS) loaded on 3 factors which are political action (six items), physical and economic action (11 items) and individual and public persuasion (six items). In the present study, it was observed that the items about physical action and economic action were loaded in the same factor. The actions which need physical engagement to increase environment quality were represented by these two factors. It was found out that r value of CREB_Physical_Economic factor ranging from 0.50 to 0.83, CREB_Political ranging from 0.71 to 0.87 and CREB_Persuasion ranging from 0.42 to 0.83 which are in an accepted interval.

Table 3.3 Factors of Children Responsible Environmental Behavior Scale

ITEMS	FACTOR1	FACTOR2	FACTOR3
CREB1		0.714	
CREB2		0.873	
CREB3		0.834	
CREB4		0.865	
CREB5		0.838	
CREB6		0.789	
CREB7	0.708		
CREB8	0.656		
CREB9	0.834		
CREB10	0.604		
CREB11	0.499		
CREB12	0.771		
CREB13	0.506		
CREB14	0.701		

Table 3.3 (Continued)

CREB15	0.791	
CREB16	0.667	
CREB17	0.566	
CREB18		-0.745
CREB19		-0.811
CREB20		-0.826
CREB21		-0.423
CREB22		-0.564
CREB23		-0.572

The internal consistency of CREB_Political, CREB_Physical_Economic, and CREB_Persuasion factors was found to be 0.91, 0.89 and 0.83 respectively assessed with Cronbach's alpha. According to the reliability analysis' result presented that the Cronbach's alpha coefficient was found as 0.90 for whole scale representing high internal consistency of the instrument (Field, 2005).

3.4.4 Environmental Motive Concern Scale

This scale was developed by Schultz (2001) to assess the individuals' level of importance of valued objects which were categorized around themselves, other people and the biosphere regarding environmental threats. It includes 12 items and cover 3 categories named *egoistic* (me, my lifestyle, my health and my future), *altruistic* (people in my country, all people, future generations, my children) and *biospheric* (plants, animals, birds, marine life). The students were asked to rate their concerns regarding themselves, others and biosphere from '' (1) of no importance'' to '' (7) ultimate importance''. In order to test whether the scale factors to leave the appropriate structure, the Kaiser-Meyer-Olkin (KMO) and Barrlett's test was used. The value of KMO is 0.86 and Barlett test significance value was determined to be smaller than 0.05. The value of KMO and Bartlett's test for factor analysis of the data to be statistically significant over

0.70 suggests that it is appropriate (Reynolds, 2010). The factor analysis was carried to examine the construct validity of the scale. The results of the analysis indicated that the items were loaded on three factors that overlapped with the factors in the original scale except one item 'my children'. The item 'my children' was highly loaded on the factor of egoistic value orientation as in the Turkish-adapted scale. Because of the cultural characteristics of Turkish family, the researchers (Onur et al., 2012) decided to place the statement ''my children'' into the factor of egoistic value orientation based on the results of their study. It was found out that r value of biospheric factor is ranging from 0.79 to 0.85, egoistic factor ranging from 0.50 to 0.82 and altruistic factor ranging from 0.44 to 0.82 which are in an accepted interval.

Table 3.4 Factors of Environment Motive Concern Scale

ITEMS	FACTOR1	FACTOR2	FACTOR3
MC1	0.819		
MC2	0.802		
MC3	0.847		
MC4	0.787		
MC5		0.819	
MC6		0.737	
MC7		0.704	
MC8		0.734	
MC9			0.822
MC10			0.804
MC11			0.795
MC12		0.489	0.443

The internal consistency of egoistic, altruistic and biospheric factors was found to be 0.82, 0.86 and 0.87 respectively assessed with Cronbach's alpha. The Cronbach's alpha coefficient was calculated as 0.87 for environmental motive concern scale.

3.5 Procedure

In this research, 7th and 8th grade students' nature relatedness, responsible environmental behaviors and environmental motive concerns were examined. The relationship between nature relatedness, environmental motive concerns and responsible environmental behaviors of students were also investigated. Firstly, the researcher started to scan literature review in the aspect of the purpose. Educational Resources Information Center (ERIC), International Dissertations Abstracts, thesis and other studies done in Turkey were searched by the help of a keyword list and some of them were read in details. The instruments developed by the other researchers, measuring nature relatedness, children's responsible environmental behavior and motive concerns were obtained from these articles and thesis. The instruments used in the current study were applied in different countries and some of them applied in different grade levels. After decision of the instruments used in the present study, a demographic tool and the introduction part of the questionnaire was prepared.

Afterwards, what would be the participant schools and type of participants were decided. Necessary permissions from Ethical Committee of Graduate School of Social Sciences at Middle East Technical University and Directorate of National Education of Samsun were taken.

The measuring tool was piloted for the purpose of try out and modified. 200 students participated the pilot study. Some of the student were talked and taken their perceptions about the statements. According to the answers, some statements were simplified. For the main study, 2-page questionnaire were administered to 7th and 8th grade students who were volunteers. To complete the questionnaire, the students gave their almost 15-20 minutes. Since there was time problem, teachers helped to the researcher in the application process of the questionnaire. In the process of analyze, some of the data were missing so 1774 data were taken into consideration while analyzing the data. The researcher informed the participants about the aim of the current study. The needed explanations about the questionnaire were made clearly to the participants by the researcher or the teachers. It was highlighted that the questionnaire

would not measure their level in knowledge and since there is no right and wrong answer, they do not need to feel under stress. The researcher or teachers guided the students about reading all items carefully and give the answer actually what they think about the items.

The data obtained from the study were entered in statistical package for the sciences program (SPSS) coding all the categories of the variables in the data by the researcher. Female students were coded as ‘‘1’’, and male students were coded as ‘‘2’’. Seventh grade students were coded as ‘‘7’’ and eighth grade students were coded as ‘‘8’’. For the mothers’ and fathers’ educational level items, ‘‘illiterate’’ was coded as 1, ‘‘primary school’’ was coded as 2, ‘‘elementary school’’ was coded as 3, ‘‘high school’’ was coded as 4, ‘‘university’’ was coded as 5, ‘‘M.S.’’ was coded as 6 and ‘‘Ph.D.’’ was coded as 7. For the mothers’ and fathers’ occupation items, ‘‘employee’’ was coded as 1, ‘‘worker’’ was coded as 2, ‘‘retired’’ was coded as 3, ‘‘employer’’ was coded as 4, ‘‘no work’’ was coded as 5. For the item ‘‘Can you reach recycling bin easily?’’, ‘‘yes’’ was coded as 1, ‘‘no’’ was coded as 2. For the item ‘‘What is the income of your family monthly?’’, ‘‘0-1000’’ was coded as 1, ‘‘1000-1500’’ was coded as 2, ‘‘1500-3000’’ was coded as 3, ‘‘more than 3000’’ was coded as 4. For the multiple choice items, in nature relatedness scale, ‘‘strongly disagree’’ was coded as 1, ‘‘disagree’’ was coded as 2, ‘‘undecided’’ was coded as 3, ‘‘agree’’ was coded as 4, ‘‘strongly agree’’ was coded as 5. For the responses to the children’ responsible environmental behavior scale, ‘‘never’’ was coded as 0, ‘‘once’’ was coded as 1, ‘‘twice’’ was coded as 2, ‘‘three times’’ was coded as 3, ‘‘four times’’ was coded as 4, ‘‘five times’’ was coded as 5, ‘‘more than five times’’ was coded as 6.

3.6 Statistical Techniques Utilized in the Study

To analyze the data, Statistical Package for Social Sciences (SPSS) for Windows software program was used. The analysis was done in two parts; in the first part, descriptive statistics and in the second part, inferential statistics were presented.

3.6.1 Descriptive Statistics

For all instruments in the questionnaire frequency analyses, the mean scores and standard deviation were used to determine the elementary school students' connections with nature (nature relatedness), environmentally responsible behaviors and motive concerns.

3.6.2 Inferential Statistics

Statistical analysis employed to assess the relationship between the nature relatedness, motive concerns and responsible environmental behaviors of 7^{th} and 8^{th} grade students was Multiple Linear Regression. Independent variables were self-experience, perspective, egoistic, altruistic and biospheric dimensions of students while the dependent variable was responsible environmental behavior.

3.7 Assumptions and Limitations

The assumptions and limitations of this study were presented below.

3.7.1 Assumptions

1- The questionnaire was implemented under normal circumstances.
2- The participants answered the items sincerely, what they really think or feel.

3.7.2 Limitations

1- The data might not represent the complete objectivity since self-report measure was used.
2- The participant 7^{th} and 8^{th} grade students may not represent the population of interest.
3- In the current research, the questionnaires were administered to the public school students located in Samsun. Different results could be obtained from different types of schools.
4- A qualitative study might be conducted to make clear statements with respect to the results of the quantitative analysis. Researchers may use semi-structured interviews to see the students' expression of their views in their own terms.

5- Kuhlemeier, Bergh & Lagerweij (1999) proposed that researchers should not be too optimistic claiming that the participants would response as they really do. There can be differences between what they tell and what they actually do. This may be a limitation for the current study.

3.8 Threats to Internal Validity of the Study

Internal validity is the association of two or more variables should be definite that means there can be some other variables which affect the correlation (Fraenkel & Wallen, 2006). In this part, the possible internal validity threats and how these threats might be eliminated were presented.

Subject characteristics threat is about the selection of the participants. Some characters such as age, gender, intelligence, maturity might affect the result of the study and it is called subject characteristics threat (Fraenkel & Wallen, 2006). In order to minimize this threat, in the present study, all students were chosen from 7^{th} and 8^{th} grade public schools and the students' ages were similar.

Lose of subject is especially a threat for most of the studies in which time is needed. In the present study, mortality is not a threat since the study was done just one time consisting 1774 students.

The location which was the data were collected may affect the result of the study and may create different explanations, and instrumentation. For example, students' answers may change in the forest, in the classroom or in their homes (Fraenkel & Wallen, 2006). The best solution to control location threat is to keep the location constant (Fraenkel & Wallen, 2006). Therefore, that is also a threat for the result of the study (Fraenkel & Wallen, 2006). In the present study, since the instruments were used only once and in the classroom environment, there could not be a testing and location threat. In addition to these, results of the study may change due to growing maturation of subjects when the time passes. Students' answers or behaviors may change due to time issue and this is called maturation threat (Fraenkel & Wallen, 2006). Since the administration was done for just one time, this was also not a threat for the study. Other

internal validity threats might be regression and implementation for the studies. If the researcher study change with the participants, regression threat can be seen because taking low or high scores in pre-test does not mean that participant is good or bad at that time. The researcher made pre-test one time and because of the other reasons, the subject could take high or low scores. Therefore, in the post-test, the researcher could observe a change or could not observe. This is known as regression threat (Fraenkel & Wallen, 2006). On the other side, implementation threat known as threat caused because of the treatment or method in any experimental study should be administered by someone like teacher, researcher (Fraenkel & Wallen, 2006). Since there is no intervention, there are no regression and implementation threats in this study.

Changing the nature of instrument in some way or another including scoring procedure can cause some problems in instrumentation. Especially as in essay tests, if different interpretations can be made from the data, this can be an internal validity for the study and it is called instrument decay threat (Fraenkel & Wallen, 2006). In the current study, since the students just choose the numbers and there was no explanations that should be written, instrument decay is not threat. Data collector characteristics such as age, gender, and ethnicity may affect the result of the study. For most studies, this threat is inevitable (Fraenkel & Wallen, 2006). In the current study, there could be data collector characteristics threat since the teachers were requested to help the researcher during the administration of the questionnaires. In addition, data collectors may unconsciously alter the result of the study and this is called data collector bias threat for the study (Fraenkel & Wallen, 2006). In the current study, all data collectors were given information about the details and the procedure of the study to minimize this threat. Beside this, attitudes of the participants such as being cared or being left out may be a threat for the result of the study and this might be attitudes of subject threat for the study (Fraenkel & Wallen, 2006). The data collectors were told to make explanations to the students to minimize the threat.

Unexpected and unplanned events may occur before the administration and these events can affect the result of the study. That is known as history threat (Fraenkel &

Wallen, 2006). In the present study, unexpected and unplanned events were not observed by the collector so there was no history threat.

CHAPTER IV

RESULT

The results of descriptive and inferential statistics were presented in this chapter.. Descriptive statistics were used to give information about the students' nature relatedness, responsible environmental behaviors and motive concerns while inferential statistics were used to determine the relationships between students' nature relatedness, motive concerns and responsible environmental behaviors. Frequency analyses, the mean scores and standard deviation were used for descriptive statistics. For inferential statistic, multiple linear regressions were used.

4.1 Descriptive Statistics

In this part, descriptive statistics of the scales namely, Nature Relatedness, Children's Responsible Environmental Behavior and Environmental Motive Concern were interpreted. Frequency, mean, range and standard deviation for the scales were reported.

4.1.1 Descriptive Statistics of Nature Relatedness Scale

Nature Relatedness Scale addressed two dimensions of participants' nature relatedness with distinct sets of questions for each dimension; self_expeience and perspective. Table 4.1 presents the mean scores and standard deviations of nature relatedness dimensions with respect to gender and grade level.

Table 4.1 Mean and Standard Deviation of Nature Relatedness Scale with Respect to Grade Level and Gender

		NR_Self_Experience		NR_Perspective	
Grade Level	**Gender**	**M**	**SD**	**M**	**SD**
7 grade	Girls	3.94	0.61	3.98	0.59
	Boys	3.72	0.66	3.73	0.72
	Total	3.83	0.65	3.85	0.67
8 grade	Girls	3.83	0.59	3.85	0.62
	Boys	3.70	0.69	3.71	0.67
	Total	3.76	0.66	3.77	0.65
TOTAL		3.79	0.65	3.81	0.67

As presented in the Table 4.1., the scores on perspective items (*M=3.81)* indicated that the students reflected an external, nature-related worldview. In other words, students give importance to individual human actions and their impact on all living things. Beside this, the students presented the physical familiarity with the natural world and an internalized identification with nature of individuals at the same time when the self_experience items scores (*M=3.79)* were investigated.

These results with respect to gender, girls were related with the nature on both dimensions with the mean of self_experience, *M*=3.89 and perspective, *M*=3.92. It indicated that girls feel a sense of being into the natural environment which is related with how the individual see herself/himself in nature and the feeling of inclusion in nature and so how they contribute to protect it (Schultz, 2002).

Boys' mean score was *M*=3.71 on the score of self_experience and *M*=3.72 on the score of perspective dimension. The results revealed that boys were moderately related with nature and they also revealed an internalized identification and physical familiarity with the natural world. Beside these, they believed that others should be persuaded to protect the nature.

Regarding grade level, it can be concluded that 7th grade students' had the scores in both dimensions with the mean of self_experience, *M*=3.83 and perspective, *M*=3.85 and 8th grade students' scores were *M*=3.76 for self_experience dimension and *M*=3.77 for perspective dimension. It was interpreted that the students had almost strong connection with nature.

A clear picture can be seen from the Figure 4.1

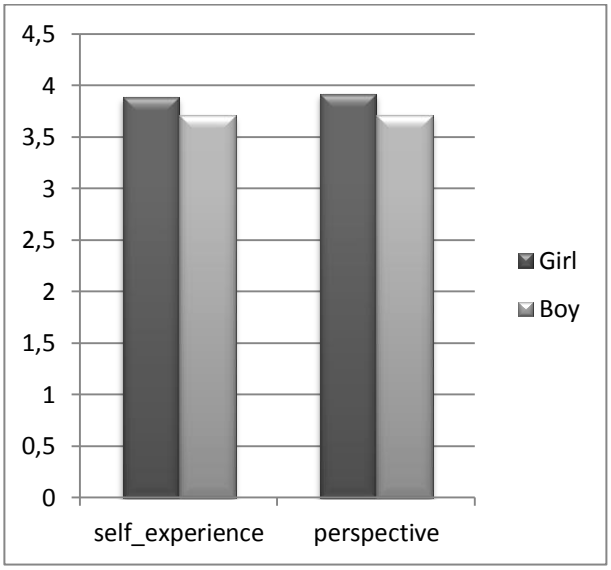


Figure 4.1. (Continued)

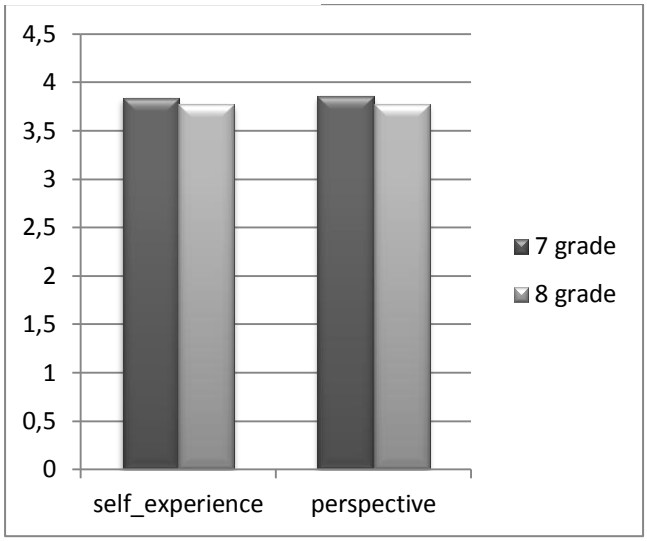


Figure 4.1. Bar Diagrams for the Self_experience and Perspectives with respect to Gender and Grade Level

Table 4.2 revealed the subjects' agreements, in percentages, on the items in Nature Relatedness Scale. There were 12 five-point likert type items to measure the self_experience dimension. Self_experience includes the items about both internalized identification with nature and physical familiarity with the nature. The result indicated that 7th and 8th grade students had high scores in self_experience dimension with the mean of M=3.79. Majority of the students supported the statements such as ''I am very aware of environmental issues'' (83.2%); ''I think a lot about the suffering of animals'' (81.8%); ''I always think about how my actions affect the environment'' (74.3%). In the following items such as ''My ideal vacation spot would be a remote, wilderness area'' (31.1%); ''I take notice of wildlife wherever I am'' (27%); and ''My relationship to nature is an important part of who I am'' (26.8%) the students are undecided mostly. The participants also disagree in the item that ''I enjoy digging in the earth'' (27.5%). In the table 4.2, all items and answers were represented in detail.

Table 4.2. Frequency Distributions of Participant Agreement with Self_Experience Statements and Corresponding Item Means and Standard Deviations

ITEMS	SD	D	U	A	SA	M	SD*
My connection to nature and the environment is a part of my spirituality	6	8.4	25.9	32.9	26.8	3.66	1.14
My relationship to nature is an important part of who I am	5.9	9.6	26.8	32.8	24.9	3.61	1.13
I am not separate from nature, but a part of nature.	6.1	9.1	24	33.1	27.7	3.67	1.15
I always think about how my actions affect the environment	4.7	4.4	16.6	38.2	36.1	3.96	1.07
I am very aware of environmental issues	4.7	4	8.1	34.8	48.4	4.18	1.06
I think a lot about the suffering of animals.	8.9	3.7	5.6	20.5	61.3	4.21	1.25
Even in the middle of the city, I notice nature around me	7.1	8.6	23.7	33.9	26.7	3.65	1.16
I enjoy being outdoors, even in unpleasant weather	3.7	2	4.8	28.9	60.6	4.40	0.95
My ideal vacation spot would be a remote, wilderness area	9.4	15.9	31.1	23.3	20.3	3.29	1.22
I enjoy digging in the earth.	12.9	14.7	19.8	27.1	25.5	3.38	1.34

Table 4.2.(Continued)

I take notice of wildlife wherever I am	**4.5**	**11.2**	**27**	**34.8**	**22,5**	**3.60**	**1.08**
I feel very connected to all livings and the earth	4.5	6.5	24.3	33.5	31.2	3.81	1.08

(Note: SD: Strongly disagree, D: Disagree, U: Undecided, A: Agree, SA: Strongly agree, M: Mean, SD*: Standard deviation)

Regarding the perspective dimension, there were 6 five-point likert type items to measure the students' perspectives toward nature. Perspective items show the students' external, nature-related worldview and the results indicated that 7th and 8th grade students also have high values in perspective dimension with the mean of *M*=3.81. Majority of the students disagree with the statements such as ''Conservation is unnecessary because nature is strong enough to recover from any human impact'' (79.1%); ''Animals, birds and plants have fewer rights than humans'' (77.8%). Students especially undecided about the statements "Nothing I do will change problems in other places on the planet'' (28.2%) and "The state of nonhuman species is an indicator of the future for humans'' (28.1%). It can be said that the students cannot imagine the hugeness of the planet. Therefore, they are not sure that they can change the world's dignity about the nature. All perspective items were dilated in the Table 4.3.

Table 4.3. Frequency Distributions of Participant Agreement with Perspective Statements and Corresponding Item Means and Standard Deviations

ITEMS	SD	D	U	A	SA	M	SD*
Humans have the right to use natural resources any way we want	39.5	23.8	14.7	10.4	11.6	2.31	1.38
Conservation is unnecessary because nature is strong enough to recover from any human impact	64.6	14.5	7.8	5.4	7.7	1.77	1.25
Animals. birds and plants have fewer rights than humans	58.6	19.2	7.8	6.7	7.7	1.85	1.26
Some species are just meant to die out or become extinct	51.7	19.5	16.9	6	5.9	1.05	1.20
Nothing I do will change problems in other places on the planet	15.7	17.2	28.2	19.6	19.3	2.10	1.32
The state of nonhuman species is an indicator of the future for humans	5.2	7	28.1	27.4	32.3	3.75	1.13

(Note: SD: Strongly disagree. D: Disagree. U: Undecided. A: Agree. SA: Strongly agree. M: Mean. SD*: Standard deviation

To conclude descriptive statistics revealed that most of the students feel connected with the nature. It can be interpreted that students are better in experience but their perspectives toward nature might be broaden. For example majority of the students answered the item 'Nothing I do will change problems in other places on the planet' as undecided. This result indicated that they are not so realized that if they do something small to protect the nature, it would contribute to conservation of nature.

4.1.2 Descriptive Statistics of Children's Responsible Environmental Behavior Scale

Children's Responsible Environmental Behavior Scale addressed three dimensions of participants' responsible environmental behaviors with distinct sets of questions for each dimension; politic, physical_economic and persuasion. Mean scores and standard deviations of children's responsible environmental behavior dimensions with respect to gender and grade level were presented in the Table 4.4.

Table 4.4 Mean Scores and Standard Deviations of Children's Responsible Environmental Behavior Dimensions with Respect to Gender and Grade Level

		CREB_Politic		**CREB_Physical_economic**		**CREB_Persuasion**	
Grade Level	**Gender**	**M**	**SD**	**M**	**SD**	**M**	**SD**
7 grade	Girl	0.23	0.66	4.32	1.48	1.93	1.59
	Boy	0.63	1.38	3.96	1.59	1.85	1.73
	Total	0.42	1.05	4.12	1.61	1.87	1.58
8 grade	Girl	0.33	0.74	4.11	1.45	1.69	1.38
	Boy	0.52	1.13	3.79	1.66	1.74	1.54
	Total	0.43	0.99	3.94	1.59	1.73	1.48

Table 4.4 revealed that the 7^{th} grade students (M=0.42) and 8^{th} grade students (M=0.43) were not active in politic actions. Regarding gender, boys (M=0.57) and girls (M=0.28) were not actively involved in political actions. In other words, results indicated that elementary grade students were not active in political issues like communicating the government officials to protect the nature. However, it might be highlighted that some

students participated political actions to contribute the nature's protection even it is not so easy to do for 7th and 8th grade students. Looking at the physical_economic dimension, 7th grade students (*M*=4.12) and 8th grade students (*M*=3.94) were active in physical and economic issues like taking steps to protect plants (i.e. watering the trees and flowers, warning the ones who harm and the step on the plants) or purchasing products which are recyclable and which are made from recycled materials. Regarding persuasion action scores 7th grade students *M*=1.88 and 8th grade students' *M*=1.73 were not so actively involved in persuading others to protect the nature. To sum up, elementary school students were more active in actions needs physical engagement rather than politic and persuasion.

A clear picture can be seen from the Figure 4.2.

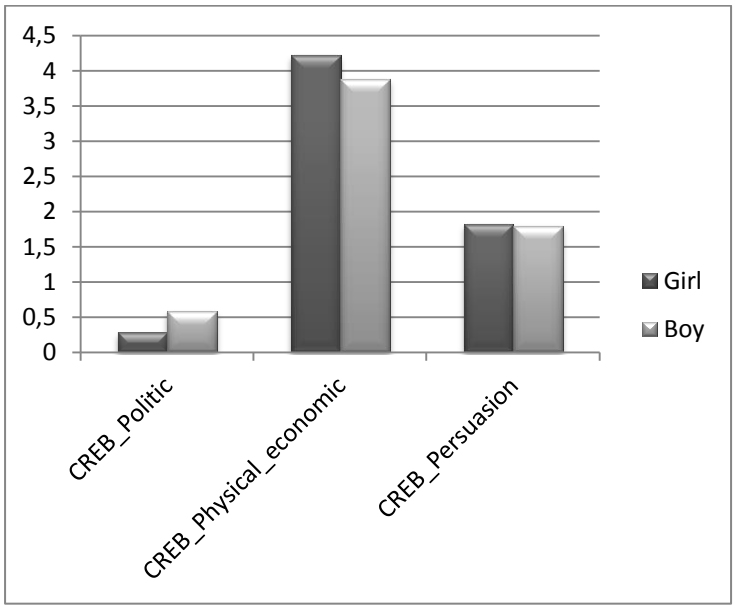


Figure 4.2. (Continued)

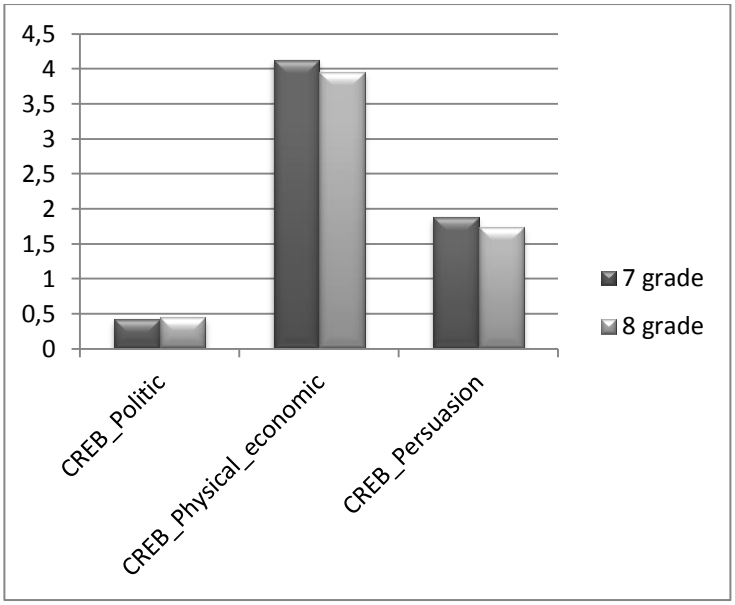


Figure 4.2. Bar Diagrams for the Politic, Physical_economic and Persuasion With Respect to Gender and Grade Level

Table 4.5 indicated the participants' level of agreements, in percentages, to the statements in Children's Responsible Environmental Behavior Scale (CREBS). CREBS consists of 23 items measured using a seven-point Likert-type scale. The students were asked that how many times they did the written statements in two years. Results show that students are not good at in political actions. Majority of the students answered as ''Never'' the statements such as ''I visited mayor and encouraged him/her to take environmental protection measures'' (87.8%) and ''I talked the government officials in order to enforce environmental laws or punish people who violate these laws'' (85.0%). However, it is seen that approximately 10% of the students had a political action more than twice in two years to protect the nature. Actually for small grade students, it can be accepted positive since it is so difficult to communicate with the government officials at these ages. On the other side, it can be said that the students are good some actions which are easier but important for the nature. Most of the students answered as ''More than 5 times'' some statements such as ''I threw materials such as paper, glass, plastic,

cans, aluminum. and batteries into recycling bins'' (71.5%); ''I took steps to conserve water (e.g. Turning of the fountains not in use. using little water while brushing my teeth. bathing. and washing hands)'' (62.2%) and ''I properly disposed of and avoided improper disposal of trash /garbage in schools. home. picnic areas. parks. and streets'' (59.9%). Moreover, most of the students told that they did not talk with the others to pursue nature protection although it is not difficult to do. The students answered as ''Never'' the related statements such as ''I talked with my family about what measures to be taken to protect and not harm the environment'' (40.7%); ''I talked with my friends about what measures to be taken to protect and not harm the environment'' (41.4%) and ''I talked with other people about what measures to be taken to protect and not harm the environment'' (50.3%). The items were presented in the Table 4.5 in detail.

Table.4.5. Frequency Distributions of Participant Agreement with Children's Responsible Environmental Behavior Statements and Corresponding Item Means and Standard Deviations

LAST TWO YEARS	NEVER	ONCE	TWICE	3 TIMES	4 TIMES	5 TIMES	MORE THAN 5	MEAN	SD
I planned to communicate with government officials(i.e.president, minister of environment and forest, and governor) regarding the importance of environment and environmental protection.(i.e.preparing mail and e-mail)	80.6	9.9	3.9	1.7	0.5	0.6	2.8	0.4	1.2
I visited mayor and encouraged him/her to take environmental protection measures	87.8	5.1	2.2	1.4	0.7	0.5	2.2	0.3	1.1
I visited district chief and encouraged him/her to take environmental protection measures	79.7	9	3.3	2.9	1.4	0.8	2.8	0.5	1.3
I talked the government officials in order to enforce environmental laws or punish people who violate these laws	85	5.3	3.2	1.5	1.9	0.5	2.7	0.4	1.2
I encouraged government officials to create a newspaper, a magazine, and public bulletin Boards in order to increase public support for environmental protection	83.8	6.1	2.8	2.3	1.3	1.1	2.6	0.4	1.3
I coopareted with government officials and NGOs representatives to prepare environmental protection projects and implement these projects	80.8	7.8	2.9	2.9	1.8	1	2.8	0.5	1.3
I properly disposed of and avoided improper disposal of trash /garbage in schools, home, picnic areas, parks, and streets	10.1	6.7	6.4	8.5	4.2	4.3	59.9	4.4	2.2
I picked up litter , trash, and garbage in schools, home, picnic areas, parks, and street and threw them in garbage bins	13.2	8.9	9	10.3	6.4	4.2	47.9	3.9	2.3
I threw materials such as paper, glass, plastic, cans,aluminum, and batteries into recycling bins	8.1	4.1	3.6	4	4.9	4	71.5	4.9	2.0
I took steps to protect plants (i.e. watering the trees and flowers, warning the ones who harm and the step on the plants)	18.2	10.2	8.9	10.3	6.2	5.4	40.8	3.6	2.4

Table 4.5 (Continued)

I took steps to protect animals, i.e. Dogs, cats, and birds, living in the streets (i.e. Creating house, feeding, protecting them from the hazards)	19.2	11.6	9.6	10.2	6.1	5.4	37.9	3.4	2.4
I took steps to conserve water (e.g. Turning of the fountains not in use, using little water while brushing my teeth, bathing, and washing hands)	11	5.8	5.1	6.3	4.7	4.8	62.2	4.5	2.2
I purchased products which are recyclable and which are made from recycled materials (e.g. I purchased the products on which there is a recycling sign)	35.4	8.3	8.3	8.9	5.8	3.7	29.5	2.7	2.5
I purchased products which were guaranteed/ certified and tested by Turkish Standards Institute (TSE) and Ministry of Village Affairs and Forestry	24.5	5.7	5.2	5	4	4.6	51.1	3.9	2.6
I purchased fresh, healthy, organic/ ecological products only after checking the expirationdate	12.3	4.5	4.1	3.7	3.4	3.2	68.9	4.7	2.2
I warned my family, my friends and other people not to use water and electricity if not necessary	14.6	7.9	7.3	8.7	6.2	5.5	49.8	4.0	2.3
I gave old books, dress, toys, and other things, which are not used, to people and institutions in need	17.1	7.3	7.5	8.2	6	5.4	48.4	3.9	2.4
I talked with my family about what measures to be taken to protect and not harm the environment	40.7	12.2	10.3	8.8	6.4	4.4	17.2	2.1	2.3
I talked with my friends about what measures to be taken to protect and not harm the environment	41.4	14.2	9.7	8.8	5.8	3.8	16.4	2.0	2.3
I talked with other people about what measures to be taken to protect and not harm the environment	50.3	12.8	9.5	7.7	4.2	3.8	11.9	1.6	2.1

Table 4.5.(Continued)

I planted and grew trees, flowers, vegetables, and other types of plants in order to embellish the environment	23.7	12.9	12	10.1	5.5	4.8	31	3.0	2.4
I donated money to national and local Non-Governmental Organizations (i.e. TEMA,DHKD)working on protecting and beautifying the environment	68.3	8.3	5.9	4.6	2.7	2.6	7.6	1.0	1.9
I prepared posters, pictures, and writings about protecting environment in order to hang on the bulletin boards at school and on the streets	61.7	12.1	6.6	5.9	3.5	2.1	8.1	1.2	1.9

4.1.3 Descriptive Statistics of Environmental Motive Concern Scale

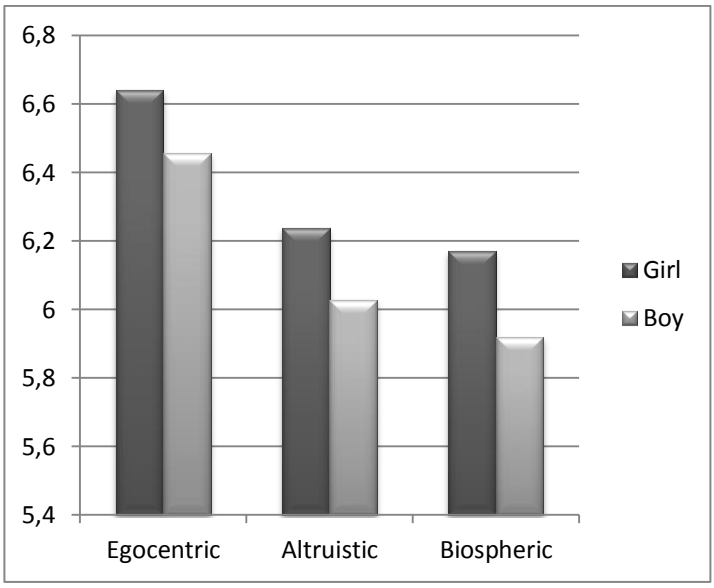
Elementary grade students were also waited to state their level of concern about current environmental topics by using Environmental Concern Scale. In Table 4.6, the mean scores and standard deviations of Environmental Concern Scale with respect to gender and grade level are presented.

Table 4.6 Mean and Standard Deviation of Environmental Motive Concern Scale with Respect to Grade Level and Gender

		Egocentric		**Altruistic**		**Biospheric**	
Grade Level	**Gender**	**M**	**SD**	**M**	**SD**	**M**	**SD**
7 grade	Girl	6.63	0.83	6.33	1.17	6.29	1.09
	Boy	6.38	1.09	6.06	1.46	6.01	1.36
	Total	6.51	0.96	6.21	1.41	6.15	1.34
8 grade	Girl	6.65	0.73	6.14	1.39	6.04	1.19
	Boy	6.52	0.95	5.99	1.44	5.82	1.40
	Total	6.58	0.87	6.06	1.41	5.91	1.34

Regarding environmental motive concerns of the elementary school students, the mean scores of subscales in the current study were: egocentric M=6.52; altruistic M=6.10 and biospheric M=6.00. With respect to grade levels, in both grade levels students were highly concerned with the nature for all subscales as it to be regarding gender. This result revealed that the students concerned about the nature by considering different perspectives such as themselves, other people and non-human living things.

A clear picture can be seen from the Figure 4.3.



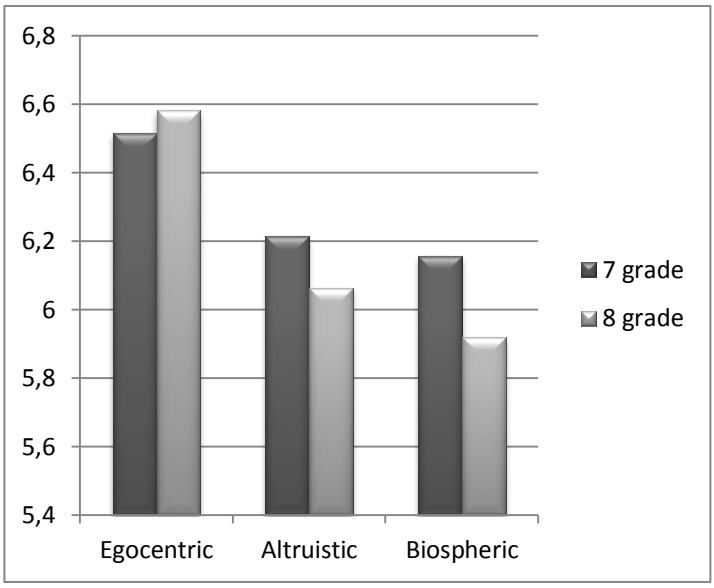


Figure 4.3.Bar Diagrams for the Environmental Motive Concern With Respect to Gender and Grade Level

When the frequency distributions of students' responses on Environmental Concern Scale were considered (Table 4.7.), students were found to be concern mostly with such items ''my children''. ''my health''. ''my future''. ''me'' when compared with the other responses of students. It was so clear that the students gave importance their egocentric concerns at most.

Table 4.7 Frequency Distributions of Participant Agreement with Environmental Motive Concern Statements and Corresponding Item Means and Standard Deviations

	Of no importance						**Of ultimate importance**		
ITEMS	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Mean**	**SD**
Me	2.6	1.1	1.8	2.5	3.7	6.6	81.7	6.5	1.3
My health	1.6	0.9	0.9	2.2	2.1	6.0	86.3	6.2	1.4
My lifestyle	3.5	0.7	2.2	5.1	8.0	11.7	68.8	6.7	1.1
My future	1.5	1.2	1.3	1.7	2.5	6.3	85.5	6.6	1.1
My children	2.8	0.6	1.1	1.3	2.0	4.1	88.1	6.6	1.2
All people	4.2	1.6	3.0	5.2	8.4	14.1	63.5	6.1	1.5
People in my country	3.8	1.4	2.7	5.8	9.2	13.3	63.8	6.1	1.5
Next generations	5.0	2.3	2.2	4.2	6.2	11.6	68.5	6.1	1.6
Plants	4.0	1.6	3.9	9.4	10.5	10.4	60.2	5.9	1.6
Marine life	3.5	1.9	4.3	7.1	10.5	13.1	59.6	6.0	1.6
Animals	1.8	1.6	2.2	4.6	7.4	11.7	70.7	5.8	1.7
Birds	3.5	3.6	5.6	7.6	10.9	11.7	57.1	6.3	1.3

4.2 Inferential Statistics

Multiple linear regression method is used to assess the strength of relationship between each of set of explanatory variables (independent variables) and a single response (dependent) variable (Landau & Everitt, 2004). In this study, Multiple Linear Regression was conducted to analyze whether responsible environmental behaviors of the students were related with the nature relatedness and environmental motive concerns of the students.

4.2.1 Assumptions

Assumptions were checked before conducting Multiple Linear Regression. Multiple linear regression has some assumptions to be checked, namely; normality, linearity and independence of residuals.

For normality assumption, skewness and kurtosis values of scores on responsible environmental behavior were checked. The skewness and kurtosis values of scores on responsible environmental behavior were in acceptable range for a normal distribution. The details can be seen from the Table 4.8.

Table 4.8 Skewness and Kurtosis Values of the Dependent Variable

	Skewness	**Kurtosis**
CREB	0.475	0.688

In order to check linearity assumption, scatterplots were constructed for dependent variable and according to these scatterplots; there was no violation of the linearity assumption for each independent variable.

As a last assumption, independency of scores was examined. It was observed by the researcher or the teachers that the students filled the questionnaires by themselves; however, it could not be observed whether the whole classes participating the study or not. To overcome this problem, administrators were requested to observe each class.

4.2.2 Multiple Linear Regression

The dependent variable of the study is responsible environmental behavior of students. NR_self_experience, NR_perspective, egoistic, altruistic and biospheric are the independent variables in the model.

Null Hypothesis

Elementary students' self-experiences, perspective related to nature and their motive concerns (egoistic, altruistic and biospheric) significantly predict their environmental responsible behaviors.

A multiple regression was conducted to see if NR_self_experience, NR_perspectives, egoistic, altruistic, biospheric concerns predicted the total score of students' responsible environmental behaviors.

Table 4.9 presents the results of multiple regression analyses for the specified purpose. Examining the predictors of children's responsible environmental behaviors, the linear combination of NR_Self_Experience, biospheric, NR_Perspective and altruistic attributes were significantly related to such kind of behaviors (R^2 = .13, $F(4,159) = 61.49$. $p < 0.001$). NR_Self_Experience was the significant predictor which explained the greatest proportion of the criterion variance uniquely (β=.26; *part correlation* =.24). The population value of β (95% ci) for NR_Self_Experience was found to be between .35 and .52 which exclude zero. Therefore, it was reasonable to conclude that NR_Self_Experience as a determinant of responsible environmental behaviors was statistically significant in terms of

conventional standards (Smithson, 2003). Furthermore, altruistic (β=.09; *part correlation* =.07; 95% ci: .03, .12) and biospheric concerns (β=.14; *part correlation* =.11; 95% ci: .07, .16) significantly and positively contributed to the causal model while NR_Perspective (β= -.10; *part correlation* = -.08; 95% ci: -.22, -.06) significantly and negatively contributed. The results also revealed that the combination of the predictors namely; NR_Self_Experience, biospheric, NR_Perspective and altruistic explained a small portion of the variance, as displayed in the Table 4.9, 13% of the variance in responsible environmental behavior scores was explained by the predictor values. According to the result of the current study egoistic concerns of the students were not a predictor for responsible environmental behaviors. In brief, null hypothesis was rejected proposing that elementary students' responsible environmental behavior is significantly related to their nature relatedness and motive concerns.

Table 4. 9 The Results of Multiple Linear Regression Analysis

	St β	***Part-Cor.***	***T***	**P**	**Adj. R^2**	**F**	**p**
Criterian: CREB					.131	61.49	.000
NRSelf_Experience	.26	0.24	9.99	.000*			
Perspective	-.10	-0.08	-3.45	.001*			
Egocentric	.00	0.00	.090	.931			
Altruistic	.09	0.07	3.12	.002*			
Biospheric	.14	0.11	4.84	.000*			

* significant at the alpha leve

4.3 Summary of Results

The results of the current study can be summarized as follows:

1- Descriptive Results of Nature Relatedness scale revealed that students are related with the nature. Moreover, students' perspective scores are higher compared with the self_experience scores. That means the students reflects an external nature-related worldview.

2- Descriptive Results of Children's Responsible Environment Behavior scale revealed that the students are actively involved to protect the nature. However, the results showed that students are more active in physical_economic actions rather than politic and persuasion.

3- Descriptive Results of Environmental Motive Concern scale revealed that the students are concerned about nature specifically in egocentric items like my future, my children and me. In addition, girls are more concerned about the nature compared with the boys in all subscales: egocentric, altruistic and biospheric.

4- Multiple Linear Regression Analysis Results showed that responsible environmental behaviors are significantly related with the 7^{th} and 8^{th} grade students' NR_self_experience, altruistic, biospheric concerns in a positive way and with NR_perspectives in negative way.

CHAPTER

CONCLUSIONS, DISCUSSION AND IMPLICATIONS

In the present chapter, the summary of the research study, conclusions of the study, discussion of the results, implications of the study and recommendations for further researches were reported.

5.1 Summary of the Research Study

The present study was conducted to investigate the 7th and 8th grade students' connections with nature (nature relatedness), environmentally responsible behaviors, and motive concerns. The power of these students' nature relatedness and motive concerns in explaining their responsible environmental behaviors were also examined.

The participants of this study were a total of 1774 seventh and eighth grade students at elementary public schools in Samsun, Turkey. Among them 859 students were 7th graders (48.4%), 802 students were 8th graders (45.2%) and 113 students (6.4%) did not label their grade level. Regarding the gender, 820 students (46.2%) were female while 824 students (46.4%) were male and 130 students (7.3%) did not label their gender.

It was revealed that these elementary public school students were highly connected with nature. It represents that the students had an internalized identification with nature and they reflected an external, nature-related worldview, individual human actions and their impact on all living things (Nisbet et al. 2008).

It was also found that they attach high level of importance to valued objects which were categorized around themselves, other people and the biosphere regarding environmental threats. They were mostly tended to conserve the nature due to their egocentric motive concerns rather than altruistic and biospheric concerns. In addition,

the present study indicated that students were actively involved in physical activities like throwing the materials to recycle bin whereas they did not take active role in persuasion someone to conserve the nature and political issues.

5.2 Conclusion

The present study indicated that majority of the students were highly connected with nature. Their connections with nature in self-experience and perspective dimensions were similar. In some perspective items like ‘‘Nothing I do will change problems in other places on the planet’’ students were undecided mostly. It was shown that although majority of the students enjoy being outdoors, in nature, they were not aware of the importance of their behaviors’ contributions to the conservation of nature in positive way.

The present study revealed that the students were not so actively involved in political activities and they also did not try to persuade the governmental agencies to take action to conserve the environment and find resolutions to the environmental problems whereas they involved directly in natural world to help prevent the environment and they were willing to restore and improve the natural systems. Some behaviors like throwing the materials into the recycle bin or taking steps to protect the animals and plants were frequently seen in the students’ environmental behaviors. In addition, it was found out that they did not environmentally active in encouraging and appealing the people to resolve the environmental problems. Students also did not put forth a verbal effort to encourage the others to take desired environmental action.

The present study also indicated that elementary school students put an emphasis on each valued object including the items which were constructed considering self, other people and all living things in terms of environmental concern. It also seems that elementary school students were in favor of environmental protection for themselves, their benefits rather than others or living things. In other words, the concepts such as their children, their health, their future and themselves motivated the students at most to protect the nature.

The results of the inferential statistics indicated that elementary students' responsible environmental behaviors were significantly related to their nature relatedness and motive concerns. The findings revealed that self_experience, perspective, altruistic and biospheric dimensions significantly predicted the responsible environmental behavior. On the other hand, the results indicated that egocentric concerns of the elementary school students were not a statistically significant predictor for their responsible environmental behaviors.

5.3 Discussion of the Results

The current study revealed that public elementary school students were highly connected with the nature and they felt that they are part of nature. The students in this study were living in the center of the city but it is so easy to contact with forests and sea around since the city was in the Black Sea region which is famous with its nature in forests and sea. For that reason, it can be inferred that the students do not live in isolation with nature and they actually directly interacted with the natural environment along with built environment. These interactions may result in high relatedness with nature as indicated by the findings of the present study. In a previous research study, Ozsoy and Ahi (2012) found that primary and elementary students mostly drew people, animals, small houses, mountains, lakes and sun in their pictures of the environment which indicated that nature means green and mostly animals in their mind. The results of Ozsoy's study also revealed that these students accepted the human as a part of nature since majority of the students drew people in their pictures. On the other hand, Louv (2007) claimed that the children and teenagers have become more aware about the environmental problems and their results to the world; however, their physical contact and relation with nature decreasing. In his research, one of the answer of the fifth grader was that 'I like to play indoors better, cause that's where all the electrical outlets are'. Louv and collogues (2008) published a report about the movement, 'Children and Nature' to contribute and increase the connection of children with natural environment. The main goal of the children and nature movement was explained to help constructing a society in which the children can play in the nature, outside under no dangerous

situation. According to Louv (2007), majority of the parents cited a number of reasons why their children's connection with nature less than their connections in their childhood. Their reasons were basically disappearing access to natural areas, children's responsibilities about school like homework and especially fear of danger. He also focused on that there are risks and some dangers outside the homes, it could be accepted. However, there are also risks in raising children under virtual protective house arrest: threats to their independency and value of place, to their ability to feel awake toward the dangerous events and to their sense of leadership, learning in cooperation (Louv, 2007).

Louv and collogues (2008) published a report on the movement, 'Children and Nature' to contribute the connectedness of children with natural environment. The main goal of the children and nature movement was explained to help construct a society in which the children play in outside and it was encouraged to be outside and playing in natural areas rather than being at home. In addition, the children and nature movement is developing an evolving set of principles. Some of the principles about parents' crucial role in nature connectedness of children:

> *(1)Parents and other guardians also responsible for the welfare of children, must know about the health, emotional and cognitive benefits of nature for children.(2)Parents and other positive adults must be intentional about taking children into nature; we cannot assume that the young will do this on their own*
> *(3)We must engage every sector of society, among them: parents, grandparents, and extended family members; developers, planners and architects; health care professionals; educators; farmers and ranchers; conservationists; government; businesses and more.*

The researcher also focused on that expanding or replicating successful state and national programs like from Texas' "Life is Better Outside" campaign to Connecticut's "No Child Left Inside" program to get families into underused state parks could make some contributions.

The present study indicated that the students were undecided about some items focusing on self-integration with the nature and their spiritually. For example, majority of the students were undecided whether their connection to nature and the environment is a part of their spirituality or not. They were also seemed to be unsure about if their relationship with nature is an important part of who they are. However, their responses to some items focusing on concrete issues were single minded. To illustrate, majority of the students declared that they think a lot about the suffering of animals or they enjoy being outdoors, even in unpleasant weather. It could be inferred that they could imagine the situation in their minds so that they could state their view points. This situation could be associated with Piaget's development stages. According to the Piaget's development stages (Flavell, 1971), the individuals whose ages are between 12 and 14 as in the current study are in the critical ages for transition from concrete thinking to abstract thinking. Since elementary school students are in the development phase of their internalized worldviews by Piaget, as educators we should help them improving their connections with nature in that phase. It was interesting to see majority of the students respond that they do not enjoy digging in the earth or they seemed to be undecided. Most of them may see digging in the earth as being dirty. The students may face with their mothers telling them 'do not be dirty' or they may take some punishments from the parents. In recent years, some detergent brands realized this and in their advertisements, they have tried to overcome this bias by using some statements like 'good to be dirty' in their ads.

The results also indicated that public elementary school students hold a strong belief about the necessity of environmental conservation. For instance, majority of the students disagreed that the conservation is unnecessary because nature is strong enough to recover from any human impact. However, they were not sure about the importance of human-being in that conservation process. Most of the students were undecided that nothing they do will change problems in other places on the planet. These elementary school students may not be aware of the fact that making even small things to conserve the nature may contribute to the solution of environmental problems in the world. Regarding the elementary science education curriculum (Ministry of National

Education, 2013), it was aimed to enhance students' basic scientific knowledge about environment and environmental problems like pollution, energy consumption, depletion of natural resources, etc. The students were also expected to be aware of the situation that people should possess the responsibility to conserve the environment. However, the strategies and the required actions that could be demonstrated to conserve the nature and how much it is important for the future of the planet and the next generations were ignored (Tanriverdi, 2009). The students in the present study might interpret that there are so big problems on the environment such as air pollution, water pollution, global warming, but their efforts to solve these problems may not make significant contribution.

The present study indicated that majority of the students were not actively involved in various aspects of responsible environmental behaviors. Looking in detail, it was found out that these students were not involved in political actions such as communicating with government officials regarding the importance of environment and environmental protection or encouraging the government officials to create a newspaper, a magazine, and public bulletin boards in order to increase public support for environmental protection whereas they had moderate tendency to be active in physical-economic actions such as recycling, picking up litter , trash, and garbage in schools, home, picnic areas, parks, and street and threw them in garbage bins or taking steps to conserve water. On the other hand, it should be highlighted that %20 of the participants stated that they did one of the political activities at least one time in 2 years although such kind of activities were regarded as dark green actions which were not frequently demonstrated even by pre-service science teachers in Turkey (Alper, 2014). At this point, it should be also noted that the actions (e.g. recycling) related to physical-economic domain could be performed by individuals several times in a day. However, same situation may not be applicable for the actions on political domain. Political behaviors such as connecting government agencies to contribute the solution of an environmental problem were rarely observed since they could be mostly performed with the guidance of NGOs (Erdogan, 2012). It was also seen that the students did not try to pursue someone like friends, family members and so on to conserve the nature. To

illustrate, they threw materials such as glass and paper into the recycle bin, however, they do not share this idea with others.

The current study revealed that elementary school students put a high emphasis on each valued object considering self, other people and all living things in terms of environmental concern. In addition, these students seemed to possess slightly higher egocentric motive concerns rather than altruistic and biospheric motive concerns. The students appreciate the environment for the sake of their own interests and needs. In other words, the students tended to use the nature for their benefits. Consistently, Onur (2010) found out that elementary students were highly concerned toward nature, especially about the environmental problems which were seen in their region. In contrast, Stern & Dietz (1994) proposed that to protect the nature, individuals should sacrifice and decrease their living standard. Most of the students also had biospheric motive concerns at the same time that they put an emphasis on species or the biosphere. Biospheric individuals had concerns about all living things including plants and animals (Schultz et al. 2005).

The present study also revealed the predictive power of environmental motive concerns and nature relatedness on elementary students' environmental responsible behaviors. The results of multiple regression analysis indicated that each predictor variable namely; nature relatedness with its self_experience; biospheric and altruistic motive concerns were significantly associated with the responsible environmental behaviors in a positive way whereas the perspectives of the students was significantly associated with such kind of behaviors negatively. The findings also indicated that egoistic motive concerns of these students were not a statistically significant predictor of responsible environmental behaviors. In contrast, in Sahin's study (2013), it was found out that the egoistic value orientations were significantly related with the energy conservation behaviors of teacher candidates. In addition to Şahin's study, Nordlund and Garvill (2003) supported that egoistic individual are less likely to conserve the nature.

In some research studies (Guiterrez Karp, 1996; Schultz and Zelezny, 1999), it was revealed that the individuals having biospheric and altruistic value orientations would have higher tendency to engage in pro-environmental behaviors. Considering the

positive association between biospheric concerns of the students and their responsible behaviors, the present study pointed out that the individuals being concerned about non-human living species or the biosphere would be more likely to participate in some actions to protect the nature. In short, elementary students living in Samsun expressed a concern to conserve the environment but they had different reasons to do so.

The present study provided some evidences showing that elementary students' altruistic and biospheric motive concerns have significant potential to make contributions on facilitating their environmental responsible behaviors. Therefore, outdoor activities to focus on biospheric concerns or the classroom activities emphasizing them conserving the environment means conserving our friends, other people or children would be more effective in their environment education. Nisbet and her friends (2011) also suggest that NR—emotions, values, attitudes and a self-concept that includes the natural world, a biospheric orientation—may provide a motivational force toward nature protection and preservation.

Learning outcomes included in primary education curriculum is generally based on acquiring knowledge and understanding issues so they do not contribute to develop skills, values and perspectives toward nature (Tanrıverdi, 2009). The students possibly do not internalize and so do not change their behaviors. Jensen (2002) suggested that activity-based teaching should be held in the schools to prepare environmentally active individuals. In teaching process, the teachers may take into consideration some activities like consisting of physical, chemical and biological investigations of a polluted lake and so on. The researcher also proposed that these activities can encourage the students' motivation and make easier the acquisition of environmental knowledge. In addition, it can be told that when the people had natural experiences or they were connected with nature in their childhood, they have more tendency to protect and prevent the nature in their adulthood (Wells and Lekies, 2006). In the Kossack and Bogner study (2011), they did a one-day education program promoting the connectedness to nature and it was seen that there are varieties of their connectedness with nature after seven weeks. Ernst and Theimer (2011) suggested that only programs with 'a condensed time frame of sufficient duration' have a positive effect on connectedness. Schultz (2002) also suggested that a

sense of being in nature is related with how the individual place herself/himself in nature, and so how he or she may change their behaviors toward nature, take some responsibilities to protect it. Moreover, Ozdemir (2010) also made a study with primary school second level students to see the effects of nature-based environmental education program on the primary school students' perceptions of and behaviors towards their environments.

According to the results of the study, he proposed that the students' concrete concerns and reactions about the environmental problems which they are facing make stronger their environmental values and raise their awareness of the destruction of these values. Erdogan (2011) also found out that ecologically based nature education made important contributions to elementary school students' environmentally responsible behaviors; however, there is no significant contribution to environmental knowledge and environmental sensitivity.

5.4 Implications of the Study

Results of the present study have some implications for teachers, curriculum planners, school administrators, and the researchers who deal with the environmental education programs in Turkey.

In the current study, it was found out that students were not so active in environmental activities, to improve this; the curriculum should be scrutinized again. In the elementary science curriculum, environmental concepts should be emphasized and infused successfully to improve the students' attitudes, concerns, interests, beliefs and awareness' toward nature. The developers also may focus on dividing the environmental concepts from the ecological concepts as in the students' mind. On the other side, providing an appropriate curriculum to teachers and students may not be enough to increase the environmental awareness. Teacher-training activities, quality of instructional materials and careful monitoring on students also should be taken into consideration as well. School programs may give greater emphasis on the importance of human-nature relations and important consequences of human behaviors on nature. With the help of the establishing environmental activities such as eco-clubs, nature camps and

field trip, the students may be familiar with environmental problems. They can imagine and make concrete the consequences of their behaviors toward nature in both positive and negative ways on their minds. There might be some challenges when the teachers take the students outdoors, such as curriculum and standards integration, discipline issues, and safety. However, by networking, teachers both within and outside the city and even country may share ideas for getting students outdoors, support one another, and motivate themselves about the nature integration (Louv, 2009). Some activities, encouraging the connection with the minister or pursuing someone to participate in an environmental activity, should be added to the lecture or clubs' schedule.

5.5 Recommendations for Further Studies

Current study has suggested a variety of useful study topics for further researches. This study is limited to seventh and eighth grade students attending public schools in the city center of Samsun. For the further research, sample, school type, different districts and variety may be increased in order to generalize the results of the present study. Researchers may conduct the similar study with a random sample from different type of schools such as private schools and public schools to make a better generalization. A detailed study can be conducted with the students from different regions of Turkey since the culture, backgrounds and the understanding of nature may differ in students and this situation may contribute the result. In the further studies, the researchers may study with different grade levels like high school students, and university students. Teachers' and parents' nature relatedness and motive concerns and also the relations of these with the responsible behaviors of participants may be considered in further studies. The researchers may explore the relation of other variables such as attitude, awareness or beliefs with the responsible environmental behaviors. The researchers may also look into the difference of eco-school and normal school students' nature relatedness and their responsible behaviors. Rather than applying questionnaire, some of qualitative research techniques can be utilized in further researches. The researches on outdoor activities may be conducted to observe nature relatedness of students and effects on their behaviors. In the context of elementary science education, the students should be encouraged that their activities or every effort to protect nature

are very crucial for the future of our planet and consequently for the well-being of next generation. Qualitative research method could be used and the detail data could be analyzed.

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APPENDICES

APPENDIX A

PERMISSION FOR THE QUESTIONNAIRE

T.C.
SAMSUN VALİLİĞİ
İl Milli Eğitim Müdürlüğü

ÖĞRENCİ İŞLERİ DAİRE BAŞKANLIĞI

Sayı : 42276601/604.01/4534284 14/10/2014
Konu : Anket Çalışması

ORTA DOĞU TEKNİK ÜNİVERSİTESİ REKTÖRLÜĞÜNE

İlgi : a) Millî Eğitim Bakanlığı Yenilik ve Eğitim Teknolojileri Genel Müdürlüğü'nün 07/03/2012 tarih ve 3616 sayılı 2012/13 nolu Genelgesi,
b) Orta Doğu Teknik Üniversitesi Rektörlüğünün 01/10/2014 tarih ve 4843 sayılı yazısı.

Orta Doğu Teknik Üniversitesi Fen ve Matematik Eğitimi Ana Bilim Dalı Yüksek Lisans Öğrencisi Fatma BAHAR' ın İlkadım İlçe Millî Eğitim Müdürlüğüne bağlı ekli listedeki ilkokul ve ortaokul öğrencilerine uygulanmak üzere, **"İlköğretim Öğrencilerinin Doğaya Bağlılıklarına İlişkin Çalışma"** konulu araştırma yapmak istediklerine ilişkin ilgi yazı ve ekleri ilgi (a) genelgeye göre müdürlüğümüzde kurulan "Araştırma ve Değerlendirme Komisyonu" tarafından 13/10/2014 tarihinde incelenmiş olup uygun görülmüştür.

Türkiye Cumhuriyeti Anayasası, Millî Eğitim Temel Kanunu ile Türk Milli Eğitiminin genel amaçlarına uygun olarak, ilgili yasal düzenlemelerde belirtilen ilke, esas ve amaçlara aykırılık teşkil etmeyecek şekilde, duyurusu ve denetimi ilçe millî eğitim müdürlükleri uhdesinde ve okul müdürlükleri sorumluluğunda gerçekleştirilmek üzere söz konusu anket çalışmasının yapılması hususunda;

Bilgilerinizi ve gereğini rica ederim.

Osman Nuri ÇOBANOĞLU
Vali a.
Vali Yardımcısı

EKLER :
1-Veri Toplama Araçları (6 Sayfa)
2- Okul İsim Listesi (1 Sayfa)

DAĞITIM :
Gereği :
İlkadım İlçe Kaymakamlığına
(İlçe Millî Eğitim Müdürlüğü)

Bilgi :
Orta Doğu Teknik Üniversitesi Rektörlüğü

Güvenli Elektronik İmzalı
Aslı İle Aynıdır
14/10/2014
Lale KARADUMAN
Şef

21.10.2014-15806

Adres : Atatark Bulvarı Yeni Hükümet Konağı Kat:3-SAMSUN
Santral : 0(362) 435 80 63 - 435 80 64 - 435 54 50
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Ayrıntılı Bilgi: ALİ ERİŞGİN (Temel Eğitim 231)
Fax: 0(362) 431 93 76 - 432 48 54 - 432 06 09
Web http://samsun.meb.gov.tr

APPENDIX B

THE QUESTIONNAIRE USED IN THE STUDY

T.C
ORTA DOĞU TEKNİK ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ
FEN VE MATEMATİK EĞİTİMİ

Sevgili öğrenciler, bu araştırma ilköğretim öğrencilerinin doğayla olan ilişiklerini ölçmek amacıyla yapılmaktadır. Bu çalışmaya katılmak tamamen **gönüllülük** esasına dayanmaktadır. Çalışmanın amacına ulaşması için sizden beklenen, bütün soruları eksiksiz, kimseden etkilenmeden ve size en uygun gelen cevapları içtenlikle cevaplamanızdır. Bu çalışmadan elde edilecek olan bilgiler tamamen araştırma amacı ile kullanılacak olup kişisel bilgileriniz kesinlikle **gizli tutulacaktır.** Katılımınızdan dolayı teşekkür ederim.

FATMA BAHAR
Ankara, 2015

KİŞİSEL BİLGİLER

1- Cinsiyetiniz: Kız ◯ Erkek ◯

2- Yaşınız:

3- Sınıfınız: 5.Sınıf ◯ 6.Sınıf ◯ 7.Sınıf ◯ 8.Sınıf ◯

4- Anne ve babanızın eğitim düzeyi nedir?

Anne	**Baba**
1- Hiç okula gitmemiş ◯	1- Hiç okula gitmemiş ◯
2- İlkokul ◯	2- İlkokul ◯

3- Ortaokul	◯	3- Ortaokul	◯
4- Lise	◯	4- Lise	◯
5- Üniversite	◯	5- Üniversite	◯
6- Yüksek lisans	◯	6- Yüksek lisans	◯
7- Doktora	◯	7- Doktora	◯

5- Anne ve babanızın mesleği nedir?

Anne		**Baba**	
1- Memur	◯	1- Memur	◯
2- İşçi	◯	2- İşçi	◯
3- Emekli	◯	3- Emekli	◯
4- İşveren	◯	4- İşveren	◯
5- Çalışmıyor	◯	5- Çalışmıyor	◯

6- Geri dönüşüm kutusuna kolayca ulaşabiliyor musunuz?

Evet ◯ Hayır ◯

7- Ailenizin aylık ortalama geliri nedir?

0-1000 ◯ 1000-1500 ◯ 1500-3000 ◯ 3000'den fazla ◯

1- Aşağıdaki ifadelerle ilgili düşüncelerinizi belirtiniz.

	Kesinlikle Katılmıyorum(1)	**Katılmıyorum (2)**	**Kararsızım(3)**	**Katılıyorum(4)**	**Kesinlikle Katılıyorum(5)**
1- Açık havada vakit geçirmekten zevk alırım.	1	2	3	4	5
2-Bazı türlerin soyu devam etmese de olur.	1	2	3	4	5
3- İnsanların doğal kaynakları istedikleri gibi kullanmaları uygun bir davranıştır.	1	2	3	4	5
4- İdeal tatil yerim uzak, el değmemiş bir doğa alanıdır.	1	2	3	4	5
5- Davranışlarımın çevreyi nasıl etkilediğini düşünürüm.	1	2	3	4	5
6- Toprakla uğraşmaktan zevk alırım.	1	2	3	4	5
7- Doğaya ve çevreye bağlılığım ruhumun bir parçasıdır.	1	2	3	4	5
8- Çevre sorunlarının farkındayım.	1	2	3	4	5
9- Nerede olursam olayım doğadaki yaşamı gözlemlerim.	1	2	3	4	5
10-Doğal alanlara sık gitmem.	1	2	3	4	5
11- Çevre konusunda ne yaparsam yapayım dünyanın öteki yerlerindeki problemlere çözüm olmayacaktır.	1	2	3	4	5
12- Kendimi doğanın bir parçası olarak görüyorum.	1	2	3	4	5
13- Şehirden uzak, ormanda olma düşüncesi korkutucudur.	1	2	3	4	5
14- Doğa ile ilgili hislerim günlük yaşamımdaki davranışlarımı etkilemez.	1	2	3	4	5
15- Hayvanlar ve bitkiler, insanlara göre daha önemsiz canlılardır.	1	2	3	4	5
16- Şehrin ortasında bile etrafımdaki doğayı fark ederim.	1	2	3	4	5
17- Doğa ile ilişkim kişiliğimin önemli bir parçasıdır.	1	2	3	4	5
18- Doğa, insanların yol açtığı sorunlarla başa çıkabilir, bu yüzden doğanın korunması gereksizdir.	1	2	3	4	5
19- İnsan dışındaki canlıların durumu, insanoğlunun geleceğinin bir göstergesidir.	1	2	3	4	5
20- Hayvanların çektiği acıları umursarım.	1	2	3	4	5
21- Dünyaya ve canlıların tümüne oldukça bağlıyım.	1	2	3	4	5

SON 2 YILDA aşağıda ifade edilen davranışları hangi sıklıkla gerçekleştirdiğinizi belirtiniz.

Son 2 yıl içinde	**Hiç**	**1 kere**	**2 kere**	**3 kere**	**4 kere**	**5 kere**	**5'den daha fazla**
1. Çevre korumanın önemi ve çevre koruma ile ilgili konularda, devlet yetkilileri (örn. başbakan, çevre ve orman bakanı ve vali) ile iletişim kurmak için planlar yaptım. (örn. mektup hazırlamak, e-mail hazırlamak)	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
2. Çevre koruma önlemleri almaları için belediye başkanını ziyaret ettim ve bu konuda onu teşvik ettim.	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
3. Çevre koruma önlemleri almaları için mahalle muhtarını ziyaret ettim ve bu konuda onu teşvik ettim.	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
5. Halkın çevre duyarlılığını ve çevreyi korumaya yönelik desteğini arttırmak için, çevre ile ilgili gazete, dergi ve sokak panoları hazırlamaları konusunda devlet yetkililerini teşvik ettim.	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
6. Devlet yetkilileri ve sivil toplum kuruluşlarının temsilcileri ile çevre koruma projeleri hazırlamak ve bu projeleri uygulamak için ortak çalıştım	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
7.Kağıt, cam, plastik, kutu, alüminyum ve pil gibi atıkları geri dönüşüm kutusuna attım.	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
8. Okulda, piknikte, parkta ve sokakta yerlere atılan çöpleri toplayıp çöp tenekesine attım	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla

9.Okuldayken, evdeyken, piknikteyken, parktayken ve sokaktayken çöplerimi uygun bir şekilde çöp tenekesine attım.	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
10. Bitkileri korumak için önlemler aldım (örn. kurumaması için ağaç ve çiçekleri suladım, bitkilere zarar veren ve ezenleri uyardım)	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
11. Sokaklarda yaşayan kedi, kopek ve kuş gibi hayvanları korumak için önlemler aldım (örn. onlara yuva yaptım, onlara yiyecek verdim, onları zararlardan korudum)	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
12. Su tasarrufu yapmak için önlemler aldım (örn. kullanılmayan çeşmeleri kapattım, banyo yaparken, el yıkarken ve diş fırçalarken aşırı su kullanmadım)	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
13. Geri dönüştürülebilen veya geri dönüşüm maddelerinden yapılmış ürünlerden satın aldım (örn. üzerinde geri dönüşüm işareti olan ürünlerden satın aldım)	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
14. Türk Standartları Enstitüsü (TSE) ve Tarım ve Köy İşleri Bakanlığı tarafından onaylanan ve test edilen ürünlerden satın aldım.	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
15. Taze, sağlıklı, son kullanma tarihi geçmemiş ve organik / ekolojik ürünler satın aldım.	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
16. Su ve elektriği gereksiz yere kullanmamaları için ailemi, arkadaşlarımı ve diğer insanları uyardım.	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla

17. Eski ve kullanmadığım kitap, giysi, oyuncak ve diğer eşyaları gereksinimi olan kişi ve kuruluşlara verdim.	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
18. Çevrenin korunması ve çevreye zarar vermemek için ne yapacakları konusunda ailem ile konuştum	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
19. Çevrenin korunması ve çevreye zarar vermemek için ne yapacakları konusunda arkadaşlarım ile konuştum	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
20. Çevrenin korunması ve çevreye zarar vermemek için ne yapacakları konusunda diğer insanlar ile konuştum	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
21. Çevrenin güzelleşmesi için ağaç, çiçek, sebze ve diğer tür bitkilerden diktim ve yetiştirdim.	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
22. Çevrenin korunması ve güzelleşmesi için çalışan ulusal ve yerel sivil toplum kuruluşlarına (örn. TEMA, DHKD) para yardımında bulundum	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla
23. Okuldaki ve sokaktaki ilan panolarına asmak için çevrenin korunması ile ilgili poster, resim ve yazılar hazırladım	Hiç	1 kere	2 kere	3 kere	4 kere	5 kere	5'den daha fazla

İnsanların çevre problemlerine yönelik ilgisi, oluşan problemlerin etkilerine göre farklılık gösterebilir. Çevre problemlerinin oluşturduğu sonuçlardan aşağıdakilerden hangisi / hangileri için endişe duyarsınız? Lütfen her bir maddeyi 1'den(Hiç endişe duymam) 7'ye (Çok endişe duyarım) kadar olan sayıları (1-2-3-4-5-6-7) kullanarak puanlayınız.

Yönerge: Cümleleri şu şekilde okuyunuz.
Örnek: Çevre problemlerinin yarattığı sonuçlardan **bitkiler** için endişe duyarım.(1'den 7'ye kadar puanlayınız.)

Hiç endişe duymam
1

Çok endişe duyarım
7

Bitkiler	**1**	**2**	**3**	**4**	**5**	**6**	**7**	Denizde Yaşayan Canlılar	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Kuşlar	**1**	**2**	**3**	**4**	**5**	**6**	**7**	Hayvanlar	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Kendim (Ben)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	Benim Yaşam Tarzım	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Benim Sağlığım	**1**	**2**	**3**	**4**	**5**	**6**	**7**	Benim Geleceğim	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Tüm İnsanlar	**1**	**2**	**3**	**4**	**5**	**6**	**7**	Ülkemdeki Tüm İnsanlar	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Gelecek Nesiller	**1**	**2**	**3**	**4**	**5**	**6**	**7**	Benim Çocuklarım	**1**	**2**	**3**	**4**	**5**	**6**	**7**

APPENDIX C

TURKISH SUMMARY

GİRİŞ

Çevresel bozulmanın dünyanın her yerinde son yıllarda kritik bir noktaya ulaştığı gözlemlenmektedir. Küresel ısınma, nüfusun artması, hava ve su kirliliği insanların yüzleşebileceği problemler arasında sayılmaktadır (World Commision on Environment and Development, 1987). Bu problemlerin çözümü için, araştırmacılar bazı önerilerde bulunmuşlardır ve çalışmalarında çevresel konuların önemine vurgu yapmışlardır. Feral (1998)'e göre, insanlar doğayla ilişkilerinin önemini fark ederlerse, diğer canlılarla empati kurabilirler ve bu empati sayesinde doğanın korunmasına daha çok katkıda bulunabilirler. Diğer taraftan, insanların doğayla ilgili endişeleri olsa bile, çevresel davranışlarında önemli değişiklikler gözlemlenememiştir (Kaplan, 2000; Schultz, 2000). Araştırmacılar tarafından öne sürülen diğer bakış açısı ise, bireylerin doğayla ilişkileri, doğaya olan bağlılıkları onlara doğanın kounmasına nasıl katkı sağlayabilecekleri konusuna dair bir algı kazandırabilir (Nisbet ve diğerleri., 2008).

Çevre konusunda çalışan psikologlara göre çocuklar doğuştan doğaya bağlılık içgüdüsünü taşırlar. Fakat, daha sonra yaşadıkları sosyal hayatları, duygusal farklılıkları onları çevreden uzaklaştırır (Liaflonder ve diğerleri., 2012). Louv (2007), çocukların çevre ilişkisine farklı bir açıdan bakmıştır. Louv (2007)'a göre, çocukların çevre algısı son yıllarda evdeki teknolojik dünyanın çekiciliğinden dolayı değişiklik göstermektedir. Çocuklar evde oynamayı daha çekici bulurken, aileler de özellikle evin dışındaki çevreyi tehlikeli gördüklerinden ve güvenlik endişesi yaşadıklarından dolayı çocuların doğada zaman geçirmelerini teşvik etmemektedirler. Wells ve Lekies (2006)'e göre, çocukluğunda doğayla ilişkili olan bireyler, yetişkinlik dönemlerinde doğayı koruma noktasında daha fazla olumlu yönde eğilim göstermektedirler. Bu nedenle, çocukluk dönemindeki doğa bağlılığı, doğanın içinde olma durumu çevrenin korunması açısından önem arz etmektedir.

Doğanın zarar görmesinde ve korunmasında ana faktör insan olduğu için, bireylerin doğayla ilgili davranışlarının düzeltilmeye çalışılması, bu konuya gereken önemin bireysel, toplumsal ve devlet düzeyinde verilmesi çevresel problemlerin en önemli çözüm yolu olarak gösterilmektedir.

Çalışmanın Amacı

Bu çalışmada (1) ilköğretim öğrencilerinin doğaya bağlılıklarını, doğaya karşı sorumlu davranışlarının ve çevresel kaygılarının tespit edilmesi (2) öğrencilerin çevreye yönelik sorumlu davranışlarının doğayla ilişkileri ve çevresel kaygıları ile bağlantısının incelenmesi amaçlanmıştır.

Temel olarak bu çalışmada;

> İlköğretim öğrencilerinin doğayla ilişkileri (özbenlik-deneyim, perspektif) ve çevre kaygılarının onların çevreye yönelik sorumlu davranışlarını ne ölçüde ilişkilidir?

sorusuna cevap aranmıştır.

Çalışmanın Önemi

İnsanların çevreye karşı hissettikleri ve tutumlarıyla davranışları arasında tutarsızlıklar bulunmaktadır (Nisbet ve diğerleri., 2008). Araştırmacılar bu konu üzerinde çalışmalar yaparak bu tutarsızlıkların düzeltilmesine katkı sağlamaya çalışmaktadırlar. İnsanlar doğaya kendilerini yakın hissetmelerine rağmen, doğayı korumaya yönelik davranışlarda bulunmamaktadırlar. Çevresel bilginin artırılmasının çevresel davranışları olumlu etkileyeceği düşünülse de Hungerford ve Volk (1990) bireylerin çevresel tutumlarının davranışlarının onların çevre bilgisiyle direk ilişkili olmadığını iddia etmişlerdir. Bu nedenle, sadece çevre bilgisinin artması çevrenin korunmasında önemli bir katkı sağlamayacaktır. Buna ek olarak, Nisbet ve diğerleri (2008) bireylerin doğaya bağlılıklarının çevreyi korumaya yönelik davranışlarına olumlu etkisi olacağını, insanların doğanın içinde olduklarında onu koruma eğilimlerinin artacağını iddia etmişlerdir. Bu çalışmada, öğrencilerin doğaya olan bağlılıklarının

görülmesi açısından önem arz etmektedir. Ayrıca, bu çalışmanın sonuçları program geliştiren uzmanların da yardımıyla çocukların çevresel davranışlarına olumlu katkıda bulunabilir.

ALAN TARAMASI

Çevresel problemler ve etkileri son zamanlarda oldukça önem kazanmaktadır. İnsanlar, hava kirliliğinden dünyanın doğal kaynaklarının tükenmesine kadar birçok çevresel problemle yüzleşmektedirler. Araştırmacılar, bu konuda çalışmalarına önem vererek çevresel kirlenmeden ve sonucunda doğabilecek tehlikelerden korunmak için araştırmalarıyla destek vermektedirler. Ünal ve diğerleri (2001)'ne göre, insanların çoğu çevresel kirlenmenin oluşturabileceği zararın farkında değil ya da bu hasarın ne kadar büyük olabileceğini hayal edemiyorlar. Çevresel problemler kanun ya da teknoloji ile çözülemez. Çözüm, insanların davranışlarının ve çevreye karşı tutumlarının değişmesinde aranmalıdır (Günindi, 2010).

Nisbet ve arkadaşları (2008) bireylerin doğaya bağlılıklarının artırılmasının çevre problemlerinin üstesinden gelinmesinde önemli rolü olduğunu iddia etmektedirler. Buna katkı sağlamak amacıyla 2008'de bir çalışma yaptılar. Bireylerin doğaya karşı olan bağlılıklarını görebilmek için yeni bir ölçek geliştirdiler. Araştırmacılar, insanların sadece doğanın güzel taraflarına değil (güneşin doğuşu, kar yağışı gibi) insanlara estetik gelmeyen doğaya (yılan, örümcek vb) da ihtiyacımız olduğunu ve bunun öneminin anlaşılmasına ihtiyaç olduğunu savunmaktadırlar.

Kossak ve Bogner (2011), yaptıkları çalışmada öğrencilere 1 günlük doğaya bağlılığı içeren bir eğitim verdiler. Bu çalışmanın sonucuna göre, eğitimden 7 hafta sonra bile öğrencilerin çevresel davranışlarındaki olumlu düzelmenin devam ettiği görülmüştür. Buna göre, bireyler kendisini ne kadar doğanın içinde tanımlar ve ait hissederlerse, o kadar doğayı korumak için katkıda bulunurlar (Schultz, 2000). Çevre eğitimi konusunda ilk resmi konferans olan Tbilishi konferansında (1977), çevre eğitiminin hedefleri tanımlandı. Hungerford ve Volk (1990) bu tanımlamalara dayanarak çevreye yönelik sorumlu davranışları olan bireyleri şu şekilde tanımladı. Çevreye karşı sorumlu bireyler;

(1) Çevrenin tamamına ve oluşabilecek problemlere karşı duyarlı ve hassas olan,
(2) Çevre konusunda ve oluşabilecek problemler karşısında temel anlayışa sahip olan,
(3) Çevreye karşı kaygılı hisseden ve çevrenin korunması için aktif olma konusunda motivesi olan,
(4) Çevresel problemleri tanımlama ve çözme konusunda beceri sahibi olan,
(5) Çevresel problemlerin çözümü konusunda aktif katılım gösteren,
bireylerdir.

Bunun yanında, yurtdışında yapılan çalışmalardan birinde Wells ve Lekies (2006), 18 ve 90 arasındaki farklı yaşlara sahip 2000 Amerikan bireyle çalıştı. Bu çalışmada, araştırmacıların hedefi bireylerin çocukluk yıllarındaki doğayla ilişkilerinin yetişkinlik dönemindeki çevresel tutum ve davranışlarıyla bağlantısını görmekti. Çalışmanın sonucuna göre, çocukluğunda vahşi doğa deneyiminde bulunan (doğa yürüyüşü) ya da doğada daha basit deneyimlerde (çiçek dikmek gibi) bulunan bireylerin, yetişkinlik dönemlerinde çevresel davranışlarının ve tutumlarının daha olumlu olduğu ortaya çıkmıştır.

Schultz ve Zeleny (1998) çalışmalarında farklı ülkelerden 958 üniversite öğrencisiyle çalıştılar. Çalışmada, geri dönüşüm, toplu taşıma kullanımı, enerji tasarrufu gibi davranışların nelere bağlı olabileceğinin tanımlanması hedeflenmiştir. Çalışmada, Meksikalı, İspanyol ve Amerikalı öğrencilerin çevresel davranışlarının sorumluluk hissiyle ilişkili olduğu sonucuna varıldı.

Bu konuyla ilgili oldukça önemli çalışmalardan biri de Schultz (2000) tarafında 245 lisans öğrencisinin katılımıyla yapıldı. Kaygı ölçeğinin oluşumuna katkıda bulunulan çalışmada, öğrencilere 21 maddeden oluşan ve çevresel kaygılarını 1 ile 7 arasında (1- Hiç endişe etmiyorum, 7- Çok endişe ediyorum) oranlamalarının beklendiği

anketler dağıtıldı. Anket sonuçlarına göre, bireyler çevre konusunda kaygılı olsalar bile, bu kaygıların sebeplerinin farklı olabileceği sonucuna varıldı. Bu sebepler, 3 ana başlık altında toplanarak öğrencilerin kaygılarının kaynağı kendileri, diğer insanlar ya da diğer canlılar olabilir sonucuna varıldı. Bu çalışmada 1 yıl sonra Schultz (2001) insanların

çevresel kaygılarının sebeplerini tespit etmek amacıyla 4 tane birbirine bağlı çalışma yaptı. Schultz (2001), ilk araştırmasında 1010 Amerikalı üniversite öğrencisiyle çalıştı. İkinci çalışmasında ise, 1005 Amerikalı katılımcıya telefonda anket yaparak veri topladı. Schultz (2001) üniversite öğrencilerinin verdiği cevaplarla halkın farklı kesimlerinden gelen cevaplar arasında farklar olduğunu tespit etti ve bunu incelemek için 1005 Kaliforniyalı bireye telefon yoluyla ulaşarak anket yaptı. Üçüncü çalışmasında anket maddeleri şu şekildeydi, '' denizde yaşayan canlılar, bitkiler, kuşlar, hayvanlar, çocuklar, Amerika'da yaşayan insanlar, insanlık, senin sağlığın, senin geleceğin, senin etrafındaki insanlar, senin yaşamın, senin rahatın''. İki çalışmada da araştırmacı bezer sonuçlar buldu fakat katılımcıların diğer canlılarla ilgili duydukları kaygı farklılık gösterdi. Çalışmanın sonucuna göre, üniversite öğrencileri bitki, hayvan gibi diğer canlılarla ilgili daha az kaygılıdırlar. Son çalışmada, araştırmacı 10 farklı ülkeden sosyal bilimler öğrencileriyle çalıştı. Çalışmanın sonucuna göre, öğrencilerin kendi kendilerini geliştirmelerinin bencil kaygılarıyla pozitif anlamda ilişkili olduğu görülürken, diğer canlılarla ya da diğer insanlarla ilgili duydukları kaygılarıyla negatif anlamda ilişkili olduğu görülmüştür. Schultz (2001)'a göre, çalışmaların kesiştiği nokta, insanların çevresel kaygılarının sebeplerinin farklı olduğudur. İnsanlar, çevreyle ilgili kaygılanırken onları buna iten sebepler kendileri, diğer insanlar ya da diğer canlılar olabilmektedirler. Schultz (2001), bu çalışmaların sonucunda ''Çevresel Kaygı Ölçeği''ni geliştirmiştir.

YÖNTEM

Çalışmada, öğrencilerin çevreye yönelik sorumlu davranışlarının ne ölçüde doğayla ilişkileri ve çevresel kaygıları ile ilişkili olduğu saptanmaya çalışılmıştır.

Araştırmanın bağımlı değişkeni çevreye yönelik sorumlu davranışlar, bağımsız değişkenleri ise çevresel kaygıları (bencil, özveri kaynaklı, diğer canlılar kaynaklı) ve doğaya bağlılıkları (özbenlik-deneyim ve perspektif) dır.

Çalışma Grubu

Samsun şehir merkezinde eğitim alan 1774 ilkokul öğrencisi araştırmanın çalışma grubunu oluşturmaktadır.

Veri Toplama Aracı

Bu araştırmada veriler dört bölümden oluşan anket aracılığı ile toplanmıştır:

1- Kişisel Bilgiler
2- Doğaya Bağlılık Ölçeği
3- Çocukların Çevreye Yönelik Sorumlu Davranış Ölçeği
4- Çevresel Kaygı Ölçeği

İlk bölümde öğrencilerin kişisel bilgileri sorulmuştur. Bu bölümde öğrencilerin kaçıncı sınıf oldukları, kaç yaşında oldukları, aile ekonomik düzeyleri, aile eğitim durumları gibi bilgilerin cevapları aranmıştır.

İkinci bölümde kullanılan ölçek Nisbet ve diğerleri tarafından2009 yılında geliştirilmiştir. Ölçeğin amacı, bireylerin doğaya bağlılıklarını bilişsel, duygusal anlamda ölçebilmektir. Ölçek 21 madde ve 3 faktörden oluşmaktadır ve beşli likert tipi üzerinden değerlendirilmektedir (1- Kesinlikle Katılmıyorum, 5-Kesinlikle Katılıyorum). Ölçeğin iç tutarlılığı 0.79 olarak hesaplanmıştır.

Üçüncü bölümde, öğrencilerin çevreye yönelik davranışlarını ölçmek amacıyla kullanılan ölçek Mehmet Erdoğan (2012) tarafından geliştirilmiştir. Ölçek 23 madde ve 4 faktörden oluşmaktadır. Öğrencilere maddelerde belirtilen aktiviteleri son 2 yıl içinde kaç defa yaptıkları sorulmuştur. Ölçek Türkçe dilinde hazırlanmış olup, iç tutarlılığı 0.90 olarak hesaplanmıştır.

Dördüncü bölümde, çevresel kaygı ölçeği kullanılmıştır. Ölçek Schultz (2001) tarafından geliştirilmiştir. Ölçek toplamda 12 madde ve 3 faktörden oluşmaktadır. Öğrencilerden belirtilrn maddelerle ilgili kaygı seviyelerini belirlemeleri beklenmiştir (1- Hiç endişe duymam, 7- çok endişe duyarım). Ölçek Onur ve diğerleri (2012) tarafından Türkçeye adapte edilmiştir. Ölçeğin iç tutarlılığı 0.87 olarak hesaplanmıştır.

Veri Toplama Süreci Ve Analizi

Çalışmanın başında, ODTÜ Etik Kurulu ve Samsun Milli Eğitim Müdürlüğü'nden gerekli izinler alınmıştır. Veri toplama sürecinde, anketlerin

uygulanmasında öğretmenlerden yardım alınmıştır ve ihtiyaç duyulan açıklamalar öğretmenlere yapılmıştır. Elde edilen verilere, çoklu doğrusal regresyon analizi uygulanmıştır.

BULGULAR

İlköğretim Öğrencilerinin Doğaya Bağlılıkları, Doğaya Karşı Sorumlu Davranışları Ve Çevresel Kaygıları

Çalışmanın sonucuna göre, ilköğretim öğrencilerinin çevreye bağlı perspektiflerinin (M=3.81) neredeyse yüksek seviyede olduğu ve öğrencilerin insanların bireysel olarak çevreye katkılarına önem verdikleri sonucuna varılmıştır. Bunun yanında, öğrencilerin doğaya bağlı olarak özbenlik-deneyimlerinin (M=3.79) önemli görüldüğü sonucuna ulaşılmıştır. Buna bağlı olarak, genel bir ifadeyle öğrencilerin bu seviyede doğaya bağlı oldukları sonucu çıkarılabilir.

İlköğretim öğrencilerinin çevresel davranışlarına bakıldığında, öğrencilerin yöneticilerle iletişime geçilmesi ve çevresel problemlere çözüm aranması gibi politik aktivitelere katılımlarının düşük olduğu gözlemlenmiştir (M=0.43). Fakat öğrencilerin fiziksel ve ekonomik aktivitelere katılımlarının yüksek olduğu görülmüştür (M=4.03). Öğrencilerin geri dönüşüme kağıt vb. materyalleri atması, bitkileri korumak için önlem alması ya da TSE damgalı ürünleri almaya önem vermesi gibi fiziksel teşvik gereken

davranışlarda iyi oldukları görülmüştür. Diğer taraftan, öğrenciler kendileri çevresel davranışlarda bulunurken, diğer insanları bununla ilgili konuşup ikna etme konusunda iyi olmadıkları saptanmıştır (M=1.80).

Öğrencilerin çevresel kaygılarına bakıldığında öğrencilerin daha kendileriyle ilgili (M=6.52) kaygı yaşadıkları, sonra diğer insanlar (M=6.10) ve diğer canlılarla (M=6.00) ilgili kaygılandıkları sonucuna ulaşılmıştır. Fakat genel olarak sonuca bakıldığında öğrencilerin tüm alanlarda kaygı düzeylerinin oldukça yüksek olduğu görülmüştür.

Bağımlı ve Bağımsız Değişkenler Arasındaki İlişki

Değişkenler arasındaki ilişkiyi görebilmek için çoklu doğrusal regresyon analizi yapılmıştır. Analiz sonuçlarına göre, öğrencilerin dağaya bağlı özbenlik-deneyimleri ve perspektifleri, diğer insanlarla ilgili ve diğer canlılarla ilgili çevresel kaygıları çevreye yönelik sorumlu davranışlarıyla ilişkilidir (R^2 = .13, $F(4,159)$ = 61.49. p < 0.001). Öğrencilerin özbenlik-deneyimlerinin criter varyansın açıklanmasına en büyük katkıyı yaptığı görülmüştür (β=.26; *part correlation* =.24). Bunun yanında, öğrencilerin diğer altrustik kaygılarının (β=.09; *part correlation* =.07; 95% ci: .03, .12) ve diğer canlılarla ilgili kaygılarının (biosferik) (β=.14; *part correlation* =.11; 95% ci: .07, .16) öğrencilerin çevreye yönelik sorumlu davranışları ile pozitif anlamda ilişkili olduğu görülürken, doğaya bağlı perspektifleriyle (β= -.10; *part correlation* = -.08; 95% ci: -.22, -.06) negative anlamda ilişkili olduğu görülmüştür. Ek olarak, öğrencilerin çevreye yönelik bencil kaygılarının dışındaki değişkenler kriter varyansın %13'ünü açıklamaktadır.

TARTIŞMA

Yapılan çalışma sonucunda ilköğretim öğrencilerinin yüksek seviyede doğaya bağlı oldukları sonucu elde edilmiştir ve sonuca göre öğrencilerin çoğu kendisini doğanın bir parçası olarak tanımlamıştır. Bu çalışmaya katılan öğrenciler, şehir merkezinde yaşasalar bile Samsun ilinin Karadeniz Bölgesinde olmasından dolayı doğayla iç içe olabilmektedirler. Başka bir deyişle, öğrencilerin şehir merkezinde yaşıyor olmaları çevreden uzak oldukları anlamını taşımamaktadır. Bundan dolayı, öğrencilerin doğaya bağlılıkları ve kaygılarının yüksek olması doğadan uzak olmamalarıyla açıklanabilir.

Louv ve diğerleri (2008), "Çocuklar ve Doğa" isimli bir rapor yayınladılar. Bu rapordaki amaç, çocukların sokakta, doğanın içerisinde tehlike endişesi duymadan oynayabilecekleri bir ortamın kurulmasına yardım etmek ve çocukların doğayla olan bağlantılarının artmasına katkı sağlamaktı. Louv (2007)'a göre, çocukların eve kapanmasında ailelerin önemli rolü bulunmaktadır. Ailelerin çoğu, çocuklarının doğayla iletişimlerinin az olmasına derslerin yoğunluğu, doğal alanların az olması, özellikle karşılaşılabilecek tehlikeleri sebep olarak göstermişlerdir. Dışarıdaki ortamın tehlikeli

olabileceği kabul edilebilir fakat korunmuş, ev hapsi gibi bir ortamda çocuk yetiştirmenin de riskleri vardır (Louv, 2007). Mesela, sürekli evde sanal dünyada yaşayan çocukların; özgürlüğe bakış açısı, tehlikelere karşı uyanık olması ve diğer insanlarla beraber çalışması gibi konularda problem yaşamaları olağandır (Louv, 2007). Buna ek olarak " Çocuklar ve Doğa" hareketi aileler için bazı prensipler öne sürmüştür. Bu prensiplerden bazıları şu şekilde;

(1) Aileler ve çocuklara eşlik eden diğer bireyler, doğanın çocuklar için sağlık açısından, duygusal ve bilişsel yönden faydalarını bilmelidirler.
(2) Aileler ve diğer bireyler, çocukları doğaya çıkarma noktasında istekli olmalıdırlar. Çocukların küçük yaşta tek başlarına dışarda olmaları beklenmez.
(3) Toplumun tüm kesimleri (aileler, büyükanne, büyükbabalar, program geliştiren bireyler, sağlıkçılar, eğitimciler, çiftçiler vb.) bu harekete dahil edilmeli ve birbirleriyle iletişim halinde olmalıdırlar.

Araştırmacı, aynı zamanda "Dışarda Hayat Güzeldir" ya da "İçerde Çocuk Kalmasın" gibi programlar ve kampanyalar düzenlenerek ailelerin ve toplumun doğaya teşvik edilebileceğini savunmaktadır.

Çalışmada öğrencilerin çoğunun soyut anlamdan oluşan maddelerde oldukça kararsız olduğu sonucu elde edilmiştir. Mesela, öğrencilerin çoğu, doğaya bağlılıklarının ruhumun parçasıdır gibi bir ifadede kararsız olduklarını belirtmişlerdir. Öğrenciler somut maddelere daha net cevaplar vermişlerdir. Mesela, öğrencilerin çoğu acı çeken hayvanları önemsediklerini ya da dışarda olmaktan zevk aldıklarını ifade etmişlerdir. Piaget'nin gelişim seviyelerine göre, bireyler bu yaşlarda somut düşünceden soyut düşünceye geçme dönemi yaşarlar. Burada eğitimciler olarak öğrencilerin bu içselleştirme sürecine çevreye olan bağlılıklarına katkı sağlayarak destek vermeliyiz.

Çalışmaya göre, öğrenciler doğanın korunması gerektiğini düşünürken kendi yapacakları çevresel davranışların doğadaki problemlerin çözümü için katkı sağlayamayacağını savunmuşlardır. Buradan anlaşılacağı üzere öğrenciler, yaptıkları davranışların doğanın korunmasındaki öneminin farkında değiller ve bu konu müfredat

açısından değerlendirilmelidir. İlköğretim fen bilgisi müfredatına (Milli Eğitim Bakanlığı, 2013) bakıldığında genelde öğrencilerin çevre bilgisinin artmasının amaçlandığı ve kirlilik, küresel ısınma gibi çevresel problemler hakkında bilgi verildiği görülmektedir. Bunun yanında, öğrencilerin yapacağı her olumlu ya da olumsuz davranışın doğada karşılık bulabileceği gerçeği çocuklara anlatılmalı ve farkındalığın artması için çalışmalar yapılması gerekmektedir.

İlköğretim öğrencilerinin çevreyle ilgili kaygılarının oldukça yüksek olduğu görülmüştür. Bu kaygı azalmaya gitmeden eğitimciler ve program geliştiren uzmanlar tarafından avantaja dönüştürülebilir ve çevrenin korunması konusunda adımlar atılabilir. Özellikle çevre odaklı eğitimler düzenlenerek, sınıf dışı aktivitelerle öğrencilerin bağlılığı artırılabilir.

APPENDIX D: CONSENT FORM FOR COPYING THE THESIS

TEZ FOTOKOPİSİ İZİN FORMU

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YAZARIN

Soyadı : BAHAR

Adı : FATMA

Bölümü : İLKÖĞRETİM FEN VE MATEMATİK EĞİTİMİ

TEZİN ADI (İngilizce) : A Study On Turkish Elementary School Students' Nature Relatedness, Environmentally Responsible Behaviors And Motive Concerns

TEZİN TÜRÜ : Yüksek Lisans ☑ Doktora ☐

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. ☐
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. ☑
3. Tezimden bir bir (1) yıl süreyle fotokopi alınamaz. ☐

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