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The Effects of Mothers' Educational Levels on University Students' Environmental Protection Commitments and Environmental Behaviors

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Abstract

Problem Statement: The damage caused by recent environmental problems has led to increased environmental concerns and the development of environment-friendly consumption behaviours in almost every society. Environment-friendly consumption involves the consideration of environmental benefits by minimizing any damage done to the environment at all stages of consumption. Studies researching the effects of parents in environmental problems have demonstrated that mothers were more concerned and worried about environmental issues than fathers.

Purpose of Study: This study investigates the environmental sensitivities of university students and the causal relationships between their environmental protection commitments and environment-friendly consumption behaviors through using Structural Equation Model (SEM) which takes into consideration their mothers' educational levels.

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Methods: As a pilot study, the prepared scale was applied to 60 randomly chosen students. The final version of the scale was applied after extracting any unclear questions.

After determining sampling, the scale was administered randomly to 520 students at Eskişehir Osmangazi University. Cronbach's α values were used to assess the reliability of the scale, and items with low reliability scores were omitted. After reliability analysis, Exploratory Factor Analysis (EFA) was applied, and the structural equation model was developed after removing items which had factor loadings lower than 0.45.

Findings and Results: Environmental sensitivity/insensitivity significantly affected the environmental protection commitment. Those with higher environmental protection commitment levels exhibited more environment-friendly consumption behaviour. It was also found that the students' genders, their families' place of domicile and particularly the parents' educational levels were significant factors in determining differences in the development of students' environmental sensitivities and behaviours.

Conclusion and Recommendations: Students whose mothers have graduated from a university promise to be active environmentalists by joining related organizations. Our results also show that the inclination toward environmentalism is similar among women as it is among students' whose mothers have graduated from a university. This result may suggest that women tend to be more environmentalist and that this tendency increases with education level. Considering that just 3.7% of mothers in Turkey have graduated from a university, it is made clear once again how important it is to encourage girls, some of whom will be mothers in the future, to pursue a university education.

Keywords: Environmental sensitivity, environment-friendly consumption, environmental protection commitment, Structural Equation Modelling.

Introduction

The damage caused by recent environmental problems has led to increased environmental concern and the development of environment-friendly consumption behaviour in almost every society. Environment-friendly consumption involves the consideration of environmental benefits by minimizing any damage done to the environment at all stages of consumption. It may be regarded as a sub-component of environmental behaviours, which include consuming ecologic and recyclable products and purchasing from companies that produce non-polluting, environmentally supportive, and environment-friendly products.

Even though most researchers consider Rachel Carson's book, *Silent Spring,* published in 1962, the start of the ecologic revolution, the ecological consciousness in

fact started at the end of the 1960s and evolved into a mass movement in the 1970s (Önder, 2009). With the widespread acceptance of the notion of environment-behaviour interaction, a conceptual model of environment-oriented behaviours was immediately required. Many researchers have thus developed various models related to the associations among environmental sensitivity, environmental attitudes and behaviours based on their own theoretical priorities or backgrounds (Wiseman & Bogner, 2003; Frick, Kaiser & Wilson, 2004). For instance, the "Responsible Environmental Behaviour Model" developed by Hinnes, Hungerford, and Tomera (1986/87) constitutes one of the most noteworthy models in the field. Previous studies have revealed that some researchers tended to examine the relationship between environmental attitudes and environmental behaviours (Kaiser, Wölfing & Fuhrer, 1999; Fraj & Martinez 2007; Steg & Vlek, 2009; Dono, Webb & Richardson, 2009; Yılmaz, Çelik & Yağızer, 2009), whereas others were more likely to focus on environmental sensitivity and environmental attitudes (Kaiser & Shimoda, 1999; Çabuk & Nakıboğlu, 2003; Tilikidou & Delistavrou, 2006; Tilikidou, 2007; Mostafa, 2007; Yılmaz, Çelik & Yağızer, 2009).

Regardless of the particular focus, the relevant literature contains abundant studies aimed at determining environmental concerns, attitudes and behaviours such as cultural issues and socio-demographic factors like age, gender and parental conditions. For instance, in terms of environmental attitude-behaviour consistency, Fuji (2006) suggested that the perceived easiness of behaviours was the most effective factor in individuals' decisions. As a cross-cultural study, Iuzuka (2000) suggested that citizens of highly-developed and developing countries had different point of views toward environmental issues, especially regarding the distribution of responsibility of environmental protection. More specifically, the citizens of highly-developed countries were found to be more likely to believe that environmental protection is a part of state responsibility, contrary to the common wisdom of citizens of developing countries, who are more likely to believe that this responsibility belongs to citizens rather than the state. Regarding socio-demographic factors, Bhate and Lawler (1997) revealed that some psychological and socio-demographic factors, including age, gender, educational level, salary, and profession, had significant effects on environmental behaviours. In a similar vein, Van Liere and Dunlap (1980) found that age had a significant effect on environmental concerns, indicating that young individuals were more open to discuss environmental issues than elders. Likewise, Mohai and Twight (1987) suggested that age had a direct, significant effect on environmental concern, whereas the place of residence had an indirect effect. In terms of educational level, there is a positive correlation between educational level and concerns about environmental issues (Kohut & Shriver, 1989; Vining & Ebro, 1990; Mainieri et al., 1997). More educated individuals tend to display more interest and become more sensitive to environmental problems.

Regarding the association of gender and environment, it has been found that women are potentially more sensitive toward environmental issues when compared to men (Diamond & Orenstein, 1990; Stern, Dietz & Kalof, 1993; Iizuka, 2000), who are more likely to concern themselves with economic issues than with the

environment (Passino & Lounsbury, 1976; Vanlier & Dunlap, 1980; Iizuka, 2000). Similarly, in terms of parental conditions, studies have demonstrated that mothers were more concerned and worried about environmental issues than fathers (George & Southwell, 1986; Dietz, Stern & Guagnano, 1998). More specifically, while mothers were more concerned about issues relating to the family's welfare and health, including quality of local environmental conditions such as water, air, and solid wastes, fathers were more concerned about the monetary and economic issues of the family (George & Southwell, 1986; Dietz, Stern & Guagnano, 1998). This difference is mostly derived from gender roles of parents. In sum, there have been many studies on the socio-demographic factors which determine environmental attitudes and behaviours. In the context of this body of research, this study aims to examine the extent to which students' environmental protection commitments are affected by environmental sensitivities/insensitivities and whether these two factors would be predictors of environment-friendly consumption behaviours, using the Structural Equation Model (SEM) with a particular emphasis on the mothers' educational levels.

Method

Research Design

The aim of this study is to determine the effects of mothers of university students on the students' environmental protection commitments and environmental behaviours. The population under study is the mothers of students at Eskişehir Osmangazi University.

Sample

Since the general proportion of the attitudes and behaviors of the population within the frame of research was not obvious, the contingent sampling technique was not applicable. Assuming the normality assumption is met, the method that grounds on the acceptable error level was used to determine the volume of the sample. In the equation, which is calculated by using the formula indicating that the number of units to which the scale is carried out, $n= \{(z^2) (\sigma^2)\}/ (d^2)$, the volume of sample was calculated as 500, with 0.05 significance level, z=1.96, d (sensitivity) =0.043, and p and q values of 0.5. After determining sampling, the scale was administered randomly to 520 students at Eskişehir Osmangazi University. Out of 520 scales, 43 were excluded from the study due to incorrect or insufficient administration.

Research Instruments

As a pilot study, the prepared scale was applied to 60 randomly chosen students. As a result, the scale was re-modified following the removal of non-understandable items. The scale used in the study consists of three dimensions: Environmental Protection Commitment (A), Environment-Friendly Consumption (B), Environmental Sensitivity (C1) / Insensitivity (C2). The Environmental Protection Commitment dimension, consisting of 20 items, is a 5-point Likert-type subscale ranging from 1 (cannot definitely commit) to 5 (can cefinitely commit) and was

developed by the authors. The Environment-Friendly Consumption dimension, which consists of 7 items, is 5-point Likert-type subscale ranging from 1 (never) to 5 (always). The Environmental Sensitivity/Insensitivity dimension is a 12-item, 5-point Likert-type subscale ranging from 1 (definitely disagree) to 5 (definitely agree). The Environment-Friendly Consumption and Environmental Sensitivity/Insensitivity dimensions were constructed on the basis of the studies conducted by Fraj and Martinez (2007), Tilikidou and Delistavrou (2008), Yılmaz, Çelik and Yağızer (2009).

Data Analyses

The theoretical premise of this study is based on the theory of planned behavior. The theory of planned behavior was formulated by Ajzen (1985) within the development of the theory of reasoned action (Ajzen & Fishbein, 1980). According to this theory, human behavior is determined by certain factors and exhibits itself in a planned manner. First, an "intention" has to emerge in order to motivate people to demonstrate planned behavior. Factors affecting intention include "attitude towards the behavior", "subjective norm", and "perceived behavioral control". Secondly, "behavior" is directly influenced by intention (Ajzen, 1985; Ajzen, 1991; Ajzen, 2005; Ajzen & Fishbein, 2000). The theory of planned behavior is shown in Figure 1.

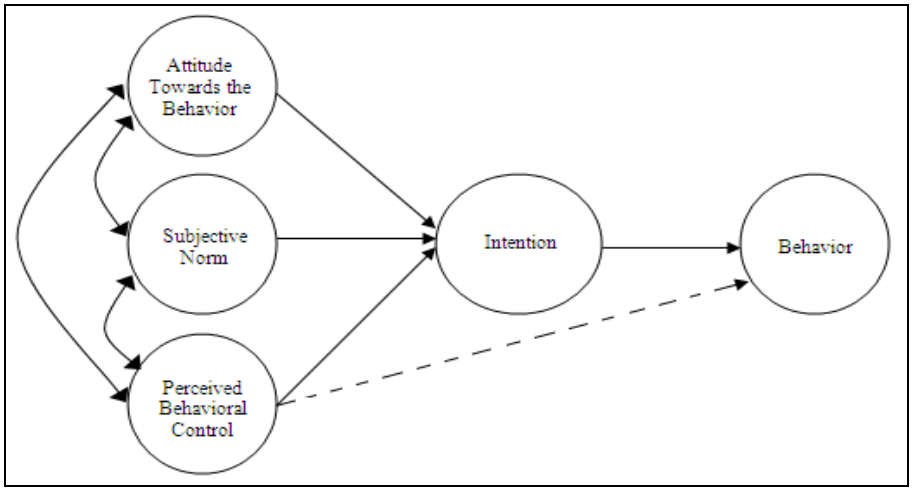

Figure 1. *Theory of Planned Behavior (Ajzen, 2005)*

In this study, the Environmental Sensitivity and Environmental Insensitivity factors were used as substitutes for the attitude towards the behavior, subjective norm, and perceived behavioral control factors. The Environmental Protection Commitment factor was used as a substitute for intention, and the Environment-Friendly Consumption factor replaced the behavior factor on the basis of planned behavior theory. In this study, then, the theory of planned behavior constituted a theoretical basis in explaining the causal relationships among factors.

Our model suggested Environmental Sensitivity (C1) and Environmental Insensitivity (C2) as the predictors of Environmental Protection Commitment (A) and the Environmental Protection Commitment (A) as the predictor of Environment-Friendly Consumption (B) (see Figure 2). This study examined three hypotheses – H_1, H_2 and H_3 – which, in reference to Figure 2, represent relationships C1→A, C2→A and A→B, respectively.

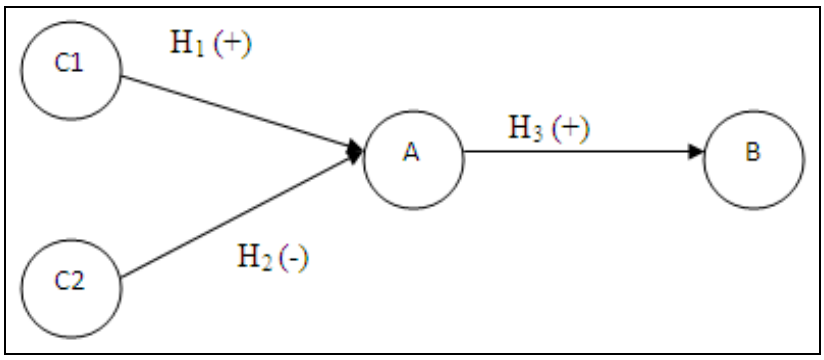

Figure 2. *Proposed Model*

So far, a review of the literature has displayed that environmental sensitivity and insensitivity lead to an increase and decrease in environmental attitude, respectively, and that this attitude determines environmental behavior (Kaiser, Wölfing & Fuhrer, 1999; Fraj & Martinez, 2007; Tilikidou & Delistavrou, 2006; Tilikidou, 2007; Yılmaz, Çelik & Yağızer, 2009). As can be seen in Table 1, it is assumed that a one-unit increase in the suggested model in the students' Environmental Sensitivity (C1) would result in an increase in their volunteering for Environmental Protection Commitment (A); that a one-unit increase in their Environmental Insensitivity (C2) would result in a decrease in their Environmental Protection Commitments (A); and that an increase in their Environmental Protection Commitments (A) would lead to an increase in their Environment-Friendly Consumption (B) behaviors.

Table 1

Study Hypotheses

H_1	As the students' environmental sensitivity increases, their environmental protection commitment increases.
H_2	As the students' environmental insensitivity increases, their environmental protection commitment decreases.
H_3	As the students' environmental protection commitment increases, their environment-friendly consumption behaviors increase.

Structural Equation Model (SEM)

Structural Equation Modeling (SEM) is a statistical technique for testing and estimating causal relationships using a combination of statistical data and qualitative causal assumptions. It is used in social, behavioral and educational sciences, particularly in psychology, biology, economy, marketing and medicine. SEM is a comprehensive statistical method used in testing hypotheses about causal relationships among observed and unobserved (latent) variables and has proved useful in solving problems in formulating theoretical constructions (Schumacker & Lomax, 2004; Reisinger & Turner, 1999; Raykov & Marcoulides, 2006; Yılmaz, 2004). SEM also can expand the explanatory ability and statistical efficiency for model testing with a single comprehensive method (Pang, 1996). While it has potential for decision support modeling, it is probably most useful for theory testing, which is a key phase in developing models (see Byrne, 1998; Cheng, 2001; Cudeck, Toit, & Sörbom, 2000; Hayduk, 1987; Jöreskog & Sörbom, 2001).

There are more than one goodness of fit indices for Structural Equation Model. The most commonly used test statistics in SEM are likelihood ratio chi-square statistics (χ^2), root mean square error of approximation statistics (RMSEA), goodness of fit index statistics (GFI) and adjusted goodness of fit index statistics (AGFI). If the value of $\{\chi^2/df\}$ is less than 3, it means that there is an acceptable fit. If the RMSEA is less than 0.05, it shows the perfect fit, $0.05 < RMSEA < 0.1$ is close to perfect, whereas $RMSEA > 0.1$ indicates a poor fit. Statistics of GFI is used similar to the statistics of coefficient of determination (R^2) in Regression Analysis. Statistics of AGFI is used similar to the statistics of adjusted coefficient of determination in Regression Analysis. Statistics of AGFI and GFI have value between 0 and 1, where values close to 1 gernerally means that the model fits well. Otherwise, if the value of Mardia-Based Kappa is close to 0 and the value of Relative Multivariate Kurtosis is close to 1, it means that the model has the assumption of normality (Tabachnick & Fidell, 2007; Schumacker & Lomax, 2004; Raykov & Marcoulides, 2006; Jöreskog & Sorbom, 2001).

As seen in Table 5 and Table 4, our findings revealed that the mother's education level significantly affected the C1, C2, A and B factors. Therefore, the hypotheses given in Table 2 were further developed in order to investigate the extent to which the mother's education level would affect the relationships in the model.

Table 2

Hypotheses Tested by the Mother's Educational Level

H_1	Educational levels of students' mothers have a significant effect on their environmental sensitivity.
H_2	Educational levels of students' mothers have a significant effect on their environmental protection commitment.
H_3	Educational levels of students' mothers have a significant effect on their environment-friendly consumption behaviors.

Validity and Reliability

As seen in Table 3, the Cronbach's α values were used to assess the reliability of the scale, and items with low reliability scores were omitted. After reliability analysis, Exploratory Factor Analysis (EFA) was applied, and the structural equation model was developed after removing items which had factor loadings lower than 0.45. The findings related to all items in the Environmental Protection Commitment dimension in the scale can be seen in Table 4.

Table 3

Items in the Measurement Tool

Factors / Cronbach Alpha(a) / Averages	***Averages***
Environment Protection Commitment(A)/ Cronbach Alpha(a)= 0.708 /Average= 3.54	
a1. That I will take part in tree-planting activities (That I will plant at least one tree every year).	3.41
a2. That I will set aside the wastes of products consumed for recycling.	3.67
a3. That I will take action about nature polluters with the authority in question.	3.23
a4. That I will warn those in my immediate vicinity to refrain from any unnecessary consumption.	3.74
a5. That I will warn those harming trees and flowers in parks and gardens.	3.66
Environment-Friendly Consumption(B)/ Cronbach Alpha(a)= 0.716 / Average = 3.07	
b1. I prefer using products produced from renewable raw materials.	3.14
b2. I am buying products with recyclable packaging.	3.31
b3. I am buying ecological products although they are more expensive.	2.76
b4. I am buying the products of companies backing environment projects.	3.08
Environmental Sensitivity(C1)/ Cronbach Alpha(a)= 0.784 / Average = 4.08	
c1.1. It annoys me to see that factory wastes cause environment pollution.	3.95
c1.2. Environmental pollution worries me.	4.20
c1.3. I am concerned about the effects of air pollution on my family's and me.	4.02
c1.4. I am afraid environmental pollution will made the world an uninhabitable place.	4.15
Environmental Insensitivity(C2)/ Cronbach Alpha(a)= 0.814 / Average = 2.12	
c2.1. I never have serious concerns about issues like water and marine pollution.	2.08
c2.2. I don't believe that the extinction of animals and plants will destroy the World.	2.09
c2.3. I believe environmental issues are being exaggerated.	2.18

Table 4
Summary of items of Environmental Protection Commitment

Items	Gender		Mother Education Level			t	t
	Female	Male	Elementary School	Secondary School	University	(Gender)	(Mother Education level)
a1. That I will take part in tree-planting activities	3.56	3.31	3.38	3.29	3.60	2.60**	3.86**
a2. That I will set aside the wastes of products consumed for recycling	3.90	3.51	3.71	3.56	3.77	4.30***	2.14N.S.
a3. That I will take action about nature polluters with the local authorities	3.36	3.14	3.27	3.08	3.38	2.24*	3.70*
a4. That I will warn those in my immediate vicinity to refrain from any unnecessary consumption	3.87	3.64	3.83	3.57	3.87	2.89**	6.38**
a5. That I will warn those harming trees and flowers in parks and gardens	3.85	3.56	3.70	3.60	3.74	3.46***	1.05N.S.
a6. That I will fight those endangering the nature	3.70	3.41	3.54	3.45	3.62	3.47***	1.44N.S
a7. That I will show no violence and aggression towards the environment I live in and what is inside it	4.19	3.89	4.08	3.98	3.99	3.38***	0.41N.S.
a8. That I will not directly and indirectly harm my environment with economic concerns in my business and private life	3.96	3.72	3.81	3.75	3.92	3.01**	1.48N.S.
a9. That I will do my best to make the environment I live in more livable	3.96	3.86	4.01	3.84	3.89	1.31N.S	1.62N.S.
a10. That I will take part in environmental cleaning campaigns	3.44	3.07	3.14	3.05	3.50	3.91***	9.10***
a11. That I will resist the destruction of world resources irresponsibly thinking that they are limited	3.95	3.72	3.88	3.71	3.90	2.88**	2.33N.S.
a12. That I will make no unnecessary consumption to make sure pollution is eliminated at its source	3.91	3.68	3.83	3.68	3.85	2.94**	2.14N.S.
a13. That I will use products produced from non-renewable resources like underground oil, coal, natural gas and mines in an economical manner because we will be unable to replace them with new resources	3.91	3.68	3.95	3.64	3.8	2.81**	4.33**
a14. That I will turn it off/fix it, when I see a dripping tap	4.32	4.07	4.31	4.12	4.16	3.22***	2.24N.S.
a15. That I will check and switch off unnecessarily used lights	4.32	4.15	4.35	4.15	4.20	2.24*	2.32N.S.
a16. That I will use the back of papers when I am studying	4.28	3.96	4.15	4.04	4.11	3.81***	0.60N.S.
a17. That I will warn those polluting the nature	3.74	3.53	3.66	3.52	3.70	2.44*	1.73N.S.
a18. That I will be an actively involved member of nature and environment organizations like Tema[a]	3.33	2.94	2.97	2.94	3.41	3.94***	10.30***
a19. That I will work on a voluntary basis for nature and human beings	3.57	3.06	3.23	3.11	3.49	5.55***	6.24**
a20. That I will observe the articles of this contract in order to leave a cleaner world to newer generations	3.96	3.66	3.87	3.66	3.88	3.61***	3.06*

Results

Among all participants, 40.9% were women and 59.1% were men. Regarding the mothers' education level, 26.8% of participants' mothers' were elementary school graduates, 40.7% were high school graduates and 32.5% were university graduates. In terms of the place of residence of the students' families, 69.4% lived in cities, 23.3% in districts and 7.3% in villages.

Regarding the factors used in the study, the mean scores of the Environmental Protection Commitment (A), Environment-Friendly Consumption (B), Environmental Sensitivity (C1) and Environmental Insensitivity (C2) factors were calculated as 3.54, 3.07, 4.08 and 2.12, respectively. On the basis of these mean scores, it can be concluded that the study participants' environmental sensitivity was high and that their environment-friendly consumption behaviours remained at a level close to the mean.

Gender had a significant effect on the Environmental Protection Commitment (A), Environmental Sensitivity (C1) and Environmental Insensitivity (C2) factors, but not on the Environment-Friendly Consumption (B) factor (see Table 5).

Regarding the place of domicile of the participants' families, no significant difference was obtained in relation to the Environment-Friendly Consumption (B), Environmental Sensitivity (C1) or Environmental Insensitivity (C2) factors in terms of the mean scores of living in the city and district. On the other hand, there was a significant difference between the mean scores in the village as compared to those for the city and district.

As to the mothers' levels of education, a significant difference was obtained between the mean scores of elementary school, high school and university graduates in relation to the Environmental Protection Commitment (A), Environment-Friendly Consumption (B), Environmental Sensitivity (C1) and Environmental Insensitivity (C2) factors. A significant difference was also found between the mean scores of Environmental Protection Commitment (A) among students whose mothers were university graduates and those whose mothers were elementary school and high school graduates. Table 5 shows ANOVA results related to socio-demographic variables such as gender, mother's educational level, father's educational level, and the family's place of domicile.

Table 5

The Effects of Socio-Demographic Variables on Mean Scores of Factors

		Mother's educational level			
		Elementary Scholl	High Scholl	University	*F* statistics
Factors	A	3.58	3.42	3.67	6.57**
	B	3.07	2.94	3.23	6.74***
	C1	3.98	4.22	4.08	5.24**
	C2	1.81	2.12	2.37	9.87***
		Father's educational level			
		Elementary Scholl	High Scholl	University	*F* statistics
Factors	A	3.64	3.51	3.53	1.23N.S.
	B	3.16	3.01	3.08	1.26N.S.
	C1	4.29	4.11	3.98	7.56***
	C2	1.84	2.03	2.29	6.56**
		The family's place of domicile			
		Village	Districts	City	*F* statistics
Factors	A	3.46	3.51	3.56	0.58N.S.
	B	3.39	3.06	3.04	3.77*
	C1	3.67	4.09	4.12	7.69***
	C2	2.69	2.06	2.08	5.50**
		Gender			
		Female		Male	*t* statistics
Factors	A	3.71		3.43	4.54***
	B	3.13		3.03	1.42N.S.
	C1	4.24		3.97	4.45***
	C2	1.99		2.20	-2.14*

Significance Level of F and t statistics: *** $p \leq 0.001$ ** $p \leq 0.01$ * $p \leq 0.05$

Findings relating to Structural Equation Models

In this study, three Structural Equation Models (SEMs) were analyzed using the LISREL 8.80 software (Jöreskog & Sorbom, 2001). The first one, named the

"Environmentalist Behavior Model" (Model No I), included all students. This model was used to determine the extent to which the mothers' educational levels would affect the causal relationships. The other models were Model No II: "Students Having Elementary School Graduate Mothers" and Model No III: "Students Having University Graduate Mothers".

Findings of Model No I

The model's goodness of fit indices yielded the following: $\chi^2(100) = 255.53$; $\chi^2/df = 2.55$, RMSEA=0.057, NFI=0.94, NNFI=0.96, PNFI=0.78, CFI=0.96; IFI= 0.96, RFI=0.93, RMR=0.054, GFI=0.94, AGFI=0.91. When examining the goodness of-fit indices, it can be concluded that the model was within acceptable limits (see Schermelleh-Engel, Moosbrugger & Müller, 2003; Byrne 1998; Hayduk 1987; Jöreskog & Sorbom 2001). Using the model-related normality hypothesis, the Mardia-Based Kappa values was calculated as 0.17 and the Relative Multivariate Kurtosis value as 1.17, indicating that the normality assumption was met. Table 6 presents the structural equations belonging to Model No I, the results related to the hypotheses and the standardized parameter estimate values.

Table 6

Standardized Parameter Estimate Values, t Values and Hypotheses (Model I)

Hypotheses	***Paths***	***Standardized parameter estimate values***	***t values***	***Results***
H_1	(C1)→(A)	0.73	6.96	Confirmed
H_2	(C2)→(A)	-0.34	-3.84	Confirmed
H_3	(A)→(B)	0.62	6.21	Confirmed
		Structural Equations		
	A = 0.73*C1 – 0.34*C2		(R^2=0.34)	
	B = A*0.62		(R^2=0.38)	
		Reduced Structural Equations		
	A = 0.73*C1 – 0.34*C2		(R^2=0.34)	
	B = 0.45*C1 – 0.21*C2		(R^2=0.13)	

As seen in Table 6, the findings revealed that the university students' Environmental Sensitivity (C1) and their voluntarism in Environmental Protection Commitment (A) had significant effects on Environment-Friendly Consumption (B). Model No I's correlation matrix is presented in Table 7.

Table 7

Correlation Matrix of Model No I

	A	B	C1	C2
A	1.00			
B	0.62	1.00		
C1	0.51	0.32	1.00	
C2	0.12	0.07	0.64	1.00

As seen in Figure 3, a one-unit increase in the Environmental Sensitivity (C1) and Environmental Insensitivity (C2) factors led to a 0.73-unit increase and a 0.34-unit decrease, respectively, in Environmental Protection Commitment (A). Figure 3 furthermore shows that a one-unit increase in the Environmental Protection Commitment (A) factor caused a 0.62-unit increase in Environment-Friendly Consumption (B). The indirect effects of Environmental Sensitivity (C1) and Environmental Insensitivity (C2) on Environment-Friendly Consumption (B) were calculated as 0.73*0.62=0.45 and -0.34*0.62=0.21, respectively, which were found to be statistically significant (*t* statistics is 5.72 for C1 and -3.58 for C2). Moreover, because the C1→A, C2→A and A→B relationships were found to be statistically significant, H_1, H_2 and H_3 were all confirmed. R^2 values of the SEMs related to factor B were calculated as 0.34, 0.38 and 0.13. An examination of the R^2 values shows that factor A uniquely explained 38% of the change in factor B, while factors C1 and C2 explained just 13%.

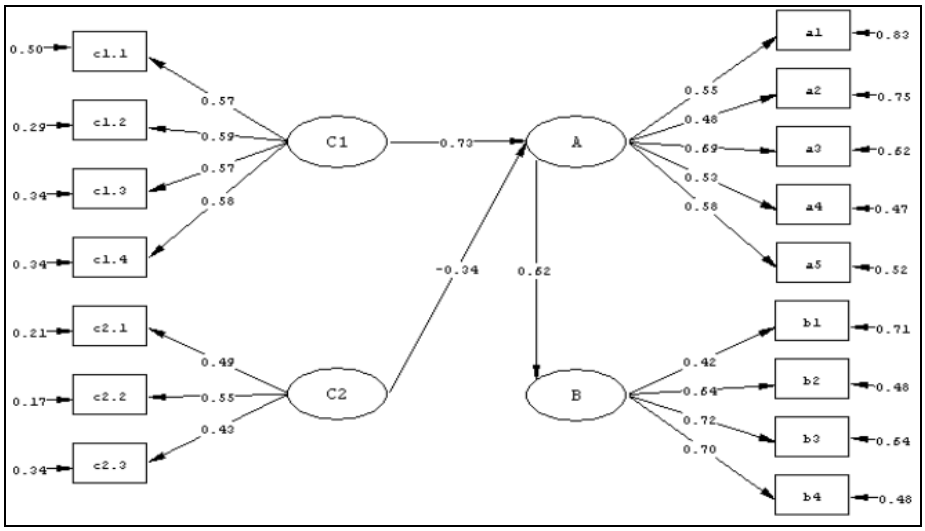

Figure 3 *Environmentalist Protection Commitment (Model No I)*

Two different models were also established to examine the effects of the education levels of students' mothers on the C1→A, C2→A and A→B relationships shown in Figure 3.

Findings of Model No II

Findings of the model established for students having elementary school graduate mothers are presented in Table 8. The model's goodness of fit indices were calculated as follows: χ^2 (100)=131.69; χ^2/df =1.32, RMSEA=0.05, NFI=0.86, NNFI=0.96, PNFI=0.71, CFI=0.96; IFI= 0.96, RFI=0.83, RMR=0.04, GFI=0.89, AGFI=0.84. These indices suggested a good fit of model without any need for modification.

Table 8

Standardized Parameter Estimate Values, t Values and Hypotheses (Model II)

Hypotheses	***Paths***	***Standardized parameter estimate values***	***t values***	***Results***
H_1	(C1)→(A)	0.42	1.60	*Not Confirmed*
H_2	(C2)→(A)	-0.29	-1.17	*Not Confirmed*
H_3	(A)→(B)	0.60	2.53	Confirmed
Structural Equations				
A = 0.42*C1 – 0.29*C2			(R^2=0.07)	
B = A*0.60			(R^2=0.36)	
Reduced Structural Equations				
A = 0.42*C1 – 0.29*C2			(R^2=0.07)	
B = 0.25*C1 – 0.17*C2			(R^2=0.03)	

As a result of the analysis, it was demonstrated that the Environmental Sensitivity (C1) and Environmental Insensitivity (C2) factors had significant effects on Environmental Protection Commitment (A) in Model No II.

Findings of Model No III

Model No III's findings are presented in Table 9. The model's goodness of-fit indices were calculated as follows: χ^2(100) =217.39, χ^2/df =2.17, RMSEA=0.087, NFI=0.87, NNFI=0.91, PNFI=0.73, CFI=0.93; IFI=0.93, RFI=0.85, RMR=0.085, GFI=0.85, AGFI=0.80. These indices indicate a good fit of model without any modification needed.

Table 9

Standardized Parameter Estimate Values, t Values and Hypotheses (Model III)

Hypotheses	Paths	Standardized parameter estimate values	t values	Results
H_1	(C1)→(A)	0.92	4.94	Confirmed
H_2	(C2)→(A)	-0.46	-2.89	Confirmed
H_3	(A)→(B)	0.69	4.05	Confirmed
Structural Equations				
	A = 0.92*C1 – 0.46*C2	(R^2=0.49)		
	B = A*0.69	(R^2=0.48)		
Reduced Structural Equations				
	A = 0.92*C1 – 0.46*C2	(R^2=0.49)		
	B = 0.64*C1 – 0.32*C2	(R^2=0.24)		

As a result of the analysis, it was demonstrated that for students with university graduate mothers, the Environmental Sensitivity (C1) and Environmental Insensitivity (C2) factors had a significant effect on Environmental Protection Commitment (A) and that the Environmental Protection Commitment (A) factor had a significant effect on Environment-Friendly Consumption (B).

The findings of Model No II and Model No III revealed that the mothers' educational levels significantly affect the students' attitudes and behaviors toward environmental issues (see the *t* statistics in Table 8 and Table 9). A summary of the C1→A, C2→A and A→B relationships in all three models is developed in Table 10 and is presented in the following section.

Table 10

Significant Test Results of the Relationships in Structural Equation Models

		Models Tested		
		Model I	**Model II**	**Model III**
Paths	**C1→A**	Confirmed	*Not Confirmed*	Confirmed
	C2→A	Confirmed	*Not Confirmed*	Confirmed
	A→B	Confirmed	Confirmed	Confirmed

Discussion and Conclusions

The objective of the current study was to investigate the extent to which students' environmental protection commitments are predicted by environmental sensitivities/insensitivities and to examine whether environmental sensitivities/insensitivities factors would predict environment-friendly consumption behaviors, using the Structural Equation Model (SEM) to take into account the education level of the students' mothers'.

The study demonstrated that men had a higher rate of environmental insensitivity compared to women. In other words, men were more unwilling and reluctant to commit to the protection of nature (see Table 5: t=4.54, p<0.001). This finding parallels many previous studies (Diamond & Orenstein, 1990; Stern, Dietz & Kalof, 1993; Iizuka, 2000). Some researchers have suggested that women are more interested in local environmental issues compared with men, but this difference was reduced in subjects concerning national environment. It has also been stated that women have lower participation in political movements in the name of environmental protection (Mohai, 1987; Stern, Dietz & Kalof, 1993; Iizuka, 2000). In addition, the students' families' place of residence had a significant effect on environment-friendly consumption and environmental sensitivity (Table 5: F=3.77, p<0.01, F=7.69, p.<0.001, respectively). Culturally, it is expected for students to maintain their lives with their family until they reach their university education. Therefore, this result indicates that the environment where the student has lived until his/her university education may influence his/her environment-related attitudes. With this finding in mind, questions related to the duration of family-rooted attitudes, change in attitudes and the direction of these changes can be topics for further study.

Another notable finding is that the mean scores of the Environmental Protection Commitment (A), Environment-Friendly Consumption (B), Environmental Sensitivity (C1) and Environmental Insensitivity (C2) factors were positively correlated with the educational level of the students' mothers. Interestingly, the mothers' educational level had a significant effect on Environmental Protection Commitment (A), Environment-Friendly Consumption (B) and Environmental Sensitivity (C) (Table 5: F=6.57, p.<0.01, F=6.74, p.<0.001, F=5.24, p.<0.01, respectively), whereas fathers' educational level had no significant effect on Environmental Protection Commitment (A) and Environment-Friendly Consumption (B) (Table 5: F=1.23, p. > 0.29, F=1.26, p.> 0.28, respectively). However, fathers' educational level did have a significant effect on Environmental Sensitivity (C1) and Environmental Insensitivity (C2) (Table 5: F=7.56, p.<0.001, F=6.56, p.<0.01, respectively). This surprising finding suggests that the educational levels of parents vary in determining their children's environment-related attitudes and behaviors. Because the social roles of mothers and fathers are different – largely a result of differences in gender roles – their children's environmental attitudes and behaviors are also different. During socialization, children acquire separate information from their parents through modeling. In a similar vein, there are various studies that resonate with this finding, indicating that mothers are more interested in family

welfare and health while fathers focus more on economic issues (George & Southwell, 1986; Dietz, Stern & Guagnano, 1998).

An additional important finding is that women had higher mean scores when compared to men in all items of the Environmental Protection Commitment dimension, as presented in Table 1. The lowest mean scores were obtained for items a3 ("That I will take action about nature polluters with the authority in question") and a18 ("That I will be an actively involved member of nature and environment organizations like Tema"). The highest mean scores were obtained for items a14 ("That I will turn it off/fix it, when I see a dripping tap") and a15 ("That I will check and switch off unnecessarily used lights"). These tendencies can be interpreted based on the perceived ease of these behaviors, a result which seems to parallel the findings of Fuji (2006).

To conclude, this study indicated that students' gender, their families' places of domicile and especially their mothers' educational levels lead to differences in environmental sensitivity, commitment to protect the environment and environment-friendly consumption behaviors. One of the most remarkable findings may be that the educational levels of the mothers proved to have a significant effect on the students' environmental protection commitment and environmental behaviors. More specifically, students whose mothers had graduated from a university displayed more responsibility toward their environment, engaged more frequently in environment-friendly consumption behaviors and were more willing to protect the environment when compared with students whose mothers had completed elementary school. This finding indicates that the more education their mothers have, the more the students will tend toward environmental protection and development commitments. Namely, those students with university graduate mothers were more likely to become members of environmentalist organizations and to commit to being active environmentalists. As seen in Table 1, there is a congruency between women and students having university graduate mothers when it comes to the commitment to environmental protection. This result demonstrates that more educated women tend toward environmentalism, becoming a role model for their children in terms of environmental issues. This finding is critical when one considers that only 3.7% of mothers in Turkey are university graduates. In raising future generations to be more sensitive and dynamic toward environmental problems, it will be important to support female children's education, since many of them will one day be mothers. Thus, additional funds could be reserved within nature protection programs for developing countries to help grant female children access to university education and to create equal educational opportunities.

In conclusion, this study demonstrates that the Environmental Protection Commitment (A) factor could be used to explain the Environment-Friendly Consumption (B) variable (A→B). Two possible shortcomings of the study are that it used a student sampling and that it relied on novel self-report measures. Nonetheless, based on the present findings, further studies should be engaged in order to clarify these results. In sum, one of this study's most important contributions is that the children of highly educated mothers are likely to become more environmentally friendly individuals.

References

Ajzen, I. (1985). *From intention to actions: A theory of planned behavior*. In J. Kuhl and J. Beckman (eds), Action-control: From cognition to behavior, 11-39. Heidelberg: Springer.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.

Ajzen, I. (2005). *Attitudes, personality and behavior*. New York: Open University Press.

Ajzen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood-Cliffs, NJ: Prentice-Hall.

Ajzen, I. & Fishbein, M. (2000). Attitudes and the attitude-behavior relation: Reasoned and automatic process. In W. Stroebe and M. Hewstone (eds), *Europen Review of Social Psychology*, 11, 1-33. Chichester: Wiley.

Bhate, S. & Lawler, K. (1997). Environmentally friendly products: factors that influence their adoption. *Technovation*, 17(8), 457-465.

Byrne, M.B. (1998). *Structural equation modeling with LISREL, PRELIS and SIMPLIS*: Basic Concepts, Applications and Programming. New Jersey: Lawrence Erlbaum.

Cheng, E.W.L. (2001). SEM being more effective than multiple regression in parsimonious model testing for management development research. *Journal of Management Development*, 20 (7), 650-667.

Cudeck, R., Toit, D. S. & Sörbom, D. (2000). *Structural equation modelling: present and future*. Scientific Software International Inc., Chicago.

Çabuk, S. & Nakıboğlu, B. (2003). Çevreci pazarlama ve tüketicilerin çevreci tutumlarının satın alma davranışlarına etkileri ile ilgili bir uygulama. [Environmental marketing and an application about the effects of consumers' environmental attitudes on purchasing behaviors] *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 12(12), 39-54.

Dietz, T., Stern, P. & Guagnano, G. (1998). Social structural and social psychological bases of environmental concern. *Environment and Behaviour,* 30, 450-471.

Dono, J., Webb, J. & Richardson, B. (2010). The relationship between environmental activism, pro-environmental bahaviour and social identity. *Journal of Environmental Psychology*, 30(2), 178-186.

Fraj, E. & Martinez, E. (2007). Ecological consumer behaviour: an emprical analysis, *International Journal of Consumer Studies*, 31, 26-33.

Fujii, S. (2006). Environmental concern, attitude toward frugality, and ease of behavior. *Journal of Environmental Psychology*, 26, 262–268.

Hayduk, L.A. (1987). *Structural equation modeling with LISREL: Essentials and Advances*. Baltimore: John Hopkins.

Hines, J.M., Hungerford, H.R. & Tomera, A.N. (1986/1987). Analysis and synthesis of research on responsible environmental behavior. *Journal of Environmental Education*, 18, 1-8.

Frick, J., Kaiser, F. & Wilson, M. (2004). Environmental knowledge and conservation behavior: exploring prevalence and structure in a representative sample. *Personality and Individual Differences*, (37) 8, 1597-1613.

Jöreskog, K. & Sörbom, D. (2001). *LISREL 8: User's reference guide*. Chicago: Scientific Software International Inc.

Kaiser, F.G., Wölfing, S. & Fuhrer, U. (1999). Environmental attitude and ecological behaviour. *Journal of Environmental Psychology*, 19: 1-19.

Kaiser, F.G. & Shimoda, T.A. (1999). Responsibility as a predictor of ecological behaviour. *Journal of Environmental Psychology*, 19, 243-253.

Mainieri, T., Barnett, E.G., Valdero, T.R., Unıpan, J.B. & Oskamp, S. (1997). Green buying: the influence of environmental concern on consumer behaviour. *The Journal of Social Psychology*, 137(2), 189-204.

Mohai, P. & Twight, B. (1987). Age and environmentalism: an elaboration of the Buttel Model Using National Survey Evidence. *Social Science Quarterly,* 68, 798-815.

Mostafa, M.M. (2007). A Hierarchical analysis of the green consciousness of the egyptian consumer. *Psychology & Marketing*, 24(5), 445-473.

Önder, T. (2009). *Yeşil siyaset*. [Green Politics] M. Türköne, Ö. Çaha, T. Önder, B. B. Özipek, H. Çetin, H. E. Beriş, et al. içinde, Siyaset (s. 603). İstanbul: Opus Yayınları.

Pang, N.S.K. (1996). School values and teachers' feelings: a LISREL model. *Journal of Educational Administration*, 34(2), 64-83.

Raykov, T. & Marcoulides, G.A. (2006). *A first course in structural equation modeling*. London: Lawrence Erlbaum Associates.

Reisinger, Y. & Turner, L. (1999). Structural equation modeling with LISREL: application in tourism. *Tourism Management*, 20, 71-88

Schumacker, R.E. & Lomax, G.R. (2004). *A beginner's guide to structural equation modeling*. London: Lawrence Erlbaum Associates.

Steg, L. & Vlek, C. (2009). Encouraging pro-environmental behaviour: an integrative review and research agenda. *Journal of Environmental Psychology*, 29, 309-317.

Stern, P., Dietzi, T. & Kalof, L. (1993), Value orientations, gender, and environmental concern. *Environment and Behaviour*, 25(5), 322-348.

Tabachnick, B.G. & Fidell, L.S. (2007). *Using multivariate statistics.* New York: Pearson Education Inc.

Tilikidou, I. & Delistavrou, A. (2006). Consumers' ecological activities and their correlates. Access date: July 11, 2009 http://www.ctw-congress.de/ifsam/download/track_9/pap00169.pdf

Tilikidou, I. (2007). The effects of knowledge and attitudes upon greeks' pro-environmental purchasing behaviour. *Corporate Social Responsibility and Environmental Management*, 14, 121–134.

Tilikidiou, I. & Delistavrou, A. (2008). Types and influential factors of consumers' non-purchasing ecological behaviors. *Business Strategy and the Environment*, 18, 61-76.

Van Liere, K. & Dunlap, R. (1981), Environmental concern: does it make a difference how it's measured? *Environment and Behaviour*, 13(6), 651-676.

Wiseman, M. & Bogner, F.X. (2003). A higher-order model of ecological values and its relationship to personality. *Personality and Individual Differences,* 34, 783-794.

Yılmaz, V. (2004). Lisrel ile yapısal eşitlik modelleri: tüketici şikayetlerine uygulanması. [Structural Equation Modeling via Lisrel: Application on Consumer Complaints] *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 4(1), 77-90.

Yılmaz, V., Çelik, H. E. & Yağızer, C. (2009). Çevresel duyarlılık ve çevresel davranışın ekolojik ürün satın alma davranışına etkilerinin yapısal eşitlik modeliyle araştırılması. [Investigating the Effects of Environmental Sensitivity and Environmental Behavior on Ecological Product Buying Behavior through Structural Equation Modeling]. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 9(2), 1-14.

Üniversite Öğrencilerinin Çevre Korumaya İlişkin Vaatleri İle Çevresel Davranışlarında Anne Eğitim Düzeyinin Etkisi

Atıf:

Saraçlı, S., Yılmaz V., & Arslan T. (2014). The effects of mothers' educational levels on university students' environmental protection commitments and environmental behaviors. *Eurasian Journal of Educational Research*, 55, 177-200. http://dx.doi.org/ 10.14689/ejer.2014.55.11

Özet

Problem Durumu: Son zamanlarda çevresel sorunların verdiği zararların ortaya çıkması toplumda çevresel kaygıyı arttırmış ve bu durum çevre dostu tüketim davranışının gelişmesine sebep olmuştur. Çevre dostu tüketim, tüketim eyleminin her safhasında çevreye verilecek zararı en aza indirerek çevresel faydayı düşünmek olarak tanımlanabilir. Çevre dostu tüketim çevresel davranışın alt bileşenlerinden biri olarak görülebilir. Çevre dostu tüketim; ekolojik, geri dönüştürülebilir ve ihtiyacımız kadar ürünleri tüketerek sergilenebileceği gibi doğayı kirletmeyen, çevre

projelerini destekleyen ve çevre dostu ürünler üreten firmaların ürünlerini satın alarak da gösterilebilir.

Anne ve babanın çevre konuları hakkında etkisinin araştırıldığı çalışmalarda annelerin çevresel konularda babalara oranla daha ilgili ve endişeli olduğu saptanmıştır. Bu farklılığın sosyal hayattaki rollerinden kaynaklandığı belirtilmektedir. Anne ailenin refahı ve sağlığı ile ilgili konular hakkında (bu konular yerel çevre şartlarının kalitesiyle alakalıdır örneğin su, hava, katı atıklar) endişe duyarken, baba ailenin maddi ve ekonomik konuları hakkında kaygı duymaktadır. Ayrıca eğitim-çevre ilişkisinin varlığını saptayan ve eğitim düzeyi yükseldikçe bireylerin çevresel konularda daha bilgili olduğu ve dolayısıyla çevresel konularla ilgi kaygılarının arttığını belirten çalışmalarda literatürde mevcuttur.

Araştırmanın Amacı: Bu çalışmanın amacı Yapısal Eşitlik Modeli (YEM) kullanarak üniversite öğrencilerinin çevresel duyarlılıklarını, çevreyi koruma vaatlerini ve çevre dostu tüketim davranışları arasındaki nedensel ilişkileri, annelerinin eğitim düzeylerini dikkate alarak incelemektir.

Araştırmanın Yöntemi: Araştırmaya başlamadan önce hazırlanan ölçek rassal olarak seçilen 60 öğrenci üzerinde uygulanmıştır. Pilot çalışma sonucunda anlaşılmayan ifadeler çıkarılarak ölçeğe son hali verilmiştir. Çalışmada kullanılan ölçek üç farklı boyuttan oluşmaktadır(Çevre Koruma Vaadi(A), Çevre Dostu Tüketim(B), Çevresel Duyarlılık(C1)/Duyarsızlık(C2)). "Çevre Koruma Vaadi" boyutu yeni geliştirilmiş ve literatürde ilk niteliğindedir. "Çevre Koruma Vaadi" 20 ifadeden oluşmaktadır ve 5' li Likert tekniği kullanılarak hazırlanmıştır(1.Kesinlikle Söz Veremem, 2.Söz Veremem, 3.Kararsızım, 4. Söz Veririm, 5.Kesinlikle Söz Veririm). "Çevre Dostu Tüketim" boyutu 7 ifadeden oluşmaktadır ve 5' li Likert tekniği kullanılmıştır (1.Hiçbir Zaman, 2.Bazen, 3.Ara Sıra, 4.Sıklıkla, 5.Her Zaman). "Çevresel Duyarlılık/Duyarsızlık" boyutu 12 ifadeden oluşmaktadır ve 5' li Likert tekniği kullanılarak hazırlanmıştır (1.Kesinlikle Katılmıyorum, 2.Katılmıyorum, 3.Karasızım, 4.Katılıyorum, 5.Kesinlikle Katılıyorum). Pilot uygulama tamamlandıktan sonra Eskişehir Osmangazi Üniversitesi Kampüsünde rassal olarak ulaşılan 520 öğrenci üzerinden çözümleme gerçekleştirilmiştir. Ölçeğin güvenilirliğini araştırmak için Cronbach Alpha(α) değerlerine bakılmış, güvenilirlik analizinden sonra açıklayıcı faktör analizi (EFA) uygulanmış ve faktör yükü 0.45' in altında olan ifadeler ölçekten çıkartılarak yapısal eşitlik modeli geliştirilmiştir.

Araştırmanın Bulguları:Araştırmaya katılanların %40.9' u kadınlardan ve %50.1' i ise erkeklerden oluşmaktadır. Annenin eğitim düzeyi dikkate alındığında, katılımcıların %26,8' i ilköğretim, %40,7' si orta öğretim ve %32,5' i ise üniversite mezunlarından oluşmaktadır. Ayrıca öğrencilerin ailelerinin yaşadıkları yer dikkate alındığında %69.4' ü şehirde, %23.3' ü ilçede ve %7.3' nün ise köyde yaşadığı saptanmıştır.

Araştırmada kullanılan faktörler dikkate alındığında "Çevre Koruma Vaadi (A)", "Çevre Dostu Tüketim (B)", "Çevresel Duyarlılık (C1)" ve "Çevresel Duyarsızlık (C2)" faktörlerinin ortalamaları sırasıyla 3.54, 3.07, 4.08 ve 2.12 olarak hesaplanmıştır. Araştırmaya katılanların çevresel duyarlılıklarının yüksek olduğu fakat çevre dostu tüketim davranışlarının ise ortalamaya yakın düzeyde kaldığı söylenebilir. Cinsiyet

değişkeni dikkate alındığında "Çevre Koruma Vaadi (A)", "Çevresel Duyarlılık (C1)" ve "Çevresel Duyarsızlık (C2)" faktörlerinde anlamlı etkiye sahip olurken "çevre dostu tüketim (B)" faktöründe anlamlı etkisinin olmadığı saptanmıştır.

Araştırmaya katılanların ailelerinin yaşadığı yer dikkate alındığında "Çevre Dostu Tüketim (B)", "Çevresel Duyarlılık (C1)" ve "Çevresel Duyarsızlık (C2)" faktörlerine ilişkin "il" ve "ilçe" de yaşayanların ortalamaları arasında anlamlı bir farkın olmadığı fakat "köyde" yaşayanlar ile "il" ve "ilçe" de yaşayanların ortalamaları arasında anlamlı bir farklılığın olduğu saptanmıştır.

Annelerinin eğitim düzeyi dikkate alındığında "Çevre Koruma Vaadi (A)", "Çevre Dostu Tüketim (B)", "Çevresel Duyarlılık (C1)" ve "Çevresel Duyarsızlık (C2)" faktörlerine ilişkin eğitim düzeyi "ilköğretim", "ortaöğretim" ve "üniversite" olanların ortalamaları arasında anlamlı bir farklılığın olduğu belirlenmiştir. Annesinin eğitim düzeyini "üniversite" olan öğrenciler "ilköğretim" ve "ortaöğretim" olanların "Çevre Koruma Vaadine(A)" ortalamaları arasında anlamlı bir farkın olduğu görülmüştür.

Bu çalışmada üç yapısal eşitlik modeli (YEM) LISREL 8.80 programı kullanılarak analiz edilmiştir. Bunlardan ilki tüm öğrenciler için geçerli olan "Çevreci Davranış" olarak isimlendirilen modeldir (Model No I). Öğrencilerin annelerinin eğitim düzeylerindeki farklılığın "Çevreci Davranış" modelindeki nedensel ilişkilerde farklılığa sebep olup olmadığını araştırılmıştır. Bunlar Model No II: "Annesi İlköğretim Mezunu Olan Öğrenciler" ve Model No III: "Annesi Üniversite Mezunu Olan Öğrenciler" olarak isimlendirilmiştir.

Model No I' e ait bulgular

Modelin uyum ölçütleri; χ^2 = 255.53(*s.d.*=100); χ^2 / s.d =2.55, *RMSEA*=0.057, *NFI*=0.94, *NNFI*=0.96, *PNFI*=0.78, *CFI*=0.96; *IFI*= 0.96, *RFI*=0.93, *RMR*=0.054, *GFI*=0.94, *AGFI*=0.91 olarak hesaplanmıştır. Uyum ölçütleri incelendiğinde modelin kabul edilebilir sınırlar içinde kaldığı söylenebilir. Modele ilişkin normallik varsayımını sınayan test istatistiklerinden; Mardia-Based Kappa değeri 0.17 olarak ve Relative Multivariate Kurtosis değeri ise 1.17 olarak hesaplanmış ve normallik varsayımının sağlandığı görülmüştür.

Model No II' ye ait bulguları

Annesi ilköğretim mezunu olan öğrenciler için kurulmuş modele ilişkin uyum ölçütleri; χ^2 = 131.69 (*s.d.*=100); χ^2 / s.d =1.32, *RMSEA*=0.05, *NFI*=0.86, *NNFI*=0.96, *PNFI*=0.71, *CFI*=0.96; *IFI*= 0.96, *RFI*=0.83, *RMR*=0.04, *GFI*=0.89, *AGFI*=0.84 olarak hesaplanmıştır. Uyum ölçütleri incelendiğinde modelin kabul edilebilir sınırlar içinde kaldığı söylenebilir. Analiz sonucunda annesi ilköğretim mezunu olan öğrencilere ait kurulan modelde "Çevresel Duyarlılık (C1)" ve "Çevresel Duyarsızlık (C2)" faktörlerinin "Çevre Koruma Vaadi (A)" üzerinde anlamlı bir etkisinin olmadığı saptanmıştır.

Model No III' e ait bulgular

Annesi üniversite mezunu olan öğrenciler için kurulmuş modele ilişkin uyum ölçütleri; χ^2 = 217.39 (*s.d.*=100); χ^2 /s.d =2.17, *RMSEA*=0.087, *NFI*=0.87, *NNFI*=0.91, *PNFI*=0.73, *CFI*=0.93; *IFI*= 0.93, *RFI*=0.85, *RMR*=0.085, *GFI*=0.85, *AGFI*=0.80 olarak hesaplanmıştır. Uyum ölçütleri incelendiğinde modelin kabul edilebilir sınırlar içinde kaldığı söylenebilir. Analiz sonucunda annesi üniversite mezunu olan öğrenciler için kurulan modelde "Çevresel Duyarlılık (C1)" ve "Çevresel Duyarsızlık (C2)" faktörlerinin "Çevre Koruma Vaadi (A)" üzerinde anlamlı etkisinin olduğu ayrıca "Çevre Koruma Vaadi (A)" faktörünün "Çevre Dostu Tüketim (B)" üzerinde anlamlı etkisinin olduğu saptanmıştır.

Model No II ve Model No III' e ait bulgular incelendiğinde annenin eğitim düzeyinin öğrencilerin çevreyle ilgili konulardaki tutum ve davranışları üzerinde etkili olduğu görülmektedir.

Araştırmanın Sonuçları ve Önerileri: Öğrencilerin annelerinin öğretim düzeyi yükseldikçe çevreyi koruma ve geliştirme vaatleri de yükselmektedir. Özellikle üniversite mezunu anneye sahip öğrenciler çevreci örgütlere üye olarak aktif bir çevreci olmaya söz vermektedirler. Cinsiyete göre kadınların çevre koruma vaatleri ile anneleri üniversite mezunu olan öğrencilerin vaatleriyle paralellik gösterdiği görülmektedir. Bu sonuç kadınların daha çevreci olma eğiliminde olduğu, eğitim düzeyi yükseldikçe bu eğilimde de artış olduğu değerlendirilmektedir. Türkiye'deki üniversite mezunu annelerin oranının %3.7, olduğu dikkate alınırsa geleceğin anneleri olan kız çocuklarının üniversite eğitimi için desteklenmelerinin ne kadar önemli olduğu bir kez daha anlaşılabilir.

Anahtar Sözcükler: Çevresel duyarlılık, çevre dostu tüketim, çevre koruma vaadi, yapısal eşitlik modeli.