

Examining the Mediating Role of Altruism in the Relationship between Empathic Tendencies, the Nature Relatedness, and Environmental Consciousness¹

NUDAR YURTSEVER² DURIYE ESRA ANGIN^{*3}

~ A study was conducted using a correlational screening model to determine the mediating effect of altruism in the relationship between empathic tendencies, the nature relatedness and environmental consciousness. The participants of the study, selected via random cluster sampling design, are composed of 305 pre-school teachers working in pre-schools and kindergartens in a city located in Turkey's Aegean region. The 'Empathic Tendency Scale', 'Altruism Scale', 'Nature Relatedness Scale', and 'Environmental Consciousness Scale' were used as data collection tools. The analyses of the sub-purposes were carried out using the PROCESS macro (Model 4) developed by Andrew Hayes using the SPSS infrastructure. When the study results were examined, the indirect effects of the empathic tendency on nature relatedness and environmental consciousness were found to be significant. Thus, altruism was the mediator for the relationship between the empathic tendency and nature relatedness ($\beta=.13$, 95% BCA CI [.08; .19]) and for the relationship between empathic tendency and environmental consciousness ($\beta=.36$, 95% BCA CI [.18; .57]).

Keywords: altruism, empathic tendency, environmental consciousness, nature relatedness, pre-school teacher

1 This article was developed from the master's thesis of the first author titled as "The mediating role of altruism in the relationship between the empathic tendencies of preschool teachers and the nature relatedness and environmental consciousness".

2 Ankara University, Turkey.

3 *Corresponding Author. Faculty of Education, University of Aydın Adnan Menderes, Turkey; esra.angin@adu.edu.tr.

Preučevanje posredniške vloge altruizma glede na empatična nagnjenja, povezanost z naravo in okoljsko zavedanje

NUDAR YURTSEVER IN DURIYE ESRA ANGIN

☞ Da bi ugotovili mediacijski učinek altruizma glede na empatična nagnjenja, povezanost z naravo in okoljsko zavedanje, smo izvedli raziskavo s korelacijskim modelom preverjanja. Udeležence raziskave, izbrane z naključnim vzorčenjem v obliki grozda, predstavlja 305 vzgojiteljev predšolskih otrok, ki delajo v vrtcih in šolah v mestu v egejski regiji v Turčiji. Kot orodja za zbiranje podatkov so bile uporabljene lestvice empatičnosti, altruizma, povezanosti z naravo in okoljskega zavedanja. Analize podciljev so bile izvedene z uporabo makroprograma PROCESS (model 4), ki ga je z uporabo infrastrukture SPSS razvil Andrew Hayes. Pri pregledu rezultatov je bilo ugotovljeno, da so posredni učinki empatične nagnjenosti na povezanost z naravo in okoljskim zavedanjem statistično pomembni. Tako je bil altruizem mediator v razmerju med empatično nagnjenostjo in povezanostjo z naravo ($\beta = ,13$, 95 % BCA CI $[,08; ,19]$) ter v razmerju med empatično nagnjenostjo in okoljskim zavedanjem ($\beta = ,36$, 95 % BCA CI $[,18; ,57]$).

Ključne besede: altruizem, empatična nagnjenost, okoljsko zavedanje, povezanost z naravo, vzgojitelj

Introduction

Humanity has always had a relationship with nature. Although this relationship is based on the principle of equality in hunter-gatherer societies, it appears that this equality is gradually disappearing in agricultural societies, while the idea that natural resources can be used indefinitely for human well-being appears to be dominant in industrial societies (Harper & Snowden, 2017; Lenski, 1966). During this process, the increase in human population and technological advances have caused severe consumption of natural resources such as land and energy. Also, environmental problems, such as ozone depletion, acid rain, and global warming, have acquired a global dimension (Steg & Vlek, 2009). The fact that critical environmental problems facing the earth have reached global dimensions has prompted people to find solutions on both an individual and social scale. For example, an action plan was implemented in 1992 globally, nationally, and locally by organisations of the United Nations, governments, and major groups in every area where people impact the environment (United Nations Sustainable Development, 1992). Also, the United Nations (2015) made an urgent call for action by all countries in a global partnership to overcome climate change and work to preserve oceans and forests within the 17 Sustainable Development Goals.

In many developing countries, people are beginning to realise that the long-term costs of ignoring environmental protection are high, and environmental concerns are no longer a luxury that only some nations can afford (Economic Commission for Latin America and the Caribbean, 2000), and they searched for solutions. In their research, Steg and Vlek (2009), Kurisu (2005), and Vlek and Steg (2007) stated that environmental problems can change through behavioural change. For this reason, environmental training is planned and implemented. However, some studies have stated that although it is important to provide environmental training, attitudes towards the environment and information about the environment are insufficient to explain environmental behaviour (Erten, 2005; Kollmuss & Agyeman, 2002). In parallel with personality development, it appears that the concepts of empathy and altruism, which are personality traits, also influence this process (Schultz, 2000; Schultz et al., 2005; Tam, 2013). It is believed that the individual's correct communication and the realisation that the existence of all living creatures in nature is just as important as his/her existence is due to empathy (Mayer & Frantz, 2004; Tam, 2013). Many studies have also shown that empathy can be established with all other living creatures and that we can better understand nature (Berenguer, 2007; Schultz, 2000; Sevillano et al., 2007). Empathy has a positive effect on

environmental problem solving, as well as an individual's altruistic values about the environment (Stern et al., 1995; Stern et al., 1999); thus, people's empathetic tendencies have a positive relationship with their altruistic behaviours (Andreoni & Rao, 2011; Batson et al., 1981; Burks et al., 2012; Cialdini et al., 1997; Rushton et al., 1981). Berenguer (2010) stated that altruism and empathy play an important role in explaining behaviour, attitudes, and personal norms about the environment. It is believed that people who exhibit altruistic behaviour participate more actively in environmental issues (Ghazali et al., 2019; Stern et al., 1995; Stern et al., 1999).

The role of the pre-school teacher

According to Keenan and Evans (2009), in early childhood, individuals develop their basic values, attitudes, skills, behaviours and habits; thus, it is a receptive period for the development of the child's personality. The early childhood period also has enormous potential for the creation of environmental attitudes (Samuelsson & Kaga, 2008). Therefore, the period that includes the pre-school education process will be the most important and ideal time for children to be aware of the effects of environmental problems, which have serious consequences in their own and others' lives, on nature and social life, and about the precautions to be taken against them.

For this reason, in this process, children should have learning and life experiences that allow them to become acquainted with nature, strengthen their bonds, and make them interested in nature in order to cope with environmental problems (Kidd & Kidd, 1997; Selby, 2017) because it is thought that children who can spend time in nature will be more sensitive to environmental problems and will be more likely to maintain this sensitivity in adulthood (Tanja Dijkstra et al., 2019). Studies have demonstrated that the acquisition of basic environmental behaviours in early childhood positively affects the individual's attitudes and behaviours towards the environment in later life stages (Basile, 2000; Chawla, 1999; Lohr & Pearson Mims, 2005). However, factors such as the density of people living in urban centres, children's encounters with a limited environment, and the increase in the time spent in front of screens negatively affect their interaction with nature (Kernan, 2010; Tanja Dijkstra et al., 2019). Children grow up by normalising living their lives, regardless of the connection between themselves and the ecological system (Louv, 2008).

In addition, role models interested in nature, sensitive to environmental problems, and displaying environmental protection behaviour are as important as forming environmental awareness during early childhood (Darling

Hammond, 2000; Palmer et al., 1998; Palmer et al., 1999). In this period, pre-school teachers are among the important role models first in terms of their physical, cognitive, and affective connectedness with nature; they also play a critical role in solving environmental problems (Landy, 2018; Meier & Sisk-Hilton, 2017; Orbanić & Kovač, 2021; Sirivianou & Papadimitriou, 2018). For this reason, pre-school teachers should have a positive attitude towards the environment to develop children's relationships with nature and raise environmental awareness. Depending on the 'value basis of environmental concern' theory of Stern and Dietz (1994), Schultz (2001) suggested three factors for environmental concern: egoistic, altruistic, and biospheric. Considering that children learn by observing the model, the pre-school teacher should also be altruistic (Nyaga, 2015; Robinson & Curry, 2005), because altruism, which emerges in early childhood, is one of the concepts used to explain environmental behaviours (Bruni et al., 2012; Kawakami & Takai Kwakami, 2015; Lam, 2012; Snelgar, 2006).

Studies have shown that empathy is necessary for the emergence of altruism and that it affects environmental awareness by strengthening the individual's bond with nature. When the relevant literature was examined, many studies on empathic tendency, altruism, nature relatedness, and environmental consciousness were found. In some of these studies, empathy has been associated with altruism (Andreoni & Rao, 2011; Batson et al., 1981; Burks et al., 2012; Cialdini et al., 1997; Rushton et al., 1981) and with nature and environmental consciousness (Berenguer, 2010; Dökmen, 2017; Schultz, 2000; Sevillano et al., 2007). Studies have been found in which altruism is associated with nature and environmental consciousness (Ghazali et al., 2019; Stern et al., 1995; Stern et al., 1999). Thus, in this study, altruism was accepted as the mediating variable. Considering the previous studies, it raised new questions; in the current study, it is thought that determining the mediating role of altruism in the relationship between empathic tendency and nature relatedness and environmental consciousness will provide a different perspective.

Nonetheless, based on the statement set out in United Nations Sustainable Development, Agenda 21 (1992) subclause B, item 25.12:

Children are also highly aware supporters of environmental thinking. The specific interests of children need to be taken fully into account in the participatory process on environment and development in order to safeguard the future sustainability of any actions taken to improve the environment (p. 277).

It is thought that working with the pre-school teachers as the most important actors in this regard will contribute to the relevant field.

Aims of the Study

The study aims to determine whether altruism plays a mediating role in the relationship between empathic tendencies, the nature relatedness, and environmental consciousness. In the light of this general aim, the sub-purposes have been determined as follows:

- 1. Is there a mediating effect of altruism in the relationship between the empathic tendency and nature relatedness?
- 2. Is there a mediating effect of altruism in the relationship between the empathic tendency and environmental consciousness?

Figure 1 and 2 shows the models for the first and second sub-purposes.

Figure 1
Model showing the mediating role of altruism on the relationship between empathic tendency and nature relatedness

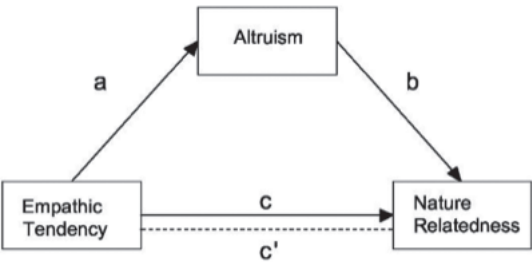
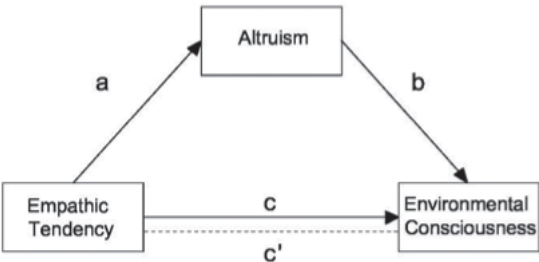


Figure 2
Model showing the mediating role of altruism on the relationship between empathic tendency and environmental consciousness



The empathic tendency prediction variable, altruism mediator variable, and nature relatedness outcome variable are included in the model related to the first sub-purpose. As seen in the model, the study examines whether altruism has a mediating role in the relationship between empathic tendency and nature relatedness. The effect of the empathic tendency on the altruism mediating variable is symbolised by *path a* and the effect of altruism on nature relatedness *path b*. When altruism and the empathic tendency, which is the mediator variable, are included in the model simultaneously, the effect of empathic tendency on nature relatedness is shown with *path c'*, and this is the direct effect. Also, *path c* shows the effect in the absence of altruism, that is, the total effect, on the nature relatedness of empathic tendency. The effect obtained by multiplying the paths *a* and *b* in the model is the indirect effect, and it shows the mediating role of altruism. The paths symbolised by the aforementioned letters *a*, *b*, *c*, and *c'* are non-standardised regression coefficients.

In the second sub-purpose model, the empathic tendency prediction variable, altruism mediation variable, and environmental consciousness are outcome variables. Paths *a*, *b*, *c*, and *c'* present the same effects, as explained in Model 1.

Method

The study was conducted in correlational design among quantitative research methods to collect various information from many subjects at once and allow the researcher to work with a wide range of variables and these variables' interrelations as cited in Creswell (2015).

Participants

The study participants are composed of pre-school teachers working in public and private pre-schools and kindergartens of primary schools in a city (five districts of the province) located in Turkey's Aegean region in the 2018/19 academic year. A total of 323 pre-school teachers were reached in the study, and the study was carried out with 305 teachers after removing the extreme values that were answered incompletely and affecting the normal distribution.

Instruments

The Empathic Tendency Scale, Altruism Scale, Nature Relatedness Scale, and Environmental Consciousness Scale were used as data collection tools to address the research questions in the study. While determining the data collection tools, attention was also paid to whether they were adapted to the Turkish culture or developed in the Turkish language or not.

Empathic Tendency Scale

The Empathic Tendency Scale was developed by Dökmen (1988) and is comprised of 20 items with a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Negative items in this scale are reverse coded. The Cronbach alpha reliability coefficient of the Empathic Tendency Scale was found as .82. For this study, Cronbach's alpha coefficient value (α) of the scale was found to be .71.

Altruism Scale

The original Altruism Scale was developed by Ruston et al. (1981) and adapted to Turkish by Tekeş ve Hasta (2015). The scale was comprised of 20 items. The scale is a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). No reverse coding/scoring was done for this scale since there were no negative items included. The internal reliability (α) co-efficient of the Altruism Scale was computed as .85. For this study, (α) of the scale was found to be .86.

Nature Relatedness Scale

The original nature relatedness scale was developed by Nisbet et al. (2009) and adapted to Turkish by Çakır et al. (2015). The scale is composed of 21 items; it is a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Negative items in this scale were reverse coded. The internal reliability (α) co-efficient of the Nature Relatedness Scale was computed as .88. For this study, (α) of the scale was found to be .78.

Environmental Consciousness Scale

The original Environmental Consciousness Scale was developed by Milfont and Duckitt (2006), and the Turkish adaptation was made by Ak (2008). The scale comprises 53 items; it is a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Negative items in this scale were reverse coded. (α) reliability coefficient of the Environmental Consciousness Scale was computed as .87. For this study, (α) of the scale was found to be .79.

Data Collect Procedures

As a first step, in order to use the scales, all necessary permissions were obtained from the researchers who developed the Empathic Tendency Scale, Altruism Scale, Nature Relatedness Scale and Environmental Consciousness Scale via e-mail. Secondly, after obtaining the necessary permissions from the Provincial Directorate of National Education, meetings were arranged with

school principals and vice-principals. Following these meetings, scales were delivered to the pre-school teachers who wanted to participate in the study. After the scales were delivered, the teachers were asked to fill in the scales within one to ten days.

Data Analysis

Before starting data analysis, the normality analysis of scales, descriptive statistics and correlation calculations between variables were performed using the SPSS 21 software package. The sub-purposes model's of the study was tested using PROCESS 3.4.1 (Model 4), developed by Andrew Hayes and runs within the SPSS infrastructure.

Table 1

Descriptive statistics and normality analysis values regarding the scores the participants obtain from the scales

	Skewness	Kurtosis	Min	Max	x	sd
Empathic Tendency Scale	-.025	-.484	56.00	95.00	75.96	7.93
Altruism Scale	.132	-.140	39.00	100.00	69.39	11.91
Nature Relatedness Scale	-.011	-.436	59.87	105.00	83.49	8.98
Environmental Consciousness Scale	-.151	-.310	204.10	356.00	282.76	30.34

Note. $n = 305$.

As seen from Table 1, the skewness and kurtosis values of the scales are between -1 and +1. According to these values, it is accepted that the data show a normal distribution (Morgan et al., 2004, p.57).

Table 2

Correlation values between variables

Variables	1	2	3	4
Empathic Tendency Scale	-			
Altruism Scale	.35**	-		
Nature Relatedness Scale	.33**	.40**	-	
Environmental Consciousness Scale	.27**	.33**	.53**	-

Note. $n = 305$, * $p < .01$, ** $p < .001$.

As Table 2 presents, there is a significant positive relationship between altruism, empathic tendency, nature relatedness and environmental consciousness.

Results

To answer the research questions, the results are provided as tables and comments. The results of the study include *paths a, b, c, and c'*. Table 3, in which the results of the first sub-purpose of the study are shown, shows the *paths a, b, c, and c'* while Table 4, in which the results of the second sub-purpose are shown, shows the *paths b, c, and c'*. Since *path a* contains the same results for both research questions, the relationship between altruism and the empathic tendency was shown only in Table 3.

Table 3
Results of the analysis regarding the mediating effect of altruism in the relationship between empathic tendency and nature relatedness

<i>Dependent Variable: Altruism</i>						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.35	.12	125.20	41.25	1.00	303.00	.00
Model						
	coeff	se	t	p	LLCI	ULCI
Constant	29.91	6.18	4.84	.00	17.74	42.07
Empathic Tendency	.52	.08	6.42	.00	.36	.68
Standardised coefficients						
	coeff					
Empathic Tendency	.35					
<i>Dependent Variable: Nature Relatedness</i>						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.45	.20	64.73	38.44	2.00	302.00	.00
Model						
	coeff	se	t	p	LLCI	ULCI
Constant	47.89	4.61	10.38	.00	38.81	56.97
Empathic Tendency	.24	.08	3.89	.00	.12	.36
Altruism	.25	.04	6.03	.00	.17	.33
Standardised coefficients						
	coeff					
Empathic Tendency	.21					
Altruism	.33					

Total Effect Model						
Dependent Variable: Nature Relatedness						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.33	.12	72.28	36.33	1.00	303.00	.00
Model						
	coeff	se	t	p	LLCI	ULCI
Constant	55.34	4.70	11.78	.00	46.10	64.58
Empathic Tendency	.37	.06	6.03	.00	.25	.49
Standardised coefficients						
	coeff					
Empathic Tendency	.33					
Indirect Effect of Empathic Tendency on Nature Relatedness (Mediator Effect)						
	Effect	BootSE	BootLLCI	BootULCI		
Altruism	.13	.03	.08	.19		

In Table 3, we can first see *path a*, the results of the regression analysis showing the effect of the independent variable, which is the empathic tendency, and on altruism, which is the mediator variable, can be seen. Accordingly, it is seen that empathic tendency affects altruism significantly and positively. The table shows the non-standardized β value as $\beta = .52$, %95 CI [.36; .68], $t = 6.42$ and its corresponding p-value as $.00 < .01$. It is understood that the value of β (non-standardised β) is significant, both because the p-value in the table is less than .01 and the values belonging to the confidential interval do not include 0 (zero) value (Gürbüz, 2019). Also, empathic tendency explains about 12% ($R^2 = .12$) of the change in altruism.

Secondly, *path b* and *path c'* can be seen on Table 3, showing the effects of altruism (*path b*) and empathic tendency variable (*path c'*), which are mediating variables, on the nature relatedness, which is the dependent variable. According to this, it is seen that altruism affects nature relatedness significantly and positively ($\beta = .25$, %95 CI [.17; .33], $t = 6.02$, $p = .00 < .01$). It is also seen that empathic tendency has a significant and positive effect on nature relatedness ($\beta = .24$, %95 CI [.12; .36], $t = 3.89$, $p = .00 < .01$). The empathic tendency and altruism explain about 20% ($R^2 = .20$) of the change in nature relatedness.

Thirdly, *path c*, the effect of empathic tendency on nature relatedness, is seen in a model without altruism, which is the mediator variable. According to this, in the absence of altruism, it is seen that empathic tendency affects nature relatedness positively ($\beta = .37$, %95 CI [.25; .49], $t = 6.03$, $p = .00 < .01$).

Lastly, the indirect effect value, which indicates whether the empathic tendency has an indirect effect on the behaviour in nature relatedness, is reported with the confidence intervals obtained by the 'bootstrap technique'. It has been determined that the indirect effect of empathic tendency on nature relatedness is significant, so altruism mediates the relationship between empathic tendency and nature relatedness ($\beta = .13$, %95 BCA CI [.08; .19]).

Table 4
Results of the analysis regarding the mediating effect of altruism in the relationship between empathic tendency and environmental consciousness

Dependent Variable: Environmental Consciousness						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.37	.14	789.40	24.27	2,00	302.00	.00
Model						
	coeff	se	t	p	LLCI	ULCI
Constant	183.26	16.20	11.31	.00	151.38	215.13
Empathic Tendency	.69	.22	3.11	.00	.25	1.11
Altruism	.70	.15	4.77	.00	.41	.98
Standardised coefficients						
	coeff					
Empathic Tendency	.18					
Altruism	.27					
Total Effect Model						
Dependent Variable: Environmental Consciousness						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.27	.07	855.71	24.05	1.00	303.00	.00
Model						
	coeff	se	t	p	LLCI	ULCI
Constant	203.95	16.16	12.62	.00	172.16	235.75
Empathic Tendency	1.04	.21	4.90	.00	.62	1.45
Standardised coefficients						
	coeff					
Empathic Tendency	.27					
Indirect Effect of Empathic Tendency on Environmental Consciousness (Mediator Effect)						
	Effect	BootSE	BootLLCI	BootULCI		
Altruism	.36	.11	.18	.57		

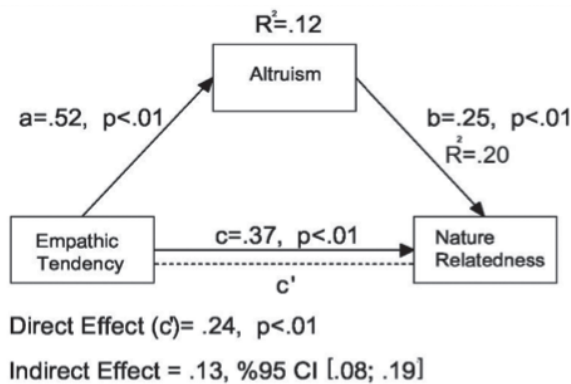
Firstly *path b* and *path c'* on Table 4, showing the effects of the altruism (*path b*) and empathic tendency variables (*path c'*) on the environmental consciousness, which is the dependent variable, are seen. Accordingly, altruism is seen to have a significant and positive impact on environmental consciousness ($\beta = .70$, %95 CI [.41; .98], $t = 4.77$, $p = .00 < .01$). In addition, it is also seen that empathic tendency significantly and positively affects environmental consciousness ($\beta = .69$, %95 CI [.25; 1.11], $t = 3.11$, $p = .00 < .01$). The empathic tendency and altruism explain about 14% ($R^2 = .14$) of the change in environmental consciousness.

Secondly, *path c*, in a model without altruism, the effect (*path c*) of the empathic tendency on environmental consciousness is seen. According to this, in the absence of altruism, the empathic tendency significantly affects environmental consciousness in the positive direction ($\beta = 1.04$, %95 CI [.62; 1.45], $t = 4.90$, $p = .00 < .01$).

Lastly, it has been determined that the indirect effect of empathic tendency on environmental consciousness is significant, so altruism mediates the relationship between empathic tendency and environmental consciousness ($\beta = .36$, %95 BCA CI [.18; .57]). The results of the study are summarised in Figures 3 and 4.

Figure 3

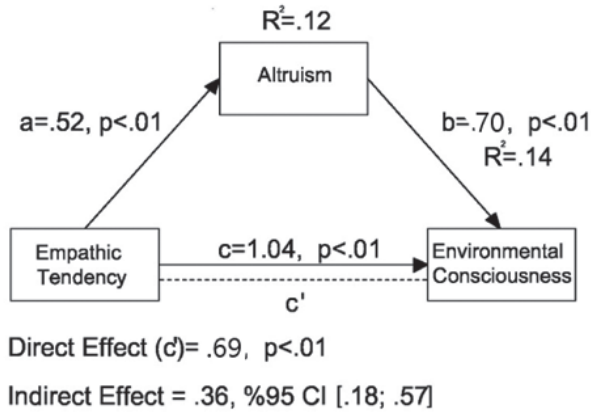
Report of analysis results on the mediating role of altruism in the relationship between empathic tendency and nature relatedness



Note: Unstandardised beta coefficients are not reported. R^2 values show the variance explained. $N = 305$.

Figure 4

Report of analysis results on the mediating role of altruism in the relationship between empathic tendency and environmental consciousness



Note: Unstandardised beta coefficients are not reported. R^2 values show the variance explained. $N = 305$.

Discussion

According to the findings of the analyses conducted for both the first and second sub-purposes, the empathic disposition significantly and positively affected altruism (*path a*). When previous studies were examined, a relationship between empathic tendency and altruism was found (Andreoni & Rao, 2011; Batson et al., 1981; Burks et al., 2012; Cialdini et al., 1997; Rushton et al., 1981). Mehrabian and Epstein (1972) have stated that people with a high empathic tendency tend to display helping behaviour, while Batson et al. (1981) stated that helping behaviour can be selfish or altruistic. It has been found that if someone's thinking is selfish, in other words, if his/her own interests are more in the foreground, then he/she will not help if it is easier to avoid doing so. While altruistic behaviour, which is defined as anti-selfish behaviour (Scott & Seglow, 2007), is a non-selfish behaviour without expecting any benefit by trying to be useful to people and by considering the benefits of others as his/her own (Gintis et al., 2003; Khalil, 2004), he/she will display this behaviour, whether it is easy to help or difficult (Batson et al., 1981). Therefore, empathy will stimulate altruism (Barr & Higgins D'Alessandro, 2007; Batson, 1991; Batson & Ahmad, 2001; Coke et al., 1978; Krebs, 1975). From these points of view, it is seen that this finding of the study is consistent with the studies in the literature.

Findings about the relationship between altruism belonging to the first sub-purpose and nature relatedness (*path b*) show that altruism significantly and positively affects nature relatedness. When previous studies are examined, it is stated that altruism will raise awareness in terms of the consequences of environmental problems (Ghazali et al., 2019; Stern et al., 1999). Therefore, it can be said that awareness in terms of environmental consequences will strengthen individuals' nature relatedness. When the literature is examined; it has been stated that people with a high nature relatedness regard themselves as a part of nature and feel a responsibility towards other living creatures and that they are more concerned about the damage caused by environmental problems and engage in environmental behaviours compared to people who have a weak nature relatedness (Dutcher et al., 2007; Schultz et al., 2004). Since people who have a high nature relatedness are aware of environmental problems, care about the suffering of animals, think that what they do about the environment will provide solutions to problems in different parts of the world, the individual must have a high nature relatedness in order to achieve success in solving environmental problems (Baylan, 2009; Çakır et al., 2015). It is also stated that altruistic people act more voluntarily (Eisenberg, 2015; Leeds, 1963). It has been stated that altruistic people act against selfishness and individualism, are people who are also observing the concerns and interests of others, behave against selfishness and individualism (Boudon & Bourricaud, 2003) and sometimes even pay a personal price to consider the interests and well-being of others (Budak, 2009). From this point of view, it is thought that the relationship between altruism and nature is because altruists can volunteer and take responsibility in the process of helping not only humans but also living creatures whose existence is endangered or in the process of helping the global environmental problems created by the industrial revolution.

According to the findings of the analysis for the relationship between the empathic tendency of the first sub-purpose and the nature relatedness (*path c*), it is seen that empathic tendency affects nature relatedness positively, even in the absence of altruism. When previous studies are examined, it is seen that empathy can be established with all other living creatures and, in this way, nature will be more understandable (Berenguer, 2007; Schultz, 2000; Sevillano et al., 2007). It has been stated that empathising with creatures such as birds and trees in nature displays behaviours that protect the environment (Berenguer, 2007). The reason for the relationship between empathic tendency and nature; can be explained by the statement that a person who can empathise enough with one of the elements that make up the environment, such as nature, people and man-made products, can also empathise with other elements (Dökmen, 2017).

As a result of the analyses belonging to the first sub-purpose, it has been determined that the indirect effect of empathic tendency on nature relatedness is significant, so altruism mediates the relationship between empathic tendency and nature relatedness.

According to the findings for the relationship between altruism and environmental consciousness (*path b*) belonging to the second sub-purpose, it was determined that altruism significantly and positively affected environmental awareness. Altruism has positively affected the environmental consciousness as well as in the relationship with nature. Batson (1991) and Krebs and Van Hesteren (1992) stated that altruism is an effective factor in creating environmental behaviour changes, and motivation is emphasised when defining altruism. Studies to explain altruism are based on social dilemmas in which people have to choose between acting in their self-interest or helping others. Although it has been revealed that people mostly display self-sacrificing attitudes in social dilemmas, social dilemmas are of great importance in terms of being within life and affecting life in the economic and cultural areas (Üzümçeker et al., 2019). The fact that this is continuing, although social dilemmas are known to have limited natural energy resources, it is also thought to be the case for environmental problems, such as the killing of endangered animals for various purposes. In this dilemma, it will be more profitable for everyone to cooperate, that is, to act altruistically, even though people can gain the highest interest just by thinking about themselves. Therefore, the relationship between environmental awareness, which means that the individual realises the environment by making sense of his/her perspective (Ak, 2008) and altruism, can be explained by the fact that altruistic people can also show their motivation to help in social dilemmas such as environmental problems.

Findings of the analysis for the relationship between the empathic tendency of the second sub-purpose and environmental consciousness (*path c*) show that empathic tendency affects environmental consciousness significantly and positively, even in the absence of altruism. A person can develop positive attitudes, consciousness and emotions about other living creatures based on his/her own experiences through empathy (Dökmen, 2017). The person who empathises will play an important role in reducing social problems by trying to understand the other, understanding social problems, and seeking solutions (Genç & Kalafat, 2010). Their interaction with other living creatures affects the individual's conscious behaviour towards environmental problems (Erten, 2012; Karaismailoğlu, 2007). The relationship between empathic tendency and environmental awareness; can be explained by the fact that people with high empathic tendencies are more sensitive to environmental problems, which is a social problem.

As a result of the analysis belonging to the second sub-purpose, it was determined that the indirect effect of empathic tendency on environmental consciousness was significant, so altruism mediated the relationship between empathic tendency and environmental consciousness. Based on the results obtained from the study, considering the mediating effect of altruism, the importance of increasing the empathic tendency and altruism of individuals is better understood in order to increase the awareness of nature and the environment.

Limitations

Based on the research design, the following limitations can be identified:

1. This study is limited to the pre-school teachers in Turkey.
2. The Empathic Tendency is limited to the qualities measured by the Empathic Tendency Scale; Altruism is limited to the qualities measured by the Altruism Scale; Nature relatedness is limited to the qualities measured by the Nature Relatedness Scale; Environmental Consciousness is limited to the qualities measured by the Environmental Consciousness Scale.
3. Since the scales used in the study are based on self-reporting, the data obtained are limited to the participants' perceptions of themselves and the concepts evaluated in the study.

Conclusions

As a result of the study, it was seen that altruism had a mediating role between empathic tendency and nature relatedness and environmental consciousness. Taking into account the limitations of the study, future researchers can focus on the effect of demographic characteristics on the relationship between pre-school teachers' empathic tendencies, altruism, nature relatedness, and environmental consciousness. This study can be repeated with teachers in different branches. Also, to understand the mediating role of altruism, more detailed information can be obtained by using different measurement tools or by making detailed interviews. Based on the results obtained from the study, developing empathic tendency and altruism can also be included in activities/seminars to develop nature relatedness or environmental consciousness. In this way, an important step will be taken in solving environmental problems.

References

- Ak, S. (2008). İlköğretim öğretmen adaylarının çevreye yönelik bilinçlerinin bazı demografik değişkenler açısından incelenmesi [Search of primary school teacher candidates' towards environmental consciousness due some demographic variables] (Unpublished master's thesis). Abant İzzet Baysal University.
- Andreoni, J., & Rao, J. M. (2011). The power of asking: How communication affects selfishness, empathy and altruism. *Journal of Public Economics*, 95(7–8), 513–520.
- Barr, J. J., & Higgins D'Alessandro, A. (2007). Adolescent empathy and prosocial behavior in the multidimensional context of school culture. *Journal of Genetic Psychology*, 168(3), 231–250.
- Basile, C. H. (2000). Environmental education as a catalyst for transfer of learning in young children. *The Journal of Environmental Education*, 32(1), 21–27. <http://dx.doi.org/10.1080/00958960009598668>
- Batson, C. D. (1991). *The altruism question: Toward a social-psychological answer*. Lawrence Erlbaum Associates.
- Batson, C. D., & Ahmad, N. (2001). Empathy-induced altruism in a Prisoner's Dilemma II: What if the target of empathy has defected? *European Journal of Social Psychology*, 31(1), 25–36. <https://doi.org/10.1002/ejsp.26>
- Batson, C. D., Duncan, B. D., Ackerman, P., Buckley, T., & Birch, K. (1981). Is empathic emotion a source of altruistic motivation? *Journal of Personality and Social Psychology*, 40(2), 290–302. <https://doi.org/10.1037/0022-3514.40.2.290>
- Baylan, E. (2009). Doğaya ilişkin inançlar, kültür ve çevre sorunları arasındaki ilişkilerin kuramsal bağlamda irdelenmesi [Examination of connections among nature believes, culture and environmental problems in theoretical context]. *Ankara University Journal of Environmental Sciences*, 1(2), 67–74.
- Berenguer, J. (2007). The effect of empathy in pro-environmental attitudes and behaviours. *Environment and Behaviour*, 39(2), 269–283. <https://doi.org/10.1177/0013916506292937>
- Berenguer, J. (2010). The effect of empathy in environmental moral reasoning. *Environment and Behaviour*, 42(1), 110–134. <https://doi.org/10.1177/0013916506292937>
- Boudon, R., & Bourricaud, F. (2003). *A critical dictionary of sociology* (P. Hamilton, Trans). Routledge.
- Bruni, C. M., Chance, R. C., & Schultz, P. W. (2012). Measuring values based environmental concerns in children: An environmental motives scale. *The Journal of Environmental Education*, 43(1), 1–15. <https://doi.org/10.1080/00958964.2011.583945>
- Budak, S. (2009). *Psikoloji sözlüğü* [Psychology dictionary] (4th ed.). Bilim ve Sanat Yayınları.
- Burks, D. J., Youll, L. K., & Durstchi, J. P. (2012). The empathy-altruism association and its relevance to health care professions. *Social Behaviour and Personality*, 40(3), 395–400. <https://doi.org/10.2224/sbp.2012.40.3.395>
- Chawla, L. (1999). Life paths into effective environmental action. *The Journal of Environmental Education*, 31(1), 15–26. <https://doi.org/10.1080/00958969909598628>

- Creswell, J.W. (2015). *Educational research: Planning, conducting and evaluating quantitative and qualitative research* (5th ed.). Pearson.
- Cialdini, R. B., Brown, S. L., Lewis, B. P., Luce, C., & Neuberg, S. L. (1997). Reinterpreting the empathy-altruism relationship when one into one equals oneness. *Journal of Personality and Social Psychology*, 73(3), 481–494. <https://doi.org/10.1037/0022-3514.73.3.481>
- Coke, S. J., Batson, C. D., & McDavis, K. (1978). Empathic mediation of helping. *Journal of Personality and Social Psychology*, 36(7), 752–766. <https://doi.org/10.1037/0022-3514.36.7.752>
- Çakır, B., Karaarslan, G., Şahin, E., & Ertenpınar, H. (2015). Doğayla ilişki ölçeğinin Türkçe'ye adaptasyonu [Adaptation of nature relatedness scale to Turkish]. *Primary Education Online*, 14(4), 1370–1383.
- Darling Hammond, L. (2000). Teacher quality and student achievement. *Education Policy Analysis Archives*, 8(1), 1–44. <https://doi.org/10.14507/epaa.v8n1.2000>
- Dökmen, Ü. (1988). Empatinin yeni bir modele dayanarak ölçülmesi ve psikodrama ile geliştirilmesi [Measuring empathy based on a new model and developing it with psychodrama]. *Ankara University Journal of the Faculty of Educational Sciences*, 21(1), 155–190. https://doi.org/10.1501/Egifak_00000000999
- Dökmen, Ü. (2017). İletişim çatışmaları ve empati [Communication conflicts and empathy]. Remzi Kitapevi.
- Dutcher, D. D., Finley, J. C., Lulof, A. E., & Johnson, J. B. (2007). Connectivity with nature as a measure of environmental values. *Environment and Behaviour*, 39(4), 474–493. <https://doi.org/10.1177/0013916506298794>
- Economic Commission for Latin America and the Caribbean. (2000, November 3). *Role of environmental awareness in achieving sustainable development*. https://repositorio.cepal.org/bitstream/handle/11362/31562/1/S00111003_en.pdf
- Eisenberg, N. (2015). *Altruistic emotion, cognition and behaviour* (5th ed.). Psychology Press.
- Erten, S. (2005). Okul öncesi öğretmen adaylarında çevre dostu davranışların araştırılması [Investigation of preservice preschool teachers' behaviours related to environmental awareness]. *Hacettepe University Journal of the Faculty of Education*, 28, 91–100.
- Erten, S. (2012). Türk ve Azeri öğretmen adaylarında çevre bilinci [Environmental consciousness among Turkish and Azeri candidate teachers]. *Education and Science*, 37(166), 89–100.
- Genç, S., & Z., Kalafat, T. (2010). Öğretmen adaylarının empatik becerileri ile problem çözme becerileri [Prospective teachers' problem solving skills and emphatic skills]. *Journal of the Theoretical Pedagogy*, 3(2), 135–147.
- Ghazali, E. M., Nguyen, B., Mutum, D. S., & Yap, S. F. (2019). Pro-environmental behaviours and value-belief-norm theory: Assessing unobserved heterogeneity of two ethnic groups. *Sustainability*, 11(12), 3237. <https://doi.org/10.3390/su11123237>
- Gintis, H., Bowles, S., Boyd, R., & Fehr, E. (2003). Explaining altruistic behaviour in humans. *Evolution and Human Behavior*, 24(3), 153–172. [https://doi.org/10.1016/S1090-5138\(02\)00157-5](https://doi.org/10.1016/S1090-5138(02)00157-5)
- Gürbüz, S. (2019). Sosyal bilimlerde aracı, düzenleyici ve durumsal etki analizleri [Intermediary,

- regulatory and situational impact analysis in social sciences]. Seçkin Yayıncılık.
- Harper, C. & Snowden M. (2017). *Environment and society; Human perspectives on Environmental Issues* (6th ed.). Routledge.
- Karaismailoğlu, E. S. (2018). Öğretmenlerin çevre bilinci düzeyinin belirlenmesi- Ankara Etimesgut örneği [Determination of teachers' environmental consciousness level- Ankara Etimesgut example] (Unpublished master's thesis). Hacettepe University.
- Kawakami, K., & Takai Kawakami, K. (2015). Teaching, caring, and altruistic behaviors in toddlers. *Infant Behavior and Development*, 41, 108–112. <https://doi.org/10.1016/j.infbeh.2015.08.007>
- Keenan, T., & Evans, S. (2009). *An introduction to child development*. Sage Foundations of Psychology.
- Kernan, M. (2010). Space and place as a source of belonging and participation in urban environments: Considering the role of early childhood education and care settings. *European Early Childhood Education Research Journal*, 18(2), 199–213. <https://doi.org/10.1080/13502931003784420>
- Khalil, E. L. (2004). What is altruism? *Journal of Economic Psychology*, 25(1), 97–123. [https://doi.org/10.1016/S0167-4870\(03\)00075-8](https://doi.org/10.1016/S0167-4870(03)00075-8)
- Kidd, A., & Kidd, R. M. (1997). Characteristics and motivations of docents in wildlife education. *Psychological Reports*, 81(2), 383–386. <https://doi.org/10.2466/pro.1997.81.2.383>
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behaviour? *Environmental Education Research*, 8(3), 239–260. <https://doi.org/10.1080/13504620220145401>
- Krebs, D. (1975). Empathy and altruism. *Journal of Personality and Social Psychology*, 32(6), 1134–1146. <https://doi.org/10.1037/0022-3514.32.6.1134>
- Krebs, D. L., & Van Hesteren, F. (1992). The development of altruistic personality. In P. M. Oliner, S. P. Oliner, L. Baron, L. A. Blum, D. L. Krebs, & M. Z. Smolenska (Eds), *Embracing the other: Philosophical, psychological and historical perspectives of altruism* (pp. 142–169). NYU Press.
- Kurusu, K. (2005). *Pro-environmental behaviours*. Springer Japan.
- Lam, C. M. (2012). Prosocial involvement as a positive youth development construct: A conceptual review. *The Scientific World Journal*, 1–8. <https://doi.org/10.1100/2012/769158>
- Landy, C. (2018). *The state of outdoor education in Northeast Tennessee: Pre-school teacher attitudes toward* (Electronic Theses and Dissertations). Paper 3453. <https://dc.etsu.edu/etd/3453>
- Leeds, R. (1963). Altruism and the norm of giving. *Merril-Palmer Quarterly of Behaviour and Development*, 9(3), 229–240. <http://www.jstor.org/stable/23082789>
- Lenski, G. E. (1966). *Power privilege: a theory of social stratification*. McGraw-Hill Book Company.
- Lohr, V. I., & Pearson Mims, C. H. (2005). Children's active and passive interactions with plants influence their attitudes and actions toward trees and gardening as adults. *HortTechnology*, 15(3), 472–476. <https://doi.org/10.21273/HORTTECH.15.3.0472>
- Louv, R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder*. Algonquin Books of Chapel Hill.
- Mayer, S. F., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals'

- feeling in community with nature. *Journal of Environmental Psychology*, 24(4), 503–515. <https://doi.org/10.1016/j.jenvp.2004.10.001>
- Mehrabian, A., & Epstein, N. (1972). A measure of emotional empathy. *Journal of Personality*, 40(4), 525–543. <https://doi.org/10.1111/j.1467-6494.1972.tb00078.x>
- Meier, D., & Sisk Hilton, S. (2017). Nature and environmental education in early childhood. *The New Educator*, 13(3), 191–194. <https://doi.org/10.1080/1547688X.2017.1354646>
- Milfont, T. L., & Duckitt, J. (2010). The environmental attitudes inventory: A valid and reliable measure to assess the structure of environmental attitudes. *Journal of environmental psychology*, 30(1), 80–94. <https://doi.org/10.1016/j.jenvp.2009.09.001>
- Morgan, G. A., Leech N. L., Gloeckner, G. W., & Barret, K. C. (2004). *SPSS for introductory statistics: Use and interpretation* (2nd ed.). Lawrence Erlbaum Associates.
- Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2009). The nature relatedness scale linking individuals' connection with nature to environmental concern and behaviour. *Environment and Behaviour*, 41(5), 715–740. <https://doi.org/10.1177/0013916508318748>
- Nyaga, J. W. (2011). *Relationship between teacher altruism and the level of altruism in pre-school children in Westlands division Nairobi, Kenya* (Unpublished master's thesis). Kenyatta University.
- Orbanić, N. D., & Kovač, N. (2021). Environmental awareness, attitudes, and behaviour of preservice pre-school and primary school teachers. *Journal of Baltic Science Education*, 20(3), 373–388. <https://doi.org/10.33225/jbse/21.20.373>
- Palmer, J., Suggate, J., Bajd, B., & Tsaliki, E. (1998). Significant influences on the development of adults' environmental awareness in the UK, Slovenia and Greece, *Environmental Education Research*, 4(4), 429–444. <https://doi.org/10.1080/1350462980040407>
- Palmer, J. A., Suggate, J., Robottom, I., & Hart, P. (1999). Significant life experiences and formative influences on the development of adults' environmental awareness in the UK, Australia and Canada. *Environmental Education Research*, 5(2), 181–200. <https://doi.org/10.1080/1350462990050205>
- Robinson, E. H., & Curry, J. R. (2005). Promoting altruism in the classroom. *Childhood Education*, 82(2), 68–73. <https://doi.org/10.1080/00094056.2006.10521349>
- Rushton, J. P., Chrisjohn, R. D., & Fekken, G. C. (1981). The altruistic personality and self report altruism scale. *Person and Individual Differences*, 2(4), 293–302. [https://doi.org/10.1016/0191-8869\(81\)90084-2](https://doi.org/10.1016/0191-8869(81)90084-2)
- Samuelsson, P.I., & Kaga, Y. (2008). *The contribution of early childhood education to a sustainable society*. UNESCO.
- Schultz, P. W. (2000). Empwith nature: The effects of perspective taking on concern for environmental issues. *Journal of Social Issues*, 56(3), 391–406. <https://doi.org/10.1111/0022-4537.00174>
- Schultz, P. W. (2001). The structure of environmental concern: concern for self, other people, and the biosphere. *Journal of Environmental Psychology*, 21(4), 327–339. <https://doi.org/10.1006/jevp.2001.0227>
- Schultz, P. W., Gouveia, V. V., Cameron, L. D., Tankha, G., Schmuck, P., & Franik, M. (2005). Values and their relationship to environmental concern and conservation behavior. *Journal of Cross Cultural Psychology*, 36(4), 457–475. <https://doi.org/10.1177/0022022105275962>

- Schultz, P. W., Shriver, C., Tabanico, J., & Khazian, A. (2004). Implicit connections with nature. *Journal of Environmental Psychology*, 24(1), 31–42. [https://doi.org/10.1016/S0272-4944\(03\)00022-7](https://doi.org/10.1016/S0272-4944(03)00022-7)
- Scott, N., & Seglow, J. (2007). *Concepts in the social science: Altruism*. Open University Press.
- Selby, D. (2017). Education for sustainable development, nature and vernacular learning. *Center for Educational Policy Studies Journal*, 7(1), 9–27.
- Sevillano, V., Aragones, J., & Schultz, P. W. (2007). Perspective taking, environmental concern and the moderating role of dispositional empathy. *Environment and Behaviour*, 35(5), 685–705. <https://doi.org/10.1177/0013916506292334>
- Sirivianou, N., & Papadimitriou, E. (2018). Cultivating environmental consciousness during early childhood-kindergarten teachers' views on the role of social values. *International Journal of Environmental & Science Education*, 13(3), 343–356.
- Snelgar, R. S. (2006). Egoistic, altruistic, and biospheric environmental concerns: Measurement and structure. *Journal of Environmental Psychology*, 26(2), 87–99. <https://doi.org/10.1016/j.jenvp.2006.06.003>
- Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, 29(3), 309–317. <https://doi.org/10.1016/j.jenvp.2008.10.004>
- Stern, P. C., & Dietz, T. (1994). The value basis of environmental concern. *Journal of Social Issues*, 50(3), 65–84.
- Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human ecology review*, 6(2), 81–97.
- Stern, P. C., Dietz, T., Kalof, L., & Guagnano, G. A. (1995). Values, beliefs, and pro-environmental action: Attitude formation toward emergent attitude change. *Journal of Applied Social Psychology*, 25, 1611–1636. <https://doi.org/10.1111/j.1559-1816.1995.tb02636.x>
- Tam, K. P. (2013). Dispositional empathy with nature. *Journal of Environmental Psychology*, 35, 92–104. <https://doi.org/10.1016/j.jenvp.2013.05.004>
- Tanja-Dijkstra, K., Maas, J., Van Dijk-Wesselius, J., & Van den Berg, A. (2019). Children and the natural environment. In L. Steg & J. I. M. de Groot (Eds.), *Environmental Psychology. An introduction* (pp. 95–103). Wiley.
- Tekeş, B., & Hasta, D. (2015). Özgencilik ölçeği: Geçerlilik ve güvenilirlik çalışması [Altruism scale: A study of reliability and validity]. *Object*, 3(6), 55–76.
- United Nations Sustainable Development. (1992, June 3 to 14). *United Nations conference on environment & development Rio de Janeiro, Agenda 21*. <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>
- United Nations. (2015, September). *United Nations department of economic and social affairs, The 17 goals*. <https://sdgs.un.org/goals>
- Üzümcüker, E., Gezin, G. N., & Akfırat, S. (2019). Sosyal ve evrimsel psikolojide insan özgeciliği bilmececi [The riddle of human altruism in social and evolutionary psychology]. *Journal of Psychology about Life Skills*, 3(5), 93–110. <https://doi.org/10.31461/ybpd.559805>

Vlek, C., & Steg, L. (2007). Human behaviour and environmental sustainability: problems, driving forces and research topics. *Journal of Social Issues*, 63(1), 1–19. <https://doi.org/10.1111/j.1540-4560.2007.00493.x>

Biographical note

NUDAR YURTSEVER is a PhD student in the Department of Early Childhood Education at Ankara University, Turkey. She has studies on determining the attitudes of preschool teachers towards gender roles and personality development.

DURIYE ESRA ANGIN, PhD, is an assistant professor in the field of Early Childhood Education in the Faculty of Education at University of Aydın Adnan Menderes, Turkey. Her research interests include child development, nutrition education, cognitive development, educational programs and approaches in early childhood at the same time she has studies on early childhood teachers and teacher candidates.