



Ecological Life Attitude Scale: Development, Validity and Reliability

Arzu ONEL¹, Zeynep YUCE²

¹Kafkas University, Faculty of Education, Department of Biology Education, Turkey, ORCID:0000-0003-4205-3939

²Kafkas University, Faculty of Education, Department of Mathematics and Science Education, Turkey, ORCID: 0000-0001-5417-2471

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ABSTRACT

It is the essence of ecological life to choose the natural and consume only as much as necessary in individual consumption preferences. People's ever-increasing consumption, use of pesticides and egocentric behaviours in their lives harm everything natural. Thus, individuals who have become aware of it have begun to adopt an ecological lifestyle. Using the data obtained from the body of literature and expert opinions, an item pool of 31 items was created and conducted on 173 instructors from Kafkas University. To assess the construct validity of the candidate scale, "Explanatory Factor Analysis (EFA)" was conducted using principle component analysis with varimax rotation while Cronbach Alpha coefficient was calculated to assess the reliability of the scale. To test the accuracy of the construct displayed by the EFA, "Confirmatory Factor Analysis (CFA)" was performed. It was found that the items loads vary between .51 and .84. At the end of the development process, "Ecological Life Attitude Scale (ELAS)" with 19 items and 4 factors was created. The factors are consumption, biological diversity, pesticides and egocentrism, and explain 49.54% of the variance.

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Keywords:

Ecological, Ecological Life, Attitude Scale, Validity, Reliability

Introduction

Ecological life is defined by Özarıslan-Aktar (2012) as "a lifestyle based on healing the nature in which organic products are preferred without polluting the environment, the use of unnatural chemicals are avoided and wastes are recycled"; and as "entirely natural from the goods used to the living space, from food consumed to the paper used, a mentality, a philosophy of life, the common ground between humans and the world" by Kurtar & Ayan (2004). Ecological life means refraining from harming the symbiotic balance of nature. It is the essence of ecological life to consume the natural and as much as necessary in our consumption preferences. Therefore, we need to discern between the natural and unnatural, and know the measure of everything. Ecological life is closely related to consumption preferences. In addition to general consumption preferences, biological diversity and the attitude towards the use of pesticides are also factors that affect ecological life. Furthermore, individuals with the awareness of ecological life turn to an ecocentric approach rather than an egocentric one. Thus, ecological life is also about whether individuals have an egocentric

¹ Corresponding author's address: Kafkas University, Faculty of Education, Department of Biology, Turkey
Telephone: 05554161660
e-mail: arzuonel@gmail.com
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approach or not. This study examines ecological life based on the dimensions of consumption, biological diversity, pesticides and egocentric approach.

The dimensions of ecological life

Consumption: Consumption, increasing in proportion to development and globalisation in particular, must be sustainable. OECD (1997) states that sustainable consumption means not endangering future generations' capacity to meet their needs while meeting today's needs by minimizing the use of toxic substances, wastes and natural resources. The use of ecological and recycled products and avoiding from overconsumption are only manifested in sensitivity towards consumption (Özgül, 2010). Ophuls (1977) defines human consumption and the resulting ecological crisis as 'ecological scarcity' which is a concept based on realizing that global ecosystem is limited and humans depend on ecological laws (Özerkmen, 2002). It should not be forgotten that biocapacity shrinks as consumption rates rise (Boahnert, 2015).

Biological diversity: Today, we are on the onset of sixth mass extinction and it is stated that such extinction is not related to natural causes and stems from human behaviour only. It is known that extinction due to natural conditions results in the annihilation of 1-10 species every year. However, up to 1000 species are reported to become extinct annually in the sixth mass extinction today (Körpe, 2010). As increasing consumption and production namely human activity disturb ecological balance, living species on our planet are diminishing. That is because humans take away other living creatures' right to life as they continuously exploit the resources of the planet they live in. Therefore, consumption style considerably affects biological diversity.

Pesticides: Discovered in the 1970s to increase agricultural production for finding a solution to famine problem in the world, pesticides not only did not solve famine problem, but also have started to disturb natural balance and human health at a great speed (Kurtar and Ayan, 2004). Today, it is a known fact that pesticides are highly toxic and carcinogenic for humans and animals, and lead to substantial environmental pollution by spreading in the air, water, soil and plants (Kalıpcı, Özdemir and Öztaş, 2011). Pesticides that are taken up by plants through the roots from soil and water accumulate in plant tissues and are passed into animals and humans through food chain. Pesticides that are inhaled and/or taken up through food display toxic effects in human tissues, accumulate in the liver and cause diseases such as chronic hepatitis, cholecystitis, hepatoclecystitis and detoxification (Kurutaş and Kılınç, 2003; Mutlu and Tokcan, 2012). In addition, because of the pesticides aiming to annihilate weeds, many species of wild flora disappeared and are continuing to disappear. For these reasons, the use of pesticides disrupts ecosystem, diminishes biological diversity and results in damage to ecosystem. Individuals becoming aware of these damages turn to the natural products not being exposed to pesticides, because an ecological lifestyle requires a natural diet.

Egocentrism: While egocentrism means self-centredness and anthropocentrism is human-centeredness, ecocentrism refers to nature-centeredness. Individuals who have egocentric ideas consider living things that are beneficial for them as necessary while regarding others as unnecessary. Anthropocentric individuals interpret the same idea for the mankind at large and consider humans as the centre of nature. As for ecocentric approach, all elements of nature constitute a whole of which humans are a part (Taycı-Ünal, 2009; Turan, 2009). As people argued that everything exists for them and they are at the centre of nature, and thus had control over nature, natural processes started to lose their balance. Bookchin (1996) maintains that ecological problems cannot be solved unless we end human dominance and underlying reasons for ecological crisis in all aspects (as cited in Çüçen, 2011). That is because the transition from egocentric or anthropocentric approach to an ecocentric approach is the key in raising ecological awareness. Individuals with ecocentric awareness notice the disruptions in the ecosystems, see everything as part of a whole, care about everything in the nature without making a distinction of necessary/unnecessary and also do not display self-centred (egocentric) attitudes and behaviours in their lives.

Attitude: A tendency that causes a certain way of thinking, feeling or behaving about any object, i.e. it refers to the individual's predisposition about that phenomenon (Kağıtçıbaşı, 1999; Nuhoğlu, 2008; Yaşar, 2014). Attitudes determine our behaviours, they are elements affecting our social perception, and expressions of positive or negative views, and involve a readiness. They can stimulate. They are not observed directly, but they are tendencies that can be inferred from behaviours. Knowing an individual's attitude towards something indicates their potential behaviour concerning this issue (Üstüner, 2006). If the attitude is positive, it is highly possible that decisions regarding that issue are also positive. Thus, attitudes serve as decisions for the future (Nuhoğlu, 2008).

Why Ecological Life:

1. For human health: Today's lifestyles and consumption preferences deteriorate human health at a great pace. Human nature loses its balance due to reinforced concrete houses equipped with entirely artificial materials, refined food grown with chemical pesticides, plastics we are exposed to nearly in every area of our lives, detergents and unconsciously used drugs, and antibiotics in particular. For all these reasons, a lifestyle preferring natural products should be realized.
2. For environmental health: Scientists state that our planet will be unliveable in the foreseeable future due to drought, desertification and natural disasters resulting from global climate change. It is predicted that there will be also problems like depletion of natural resources and famine. And humans' consumption preferences accelerate this course of events. This situation referring to the disruption of ecological balance, extinction of the natural and deterioration of human and environmental health can be prevented to a certain degree or can be slowed down and delayed at least with the adoption of an ecological lifestyle approach.
3. For future generations: Deterioration of human health today means that the health of future generations can also deteriorate due to inheritance. In addition, the pollution of nature and the disruption of natural balance due to human activity also indicate that we will leave an unhealthier world to the future generations.

Hence, we need to adopt positive attitudes towards ecological life for the sake of human health, environmental health and the future of our species.

Aim of the Study

Individuals, who have come to realize that ecological balance and human health have been deteriorating, i.e. people with ecological awareness have started to prefer nature friendly products as they gain awareness of an ecological life. Öztürk-Demirbaş (2015) maintains that building one's life on ecological values is only possible through raising awareness about the subject, which can be achieved through education. For solving ecological problems, people's general consumption and life attitudes in daily life need to gravitate towards ecological products. According to Özdemir (2016), any human behaviour in daily life has a positive or negative impact on ecosystems and our habits seeming quite innocent such as eating-drinking, sheltering, clothing, transportation and energy use can cause ecological problems. Wrong habits concerning such issues also bring along health problems. Thus, this study aims to develop a scale to identify the level of ecological life attitude. For the scale, we created items concerning consumption preferences, pesticides, biological diversity and egocentric approach. We believe that this scale will measure ecological life attitude in all adults.

Method

Research Model

This study uses a descriptive method to determine the ecological life attitudes of adults. Descriptive method attempts to illustrate a situation as thoroughly and carefully as possible (Büyüköztürk, Çakmak, Akgün, Karadeniz and Demirel, 2011).

Study Group

For “Ecological Life Attitude Scale” aiming at identifying adult individuals’ attitude towards ecological life in the society, purposeful sampling was selected and the instructors from Kafkas University (Teaching Assistant, Research Assistant, Asst. Prof., Assoc. Prof. and Prof.) participated in the study group. 173 academics from the university was participated in the study of “Ecological Life Attitude Scale”. Of the instructors who responded to the scale, 65 were female and 108 were male, whose ages ranged between 23 and 53. 59 instructors were single while 114 of them were married at the time of the study.

Development of Scale

During the development of “Ecological Life Attitude Scale-ELAS” aimed at identifying the level of ecological life attitude, the order also recommended by Büyüköztürk (2005) was followed. Accordingly, first the problem was defined, and a draft form was created by writing down appropriate items, then, expert opinion was asked and preliminary application was performed, finalizing the scale.

At the first stage of development, literature review was conducted to find out what ecological life is and the competency of individuals with ecological life attitude. Within this scope, domestic and international studies in the field of ecology were investigated and the items that can be used in the scale were identified to create an item pool.

Ecological life is based on not harming the human health and environment, using natural goods only and healing the nature (Kurtar & Ayan, 2004; Özarslan-Aktar, 2012). Therefore, by addressing the subjects of overconsumption, industrial products and recycling, we created items involving general behaviours in the areas such as eating-drinking, sheltering, clothing, detergents and plastics, transportation and energy use (Capra, 1994; Capra, 1997; Capra, 2003; Capra, 2005; Capra, 2007; Capra, 2009). The candidate items were presented to the experienced experts in their fields who were informed of the study –one expert in biology, two experts in biology education and two experts in science education. Furthermore, for ensuring language validity, the opinion of a Turkish language teacher was asked. The scale was developed in line with the feedback provided by these experts. We used Likert-type measure with 1-5 rating with the options “Strongly Disagree”, “Disagree”, “Neutral”, “Agree” and “Strongly Agree” as the most common method for measuring attitudes is Likert-type scales (Tezbaşaran, 1996). Within this framework, 31-item “Ecological Life Attitude Scale -ELAS” was developed. The scale was applied on the instructors who were working at the university

Data Analysis

The most important two basic features required from a good assessment instrument are reliability and validity. Reliability is the consistency between independent assessments of the same thing (Karasar, 2002). In the study, after application, the reliability of the scale was evaluated by internal consistency criterion. As for validity, it is the quality of being assessed without being confused with other things. The first condition to accept an assessment as valid is its reliability (Karasar, 2002). However, the validity of a reliable assessment instrument is not certain. After preliminary application, the validity of the scale was evaluated by content and construct criteria. Content validity is about whether the questions (items) of the assessment instrument are compatible with the purpose of the assessment and represent the area to be measured, and it was determined with expert opinion in our study. Construct validity defines how well an assessment instrument measures an abstract phenomenon. There are various types of construct validity: factor analysis, the impact of experimental variables on test points, internal validity (item analysis), split-validity, cross-validation, structural equation

modelling (Tavşancıl, 2006). Factor analysis is a statistical technique that aims to explain the measuring with fewer numbers of factors by gathering the variables measuring the same structure or quality. It can be performed for various reasons. This study conducts factor analysis to test the validity of the scale. The construct validity of the scale was assessed through item analysis.

According to the responses of the 173 instructors who agreed to take part in the study, the reliability and validity of the scale were assessed. The sample size was examined for factor analysis and was found adequate (Pallant, 2016). To assess construct validity, "Explanatory Factor Analysis (EFA)" was conducted using principle component analysis with varimax rotation. In the analysis, it was required that factor loads (item correlation coefficients) would be .30 at the least (Tabachnick & Fidell, 2013; Pallant, 2016). For assessing the reliability of the scale, item analysis was performed while also Cronbach Alpha, Guttman Split Half and Spearman Brown reliability coefficients were calculated. In addition, "Confirmatory Factor Analysis (CFA)" was performed to test the accuracy of the construct suggested by the EFA.

Findings

This part of the study discusses the findings on the validity and reliability of "Ecological Life Attitude Scale - ELAS" aimed at identifying ecological life attitude of adult individuals.

Findings of Explanatory Factor Analysis (EFA) for Ecological Life Attitude Scale (ELAS)

Findings on the Validity of the ELAS

Factor and item analyses were conducted to reveal the construct validity of the scale and to identify and size the factor loads of the items. Through item analysis, strong or distinguishing items were selected for the scale.

The 31 items of the Ecological Life Attitude Scale (ELAS) were subjected to principal components analysis using SPSS program. Before the analysis, the fitness of the data for factor analysis was assessed. Examination of the correlation matrix revealed the existence of many coefficients that are .30 and above. In addition, the Kaiser-Meyer-Olkin (KMO) coefficient was calculated as well as Bartlett's test of sphericity. While the KMO value was .71, the result of the Bartlett's test of sphericity ($\chi^2 = 1389.434$; $p = .00$) was statistically significant. As the KMO coefficient was $> .60$ and chi square value was $p < .05$ according to the Bartlett's test of sphericity, it was decided that factor analysis can be conducted on the data (Şeker & Gençdoğan, 2006; George & Mallery, 2011; Tabachnick & Fidell, 2013; Pallant, 2016).

The item analysis and the principal component analysis with varimax rotation revealed the existence of 10 items with an Eigen value > 1 . These 10 components explain 61.61% of the variance. The scree plot shows a clear break after the fourth component. Using Catell's scree test (Pallant, 2016), we decided to limit the scale with four factors for further analyses. This decision was supported by the results of the parallel analysis (Pallant, 2016) as well. These results showed the existence of four components that exceed the criterion values corresponding to randomly created data matrix of the same size (31 variables x 173 participants).

To see the highest significant factors more clearly, the following “Scree Plot” graph was drawn.

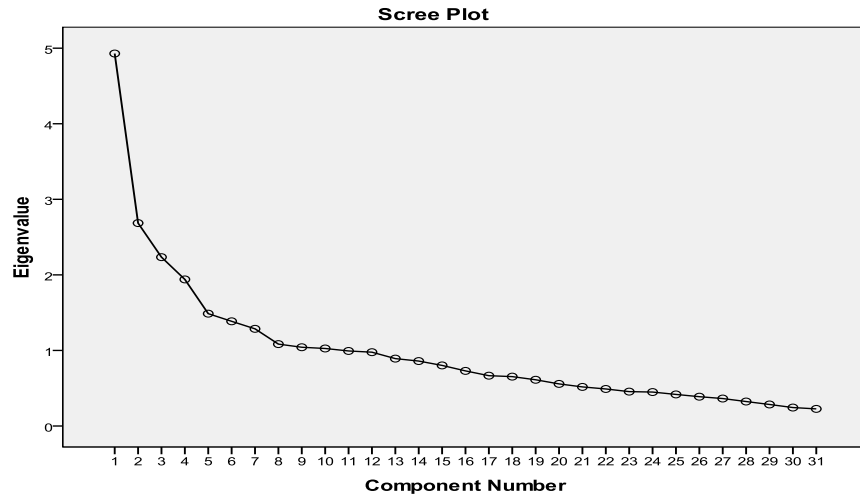


Figure 1. Scree plot graph for ecological life attitude scale

Figure 1 indicates that there are clear and huge breaks at the first, second, third and fourth components vertically while the breaks following the fourth component are horizontal and smaller.

Twelve items including those with no loading on a factor, those that have a factor loading below .30 and the difference between the factor loads on more than one factor is less than .10, or those with insignificant contribution to the variance were discarded from the analysis. EFA was repeated for the ELAS consisting of nineteen items and limited with four factors.

Since the KMO coefficient was .69 and the result of the Bartlett’s test of sphericity was significant - $\chi^2 = 799.928$; $p = .00$ - (the KMO coefficient $>.60$ and Bartlett’s test of sphericity chi-square value $p < .01$) for the nineteen item-scale, it was decided that factor analysis can be conducted on the data (Şeker & Gençdoğan, 2006; George & Mallery, 2011; Tabachnick & Fidell, 2013; Pallant, 2016). As result of the item analysis and varimax factor analysis rotation on the 19-item ELAS, there were four factors with an Eigen value > 1 . It was found that the item loads vary between .51 and .84, and the factors explain 49.54% of the variance.

The factors with the items and the load values are given in Table 1.

Table 1. Factors with items and load values

Items	Direction	Factor Loads (Varimax Rotation)*			
		1	2	3	4
a 9- It is against human nature to live in reinforced concrete buildings.	+	.678			
a 10- Today’s urban lifestyle deteriorates human health.	+	.672			
a 14- Industrial products harm natural life.	+	.670			
a 16- Our diseases are related to our consumption preferences.	+	.551			
a 30- Refined (processed) food deteriorates human health.	+	.547			

a 28- Rural lifestyle is also ecologic.	+	.540		
a 15- Everything that is not ecological is harmful to human health.	+	.539		
a 29- We should live in houses with garden to make more contact with the soil.	+	.538		
a 26- It is OK even if living things with no benefit to humans are not protected.	-		.811	
a 24- Biodiversity on Earth adds richness to life.	+		.722	
a 23- Creatures I do not see around do not matter at all for my life.	-		.690	
a 25- Biological diversity is the greatest natural wealth for the countries.	+		.571	
a 21- It is OK even if some creatures do not exist in nature.	-		.518	
a 6- We should use pesticides to protect against harmful pests.	-			.819
a 5- We should use pesticides to get higher productivity.	-			.761
a 22- We should fight against harmful creatures by using chemicals.	-			.622
a 3- I have the freedom to use anything I have paid for as much as I want.	-			.845
a 1- What and how much I consume does not concern anyone.	-			.741
a 2- People can use everything in the nature as they want.	-			.696
Eigen value		3.736	2.189	1.798
Variance explained		19.662	11.520	9.461
Total variance explained		49.537		
Number of items		8	5	3
Minimum and maximum scores		Min.= 8 Max.= 40	Min.= 5 Max.= 25	Min.= 3 Max.= 15
Cronbach α		.75	.71	.70

*1st Sub-factor: Attitude Towards Consumption Preferences. 2nd Sub-factor: Attitude Towards Biodiversity. 3rd Sub-factor: Attitude Towards the Use of Pesticides. 4th Sub-factor: Egocentric Attitude.

Findings on the Reliability of the ELAS

Item analysis was performed on the item and scale points to determine the functioning of the nineteen items in the scale. The reason for this analysis was the selection of strong or discerning items for the scale. In the correlation based item analysis conducted to decide whether items measure the same property, the relationship between the points obtained for each item in the assessment tool and total points obtained for the entire assessment tool (correlation coefficient) is calculated.

Table 2 shows item-total correlation coefficients and Cronbach Alpha values of the scale

Table 2. Corrected item-total correlation coefficients and cronbach alpha values of the scale

Scale items	n	Mean	Standard deviation	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's Alpha if item deleted
a 1- What and how much I consume does not concern anyone.	173	3.90	1.12	72.38	54.38	.28	0.75
a 2- People can use everything in the nature as they want.	173	4.58	.81	71.70	57.08	.20	0.75
a 3- I have the freedom to use anything I have paid for as much as I want.	173	4.05	1.14	72.24	54.08	.29	0.75
a 5- We should use pesticides to get higher productivity.	173	3.91	1.12	72.37	55.26	.22	0.76
a 6- We should use pesticides to protect against harmful pests.	173	3.28	1.13	73.01	54.02	.30	0.75
a 22-We should fight against harmful creatures by using chemicals.	173	3.84	.97	72.45	53.75	.39	0.74
a 9- It is against human nature to live in reinforced concrete buildings.	173	3.58	1.22	72.71	50.33	.49	0.73
a 10- Today's urban lifestyle deteriorates human health.	173	4.10	.99	72.19	52.34	.48	0.73
a 14- Industrial products harm natural life.	173	3.88	.99	72.41	53.45	.40	0.74
a 15- Everything that is not ecological is harmful to human health.	173	3.16	1.04	73.13	53.48	.37	0.74
a 16- Our diseases are related to our consumption preferences.	173	3.95	.87	72.33	53.92	.44	0.74
a 28- Rural lifestyle is also ecologic.	173	3.15	1.00	73.13	56.04	.21	0.75
a 29- We should live in houses with garden to make more contact with the soil.	173	4.05	4.05	72.24	54.52	.37	0.74
a 30- Refined (processed) food deteriorates human health.	173	3.83	3.83	72.46	53.60	.42	0.74
a 21- It is OK even if some creatures do not exist in the nature.	173	4.60	.73	71.69	57.29	.22	0.75
a 23- Creatures I do not see around do not matter at all for my life.	173	4.56	.68	71.73	56.30	.34	0.75
a 24-Biodiversity on Earth adds richness to life.	173	4.61	.76	71.67	56.26	.30	0.75
a 25- Biological diversity is the greatest natural wealth for the countries.	173	4.58	.73	71.71	56.99	.24	0.75
a 26- It is OK even if living things with no benefit to humans are not protected.	173	4.69	.60	71.59	57.72	.23	0.75
Total number of items	19						
Maximum total points	Min.= 19		Max.= 95				

Mean	76.28
Variance	60.22
Standard deviation	7.76
Cronbach α	.76

To identify the items to form the scale, arithmetic mean, standard deviation and item-total correlation were calculated for each item. The required criterion to select the items to include in the scale is that the item-total correlation coefficient is above .20 (Tavşancıl, 2006). It was found that item-total correlation coefficients vary between .20 and .49 for all the items. The Cronbach Alpha reliability coefficient in the internal consistency test of the 19-item scale is .76. Ideally, it should be above .70 (DeVellis, 2012; Pallant, 2016). According to these results, we can say that the items of the scale are consistent with each other and have high reliability.

Findings of Confirmatory Factor Analysis (CFA) for the ELAS

Table 3 indicates the fit index values for the ELAS, and normal and acceptable values.

Table 3. Fit index values for the ELAS, normal and acceptable values

Index	Normal values	Acceptable values	Values obtained
χ^2/sd	<3	<5	1.64
GFI	>0.95	>0.90	0.93
AGFI	>0.95	>0.90	0.90
CFI	>0.95	>0.90	0.92
NNFI	>0.95	>0.90	0.91
NFI	>0.95	>0.90	0.90
RMSEA	<0.05	<0.08	0.061
SRMR	<0.05	<0.08	0.074
RMR	<0.05	<0.08	0.074

As is seen in Table 3, we used various indices to examine the fitness of the ELAS model. When examining the fitness indices, the fact that χ^2/sd proportion is below 3; NFI, NNFI, CFI, GFI, AGFI values are above .95 while RMSEA, RMR and standardized RMR value is below .05 indicates perfect fitness. That NFI, NNFI, CFI, GFI, AGFI values are above .90 and RMSEA, RMR and standardized RMR values are below .08 displays good fitness (Çokluk, Şekercioğlu & Büyüköztürk, 2012).

Fit index values for the ELAS are as follows: χ^2/sd value 1.64, GFI 0.93, AGFI 0.90, CFI 0.92, NNFI 0.91, NFI 0.90, RMSEA 0.061, SRMR 0.074 and RMR 0.074. According to the relevant fit index values, it was decided that this version of the model is acceptable.

Figure 2 presents the subdimensions for the ELAS and the factor loads of the items in a PATH diagram.

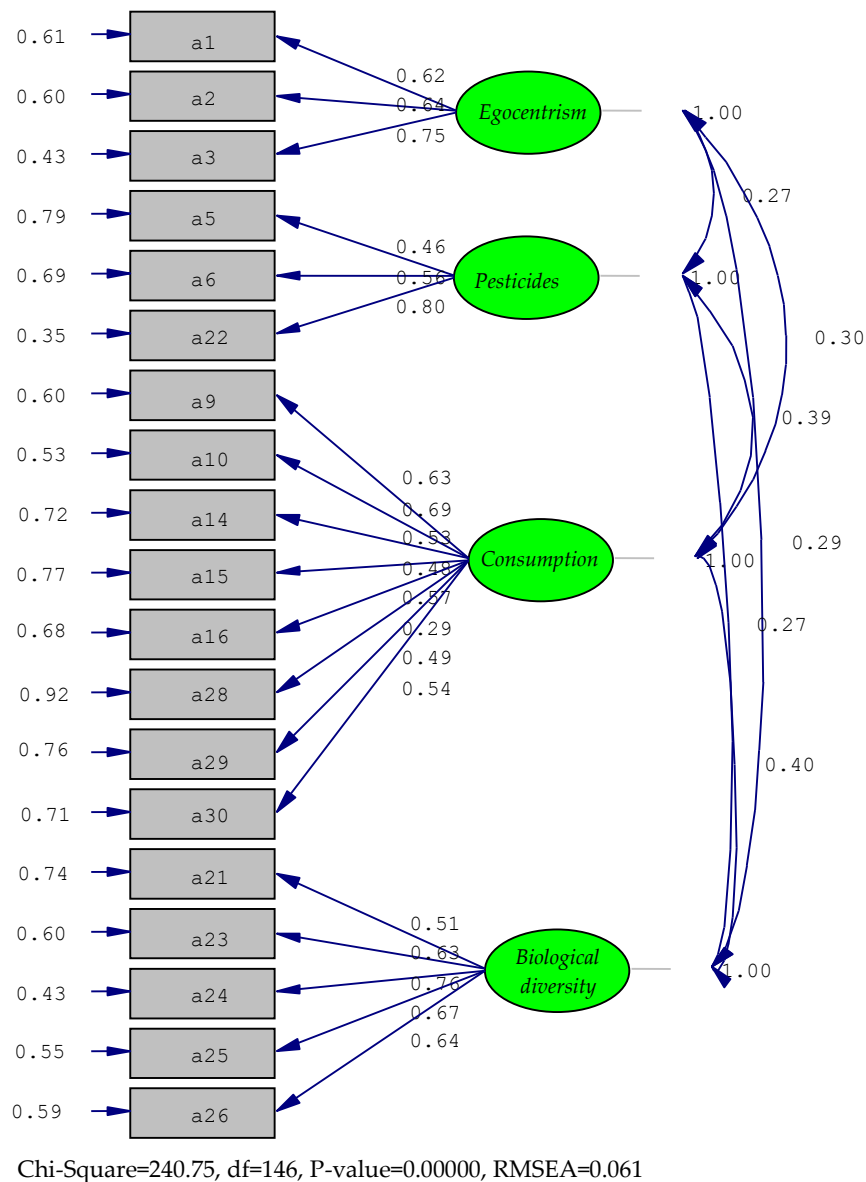


Figure 2. PATH diagram for ecological life attitude scale

As is seen in Figure 2, the original model is accepted with no modification. The factor loads of the model vary between 0.29 and 0.80, and t value for all the items is above 1.96.

Conclusion and Recommendations

Deterioration of ecological balance and human health has compelled people to reconsider and reorganize their lifestyles and consumption behaviours. Thus, developing positive attitudes towards ecological life has emerged as a new lifestyle. The general philosophy of ecological lifestyle is turning to the natural, avoiding the industrial, reducing the amount of waste-garbage and accepting that all living and non-living things are important within the balance of the planet. This lifestyle aims at people's preserving their own health, preventing ecological degradation and leaving healthy genes and a healthy planet for the future generations. Consumption habits advancing with industrialisation have transformed into addiction, resulting in consumerism in this century. Individuals who have become aware of the deterioration in health and environment -mostly educated individuals- gave up this lifestyle, and a movement to avoid industrial products was born. Though very young, this tendency is spreading on a mass scale with the additional impact

of the media. Individuals preferring an ecological lifestyle have started to consider that the air, water and soil are the greatest, but exhaustible resources and must remain clean, to avoid agricultural products being exposed to chemicals, to live in the countryside, to prefer preventive health behaviour rather than treatment, to reduce fuel consumption, to preserve green and to afforest, to abstain from unnecessary consumption, and to have ecological holidays alone with the nature; seeing all living things in nature as significant parts of the planet. These tendencies added to today's terminology new concepts such as eco-businesses (Dauvergne and Lister, 2013), eco-entrepreneurship (Wagner, 2009; Balci, 2011), eco-schools (Chapman and Sharma, 2001; Aktepe and Girgin, 2009), ecological products (Nissen, 1995), eco-tourism (Rata, Petroman and Petroman, 2008), green office (Eichholtz, Kok, Quigley, 2010; Uslu and Erkan, 2016) and green customer (Chang and Fong, 2010). This new situation has also led the industry to 100% environmentally sensitive activities in line with the supply-demand relationship.

The scientific studies on ecological life both in national and international literature are unfortunately quite inadequate. And there is no measuring tool to assess the concept of ecological life or ecological life attitude.

Thus, this study has developed a 19-item scale with four factors with the participation of university instructors to determine adult individuals' attitude towards ecological life. We believe that it can be used in the studies on instructors as well as in the studies on adult individuals in different situations in the society.

GENİŞLETİLMİŞ ÖZET

Ekolojik Yaşam Tutumu Ölçeği: Geliştirme, Geçerlik ve Güvenirliği

Çalışmanın amacı

İnsanın her türlü günlük davranışı ekosistemleri olumlu veya olumsuz olarak etkilemekte ve oldukça masum gibi görünen sıradan yeme-içme, barınma, giyim, ulaşım, enerji kullanımı gibi alışkanlıklarımız ekolojik sorunlara yol açabilmektedir. Bu konulardaki yanlış alışkanlıklar sağlık sorunlarını da beraberinde getirmektedir. Bu çalışmada, yetişkinlerin ekolojik yaşam tutum düzeyini tespit etmeye yönelik bir tutum ölçeği geliştirmek amaçlanmıştır. Ölçek için tüketim tercihleri, pestisitler, biyolojik çeşitlilik ve egosantrik yaklaşıma yönelik maddeler hazırlanmıştır. Hazırlanan ölçeğin tüm yetişkinlerde ekolojik yaşam tutumunu ölçebileceği düşünülmektedir.

Metod

Yetişkin bireylerin ekolojik yaşama yönelik tutumlarını belirlemek amacıyla geliştirilmek istenen bu çalışmada betimsel yöntem kullanılmıştır. Amaçlı örneklem seçilmiş ve Kafkas Üniversitesi'nde görev yapmakta olan 173 akademisyen (Öğr. Gör., Arş. Gör., Yrd. Doç. Dr., Doç. Dr. ve Prof. Dr.) "Ekolojik Yaşam Tutumu Ölçeğine" katılmıştır. Ölçeğe yanıt veren 65'i kadın, 108'i erkek akademisyenlerin yaş aralıkları 23 ile 53 arasındadır. Bu öğretim elemanlarından 59'u bekar ve 114'ü ise evlidir.

Ölçeğin Geliştirilmesi

Ekolojik yaşam tutum düzeyini belirlemek amacıyla geliştirilen "Ekolojik Yaşam Tutumu Ölçeği (EYTÖ)"nin geliştirilmesi sırasında Büyüköztürk (2005)'ün de belirttiği sıra takip edilmiştir. Bu doğrultuda tanımlanmış probleme uygun maddeler yazılarak taslak bir form oluşturulmuş, uzman görüşü alınmış, ön uygulama yapılmış ve ölçeğe son şekli verilmiştir. Ölçeği geliştirmenin ilk aşamasında alanyazın incelenerek ekolojik yaşamın ne olduğu ve ekolojik yaşam tutumuna sahip olan bireylerin yeterlikleri belirlenmeye çalışılmıştır. Bu kapsamda yurtiçi ve yurtdışında alanyazın taranarak ölçekte kullanılacak maddeler belirlenmiş ve madde havuzu oluşturulmuştur. Oluşturulan maddeler bu alanda tecrübeli olan biyoloji alanından bir, biyoloji eğitimi alanından iki ve fen eğitimi alanından da iki uzman görüşlerine sunulmuştur. Ayrıca dil geçerliliğini sağlamak için bir Türkçe eğitimcisiinden görüş alınmıştır. Uzmanlardan gelen dönütler doğrultusunda aday ölçek oluşturulmuştur. Ekolojik yaşam tutumu ölçeğinde; "Kesinlikle Katılmıyorum", "Katılmıyorum", "Kararsızım", "Katılıyorum" ve "Kesinlikle Katılıyorum" seçeneklerini içeren 5'li derecelendirme yapılan likert tipi ölçme kullanılmıştır. Bu kapsamda 31 maddeden oluşan "Ekolojik Yaşam Tutumu Ölçeği (EYTÖ)" hazırlanmıştır.

Verilerin Analizi

Ön uygulama sonucu ölçeğin geçerliği içerik ve yapı ölçütüne göre yapılmıştır. İçerik geçerliği; ölçme aracında bulunan soruların (maddelerin) ölçme amacına uygun olup olmadığı ve ölçülmek istenen alanı temsil edip etmediği sorunu ile ilgili olup, uzman görüşü ile belirlenmiştir. Ölçeğin geçerliği faktör analizi ile, yapı geçerliği ise madde analizi yapılarak belirlenmiştir. Yapı geçerliliğini belirlemek için varimax döndürme ile temel bileşenler analizi kullanılarak "Açıklayıcı Faktör Analizi (AFA)" yapılmıştır. Ölçeğin güvenirliliği için madde analizi, Cronbach Alfa, Guttman Split Half ve Spearman Brown güvenirlilik katsayıları hesaplanmıştır. Ayrıca AFA ile ortaya konulan yapının doğruluğunun test edilebilmesi için "Doğrulamalı Faktör Analizi (DFA)" yapılmıştır.

Bulgular

Ekolojik Yaşam Tutumu Ölçeği (EYTÖ)'nin 31 maddesi SPSS programı kullanılarak temel bileşenler analizine tabi tutulmuştur. Temel bileşenler analizinden önce verilerin faktör analizi için uygunluğu

değerlendirilmiştir. Korelasyon matrisinin incelenmesi neticesinde .30 ve daha yüksek düzeylerde pek çok katsayının varlığı ortaya koyulmuştur. Kaiser-Meyer-Olkin (KMO) katsayısı ve Bartlett Sphericity testi hesaplanmıştır. KMO değeri .71 bulunmuş ve Bartlett Sphericity testi sonucu da ($\chi^2 = 1389.434$; $p = .00$) istatistiksel olarak anlamlı çıkmıştır. KMO katsayısı $> .60$ ve Bartlett Sphericity testi ki-kare değeri $p < .05$ olduğundan verilere faktör analizi uygulanabileceğine (Şeker & Gençdoğan, 2006; George & Mallery, 2011; Tabachnick & Fidell, 2013; Pallant, 2016) karar verilmiştir.

Temel bileşenler analizi ile yapılan madde analizi ve varimax döndürme işlemi sonucunda özdeğeri 1'den büyük olan 10 bileşenin varlığı ortaya koyulmuştur. Bu 10 bileşenin ölçeğe ilişkin açıkladığı varyans ise % 61.61'dir. Catell yamaç testi (Pallant, 2016) kullanılarak, ölçeğin daha ileri analizler için dört faktör ile sınırlandırılmasına karar verilmiştir. Bu karar, paralel analizin (Pallant, 2016) sonuçları tarafında da desteklenmiştir. Hiçbir faktörde yüklenmeyen, faktör yükü .30'un altında ve birden fazla faktöre yüklenen faktör yükleri arasındaki fark .10'dan az olan ya da açıklanan varyansa katkısının düşük olduğu belirlenen on iki madde analizden çıkartılmıştır. Dört faktör ile sınırlandırılan on dokuz maddeden oluşan EYTÖ için AFA tekrarlanmıştır. On dokuz maddelik EYTÖ'nün madde analiz çözümlenmesi ve varimax faktör analizi yapılan döndürme işlemi sonucunda ölçekte özdeğeri (eigenvalue) 1'den büyük olan dört faktör bulunmuştur. Madde yüklerinin .51 ile .84 arasında değiştiği görülmüştür. Bu dört faktörün ölçeğe ilişkin açıkladığı varyans ise % 49.54'dür. Ölçekteki on dokuz maddenin işlerliğini belirlemek amacıyla madde ve ölçek puanları üzerinde madde analizi yapılmıştır.

Ölçeği oluşturacak maddelerin belirlenmesi amacıyla her bir maddenin aritmetik ortalaması, standart sapması ve madde-toplam korelasyonları hesaplanmıştır. Tüm maddeler için madde-toplam korelasyonlarının .20 ile .49 arasında değiştiği görülmüştür. On dokuz maddeden oluşan ölçeğin iç tutarlık sınavında Cronbach Alfa güvenilirlik katsayısı .76 olarak belirlenmiştir. İdeal olarak Cronbach Alfa katsayısının .70'in üstünde olması istenmektedir (DeVellis, 2012; Pallant, 2016). Buna göre ölçeği oluşturan maddelerin birbirleri ile tutarlı olduğu ve güvenilirliğinin yüksek olduğu söylenebilir. Uyum indeksleri incelendiğinde χ^2/sd oranının 3'ün altında, NFI, NNFI, CFI, GFI, AGFI değerlerinin .95'in üzerinde, RMSEA, RMR ve standardize edilmiş RMR değerinin ise .05'in altında değer almasının mükemmel uyuma karşılık geldiği işaret edilmektedir. EYTÖ'ye yönelik saptanan uyum indeksi değerleri; χ^2/sd değeri 1.64, GFI 0.93, AGFI 0.90, CFI 0.92, NNFI 0.91, NFI 0.90, RMSEA 0.061, SRMR 0.074 ve RMR 0.074 olarak saptanmıştır. İlgili uyum indeks değerleri sonucunda modelin bu hali ile kabul edilebilir olduğuna karar verilmiştir.

Sonuç ve Öneriler

Dünyada endüstrileşme ile birlikte ilerleyen tüketim alışkanlıkları yüzyılımızda bağımlılıklara dönüşmüş ve ortaya tüketim bağımlılıkları çıkmıştır. Sağlık ve çevresel bozulmaların farkına varan çoğunlukla eğitimli bireyler tarafından geriye dönüş başlamış ve endüstriyel ürünlerden kaçınma hareketi doğmuştur. Daha çok yeni olan bu eğilim medyanın da etkisiyle kitlesel olarak yayılmaktadır. Ekolojik yaşam tarzını seçen bireyler hava, su ve toprağın en büyük ama tükenebilir kaynaklar olduğunu ve temiz kalmaları gerektiğini düşünmeye; kimyasal ilaç kullanılmış tarımsal ürünlerden kaçınmaya; kırsalda yaşamaya; tedaviye değil de koruyucu sağlık davranışlarına; yakıt tüketimini azaltmaya; yeşili korumaya ve ağaçlandırmaya; gereksiz tüketimlerden kaçınmaya; doğa ile başbaşa ekolojik tatiller yapmaya yönelmişler ve doğada bulunan tüm canlıları gezegenin önemli birer parçası olarak görmeye başlamışlardır. Bu yönelimler beraberinde ekolojik işler (Dauvergne and Lister, 2013), eko-girişimcilik (Wagner, 2009; Balci, 2011), eko-okul (Chapman and Sharma, 2001; Aktepe ve Girgin, 2009), ekolojik ürün (Nissen, 1995), eko turizm (Rata, Petroman and Petroman, 2008), yeşil ofis (Eichholtz, Kok, Quigley, 2010; Uslu ve Erkan, 2016), yeşil müşteri (Chang and Fong, 2010) kavramları da günümüz terminolojisine eklemiştir. Bu durum arz-talep ilişkisi doğrultusunda endüstriyi de %100 çevre duyarlı faaliyetlere yönlendirmiştir.

Gerek yurtiçi gerekse yurtdışı literatürde ekolojik yaşamı konu alan bilimsel çalışmalar maalesef görece oldukça yetersizdir. Ekolojik yaşam düşüncesini ya da ekolojik yaşam tutumunu ölçen bir ölçme aracına ise rastlanmamıştır.

Bu çalışmada, yetişkin bireylerin ekolojik yaşama yönelik tutumlarını belirlemek amacıyla öğretim elemanlarının katılımı ile dört faktörden oluşan on dokuz maddelik bir ölçek geliştirilmiştir. Geliştirilen bu ölçeğin öğretim elemanları ile yürütülecek çalışmalarda olduğu kadar toplumu oluşturan farklı durumlardaki yetişkin bireyler ile yapılacak çalışmalarda da kullanılabilmesi düşünülmektedir.

Değerli Akademisyenler, **ekolojik farkındalığı** belirlemek amacıyla yapmış olduğumuz bu çalışmaya gönüllülük esaslı vereceğiniz cevaplar önemli katkı sağlayacaktır.

Katılımınız için çok teşekkür ederiz.

Yrd. Doç. Dr. Arzu ÖNEL
Yrd. Doç. Dr. Zeynep YÜCE
KAÜ Eğitim Fakültesi

Cinsiyetiniz : () Kadın () Erkek
Medeni durumunuz : () Bekar () Evli
Ünvanınız :
Görev yaptığınız birim:
Bölümünüz :
Yaşınız :

Bu anket ekolojik farkındalığın tutum boyutuyla ilgilidir. Katılma derecenizi belirlemek amacıyla sizin için uygun olan seçeneğe (X) işareti koyunuz. Lütfen hiçbir maddeyi boş bırakmayınız.		Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
1	Neyi, ne kadar tükettiğim kimseyi ilgilendirmez.					
2	İnsanlar doğadaki her şeyi istediği gibi kullanabilir.					
3	Parasını ödemediğim her şeyi istediğim miktarda kullanma özgürlüğüm vardır.					
4	Daha yüksek verim alabilmek için tarım ilaçları kullanılmalıdır.					
5	Zararlı böceklerden korumak için tarım ilaçları kullanılmalıdır.					
6	Betonarme yapılarda yaşamak insan doğasına aykırıdır.					
7	Günümüz şehir yaşantısı insan sağlığını bozmaktadır.					
8	Endüstriyel ürünler doğal yaşama zarar verir.					
9	Ekolojik olmayan her şey insan sağlığına zararlıdır.					
10	Hastalıklarımız, tüketim tercihlerimizle ilişkilidir.					
11	Doğada bazı canlılar olmasa da olur.					
12	Zararlı canlılara karşı kimyasal ilaçlar kullanılarak mücadele edilmelidir.					
13	Çevremde göremediğim canlıların benim hayatım için hiçbir önemi yoktur.					
14	Yeryüzündeki canlı çeşitliliği yaşama zenginlik katar.					
15	Biyolojik çeşitlilik ülkelerin en büyük doğal zenginliğidir.					
16	İnsanlara faydası olmayan canlılar korunmasa da olur.					
17	Kırsalda yaşamak ekolojiktir.					
18	Toprağa daha fazla temas edebilmek için bahçeli evlerde yaşanmalıdır.					
19	Rafine (işlenmiş) edilmiş gıda ürünleri insan sağlığını bozar.					

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