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RESEARCH ARTICLE

Validity and Reliability Study of Environmental Awareness and Attitude Scale for Preschool Children

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Abstract

The aim of this study is to conduct validity and reliability study of the Environmental Awareness and Attitude Scale for Preschool Children .This study is conducted with 310 children who are having preschool education. At the end of the factor analysis results, there are three factors that explain 44.02% of the total variance in Environmental Attitude subscale. In the Environmental Awareness subscale, 3 factors that explain 40.94% of total variance were found. The correlation coefficients between the factors of the Environmental Awareness subscale were *r* =.80, .78 and .83 and for the Environmental Attitudes subscale were *r* =.70, .79 and .72 respectively. In statistics done for the reliability study of the Environmental Attitudes subscale, the Spearman Brown reliability coefficient was found to be .75, and the Cronbach's alpha reliability coefficient was found to be .73. For the Environmental Awareness subscale these coefficients were found to be .65 and .66 respectively. For the whole scale the Spearman Brown reliability coefficient was found to be .60, while the Cronbach's alpha reliability coefficient was found to be .67. According to t-test results concerning the significance of the difference between the upper and lower 27% of the total scores, there is a significant difference in favor of the upper group. The item discrimination power of Environmental Attitudes subscale varies between .34 and .47, for Environmental Awareness subscale it varies between .32 and .40. The scale's average item discrimination power is .38. This value indicates that the scale has a discrimination feature. As a result it can be claimed that a scale with 26 items and two subscales is a valid and reliable scale for 60-66 month old children.

Keywords: Preschool children, environmental awareness, environmental attitude, validity and reliability

Introduction

Addressing environmental issues has been an important endeavor over the last 40 years. Especially in recent years great effort has been expended in developing environmental awareness in children as in early years an individual has the ability to acquire self-care skills and demonstrate individual independence. Moreover, during this period children start to learn social rules and roles differentiate between right and wrong, develop conscience and form healthy relationships with family and immediate surroundings (Koç, 2009). An education given during this period in which a number of important values, judgments, attitudes and behaviors are acquired is very important in shaping the behavior of an individual in society. For this reason, the aims of preschool education include raising individuals entrenched in an environmental culture, inculcating awareness of the effects of humans in causing environmental problems, engaging in active participation in solving environmental problems and developing environmental awareness among individuals (Bogner, 2004; Hsu, 2004). Environmental education introduced during this period is considered as a continuous

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learning process in which students acquire knowledge, skills, values and experience to solve environmental problems for the benefit of future generations (Vaughan, Gack, Solorazano, & Ray 2003). In order to increase the efficiency of environmental education programs, it is relevant to examine behavior changes in environmental attitudes of students (Pooley & O'Connor, 2000).

There are a number of studies about the effects of environmental education on the development of positive environmental attitudes in preschool education (Heimlich & Ardoin, 2008, Kopnina, 2013; Manoli, Johnson, & Dunlap, 2007). A number of researchers have stated that attitude has an important effect on behavior (Chatzifotiou, 2006; Evans et al., 2007; Fernandez-Manzanal, Rodriguez-Barreiro, & Carrasquer, 2007).

In Turkey, it is seen that this issue has been given importance and there are studies about children's attitudes and awareness levels about the environment (Akçay, 2006; Buhan, 2006; Cevher-Kalburan, 2009; Çabuk, 2001; Gülay & Ekici, 2010; Gülay, Yılmaz, Turan-Güllaç & Önder, 2010; Haktanır & Çabuk, 2000; Kahriman-Öztürk, Olgan & Tuncer, 2012; Kesicioğlu & Alisinanoğlu, 2009; Taşkın & Şahin, 2008; Yağlıkara, 2006). Most of these were qualitative studies that were conducted with preschool teachers and children.

The measurement instruments that have been used in the studies for environmental education were generally designed for primary school children (Atasoy & Ertürk, 2008; Avan, 2011; Bruni, Chance, & Schultz, 2012; Fernandez-Manzanal, Rodriguez-Barreiro, & Carrasquer, 2007; Erdoğan, Ok, & Marcinkowski, 2012; Fernandez-Manzanal, Rodriguez-Barreiro, & Carrasquer, 2007; İşyar, 1999; Johnson & Manoli, 2011; Malkus, & Musser, 1994; Manoli, Johnson, & Dunlap, 2007; Wu, 2012; Yaşaroğlu, 2012) and only three instruments have been developed for preschool children (Cevher-Kalburan, 2009; Çabuk, 2001; Evans et al., 2007; Gülay, 2011, Kahriman-Öztürk, Olgan & Tuncer, 2012; Musser & Diamond, 1999).

One of the available scales is the Children's Attitudes toward the Environment Scale for Preschool version (CATES-PV) that was developed by Musser and Diamond in 1999 and adapted into Turkish by Gülay (2011) and Kahriman-Öztürk, Olgan and Tuncer (2012). At the end of their adaptation studies Gülay (2011) finalized the scale with 15 items, while Kahriman-Öztürk, Olgan, and Tuncer (2012) finalized it with 12 items. In this scale there are qualitative questions about the pictures that are presented (Gülay, 2011; Kahriman-Öztürk, Olgan & Tuncer, 2012; Musser & Diamond, 1999).

The Children's Environmental Attitudes Scale was developed by Evans et al. (2007) and adapted into Turkish by Cevher-Kalburan (2009). This scale was developed in order to assess environmental attitudes of the first and the second grade students attending state schools in New York and it includes three games. In the first and second game there were three questions with two choices in each game and 5 questions in the third game, so there were 11 questions in total (Cevher-Kalburan, 2009).

The Environmental Awareness Level Identification Test for Preschool Children was developed by Çabuk (2001) and includes the following; domains or factors: distinguishing subjects about the environment (6 items), organizing subjects about the environment (5 items), and comprehending subjects about the environment (6 items). In the scale there are items like smoking when you are pregnant, swimming in a polluted lake, throwing rubbish on the beach and car, etc. (Çabuk, 2001).

Scales about environmental attitude and awareness were generally adaptions of scales that were developed abroad and translated into Turkish. Two of the available measurement instruments are for assessing attitudes and the other is for assessing

environmental awareness; there is no instrument that both assesses students' and awareness of the environment However, Stepath (2004) stated that there was a close relationship between attitudes about the environment and environmental awareness. A possible increase in attitudes towards the environment would have an important role in increasing environmental awareness. The concept of awareness is defined as having knowledge about something that needs to be seen or known or is the state of paying attention to something that should be comprehended (TDK, 2013). Taking that definition as a starting point, environmental awareness can be defined as "having knowledge about the things that are to be known or to be seen about the environment and paying attention to the things that should be comprehended" (Erten, 2004).

Dünyada ve ülkemizde okul öncesi dönemdeki çocukların çevre tutum ve farkındalıklarını belirlemeye yönelik ölçek maddeleri ve bu ölçekler ile ilgili alan yazında yapılan eleştiri ve kaygılar dikkatle incelendiğinde, ölçek maddelerinde bir birlikteliğin olmadığı, çalışmalarda araştırmanın içeriğine özel ölçme araçları geliştirildiği görülmüştür. Bununla birlikte, çocukların sadece çevreye karşı tutumlarının değerlendirilmesinin yeterli olmadığı, çevre farkındalıklarının da birlikte ölçülmesinin gerekli ve önemli olduğu düşünülmektedir.

Türkiye'de kullanılan diğer ölçeklerden farklı olarak, beş yaş çocuklarının çevreye karşı tutumlarının yanı sıra çevreye karşı farkındalıklarını da ölçen bir ölçme aracının alana kazandırılmasının önemi açıktır. Bu amaca ulaşmak için, in this study it was aimed to develop the Environmental Awareness and Attitude Scale for Preschool Children (EAASPC) aged 60-66 months, and to conduct a reliability and validity study.

Methodology

Design of the Research

In this study the survey model was used as it is the most appropriate for the nature of this research. The survey model is appropriate for large samples and it is a model that aims to "collect data to identify specific features of a group" (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz, & Demirel, 2011).

Study Group

The sample of the survey consisted of 310 children aged 60-66 months attending a nursery class or an independent preschool that are affiliated with the National Ministry of Education in Aydın and Konya city centers. The sample was selected using the stratified sampling method representing children of families with different socio-economic levels in Konya city center and Aydın city center. The schools were classified as being of low, average and high socio-economic levels by the Directorate of National Education.

According to Nunually (1978) for conducting factor analysis, the number of subjects should be ten times greater than the number of items, while Tavşancıl (2002) suggested that the number of subjects should be between 5 to 10 times the numbers of items. According to Tabachnick & Fidell (1996) for factor analysis 300 subjects is considered "good", 500 subjects is "very good" and 1000 subjects is "perfect". Considering the convenience of availability, 310 children were included for our scale with 26 items. There were 96 males 85 females from Konya while there were 65 females and 64 males from Aydın, totaling 310 children in the sample of the study.

Process of Scale Development

In order to develop the items of the scale a literature review about children's environmental attitudes and awareness was first conducted (Akçay, 2006; Domka, 2004; Ernst, 2007; Grodzinska-Jurczak, Stepska, Nieszporek, & Bryda, 2006; Haktanır & Çabuk, 2000; Palmer, Grodzinska-Jurczak & Suggate, 2003). In addition, developed scales about environmental attitudes and awareness that were documented in the literature (Çabuk, 2001; Evans et al., 2007; Fernandez-Manzanal et al., 2007; Musser & Diamond, 1999; Pelletier, Tuson, Green-Demers, & Noels, 1998) were examined in detail.

Using the information obtained from the literature review, 28 items were developed about preschool children's environmental attitudes and awareness. Some items were positively worded while others were written negatively. For each item, two contrasting pictures were prepared. In order to facilitate children's understanding, simple pictures were drawn to depict one situation. After the 28 items were developed and the 56 pictures were drawn, they were given to five academicians for their expert opinion. The experts evaluated the items and the pictures in terms of appropriateness and understandability. Some changes were made to 10 pictures based on the expert opinions before finalizing 15 items in the Environment Attitudes subscale and 13 items in the Environmental Awareness subscale.

Administration of the trial instrument

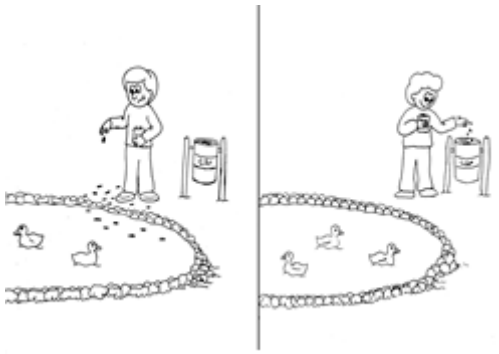
The items of the scale and the pictures were shown to the children who were then told: "Each item in the Environmental Attitudes subscale is composed of two pictures. Now I will show you the two pictures that refer to an item. In each picture two different situations are depicted followed by a question". After ensuring that the children understand the question, the rest of the 15 items in the subscale were asked one at a time.

Sample Item 1: This child warns the people who litter. Whereas that child ignores the people who litter. Do you always ignore people who litter like that child? Do you sometimes warn and sometimes ignore? Or do you always warn the people who litter?

Sample Item 2: This child likes playing in the garden. That child likes watching TV. Do you always watch TV like this child? Do you sometimes watch TV and sometimes play in the garden? Or do you always play in the garden?

Sample Item 3: That child turns off the tap while brushing his teeth. This child does not turn it off. Do you always do like that child and do not turn off the tap? Do you

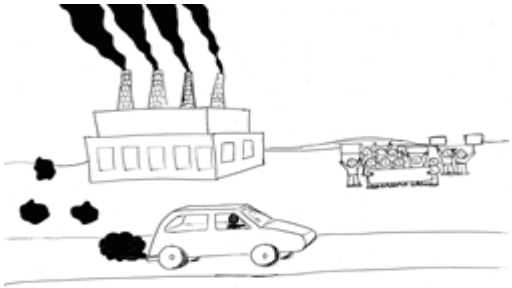
sometimes turn it off and do you sometimes leave it open? Or do you always keep it turned off?



Sample Item 4: That child throws the hulls of sunflower seeds he has eaten into the water. This child keeps the hulls in his hands and throws them into the trash. Do you throw the hulls of the sunflower seeds into the trash like this child? Do you sometimes throw them into water or in to the trash? Or do you always throw them into the trash?

The children were then told: “Each item in the Environmental Awareness subscale is composed of two pictures. Now I will show you the two pictures that refer to an item. I will place the two pictures on the table and tell you what they depict. If the depicted situations are correct, I want you to give me the green card; if it is wrong give me the red card or if you don’t know give me the yellow card.” After ensuring that the children understand the question, the rest of the 13 items in the subscale were asked one at a time.

Sample Item 1: Instead of taking animals to the zoo they should be released in the forest to live with their family.



Sample Item 2: Measurements should be taken for factory and car smoke.

Sample Item 3: The fire that we lighted during picnic must certainly be extinguished.

Sample Item 4: We should hunt wild animals.

Process of administration of the EAASPC

Before the data collection, a meeting was first held with the school principal and teachers concerned to explain the aim of the study. Then, the children who would be participating in the study were taken to a suitable place in their school and they were given an explanation about the study by the researcher and the EAASPC scale was administered to the children individually. All the children were given the items of the scale in the same order; first the Environmental Attitudes items then the Environmental Awareness items. It took about 15 minutes to administer the test to each child. In a pilot study, the scale composed of 28 items was administered to 50 children (20 females and 30 males). Analyses of the data indicated a Cronbach's alpha reliability coefficient of .80. Subsequently, the EAASPC scale was administered to the 310 children in the sample and analysis of the data was performed.

The EAASPC data analysis

After administering the scale to the sample group, the data obtained were entered into a SPSS 16 data file to do the necessary statistical analyses for reliability and validity. Children's responses to the Environmental Attitude items were scored as following; if the child chose "always" for the positive behavior two points were awarded, if the child chose "sometimes" 1 point was awarded and 0 point was awarded if the child chose a negative behavior. In the Environmental Awareness subscale, the children's responses were scored 2 for right, 1 for I don't know/I have no idea and 0 for wrong. The following items were negative statements so they were coded; in reverse: 19,20,22,23,24,25. The total score for each child was computed and a validity and reliability study was conducted using the scores obtained.

Explanatory factor analysis was used in order to identify the construct validity and factor structure of the EAASPC Scale. Correlation coefficients between the Environmental Attitudes and Environmental Awareness subscales were examined. In

order to identify the reliability of the scale, internal consistency reliability Cronbach Alpha reliability coefficients and the Spearman-Brown formula were used. Moreover, item discrimination and significance of the the upper and lower 27 % percent tests were used.

Findings

Construct Validity

First of all, in order to identify whether the data is appropriate for factor analysis the Kaiser-Meyer-Olkin (KMO) coefficient and Bartlett's Test of Sphericity were examined. Kaiser stated that the coefficient is perfect when it is closer to 1 and unacceptable if it is under .50 (.90 is perfect, .80 very good, .70 and .60 average and .50 bad) (Tavşancıl, 2002). Furthermore, in order to ensure that the data normally distributed, the Bartlett's Test of Sphericity was used. Significant chi square statistics gathered at the end of this test is an indicator that data comes from a normal distribution (Şencan, 2005; Tavşançıl, 2002).

Table 1.

KMO and results of bartlett test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy			.76
Environmental Attitude Subscale	Bartlett's Test of Sphericity	X^2	749.85
		df	91
		p	.00
Kaiser-Meyer-Olkin Measure of Sampling Adequacy			.70
Environmental Awareness Subscale	Bartlett's Test of Sphericity	X^2	289.82
		df	66
		p	.00
Kaiser-Meyer-Olkin Measure of Sampling Adequacy			.73
Total	Bartlett's Test of Sphericity	X^2	1.30
		df	325
		p	.00

In this study the KMO value was found to be .76 for the Environmental Attitudes subscale, .70 for the Environmental Awareness subscale and .73 for the overall EAASPC scale. Moreover, the Bartlett's Test of Sphericity was also significant. This indicates that the data are suitable for factor analysis.

Factor analysis of the Environmental Awareness and Environmental Attitude subscales was performed using the Principle Component Analysis procedure. To reach a clear judgment about the number of factors, a Scree Test graph based on eigenvalues of the factors was also analyzed (Büyüköztürk, 2011). In this examination the discontinuities were considered and it was identified that the EAASPC scale is composed of two subscales with three factors each. It was then decided to perform factor analysis in order to ensure construct validity of the scale. The Varimax Orthogonal Rotation technique (Büyüköztürk, 2011; Kalaycı, 2008) was used. It was decided that the factor loading of an item should be at least .35 (Hair Anderson, Tatham, & Black, 1998; in Kalaycı, 2008).

Table 2.

Factor analysis results of environmental attitude subscale

Factor Load Values before the Rotation		**Varimax Orthogonal Rotation**		
		Consumption	Protecting Creatures	Environmental Pollution
Item 2	.42	.60		
Item 3	.48	.69		
Item 9	.35	.47		
Item 10	.49	.49		
Item 11	.31	.66		
Item 4	.36		.53	
Item 12	.37		.55	
Item 13	.54		.45	
Item 14	.50		.67	
Item 1	.49			.65
Item 6	.59			.63
Item 7	.49			.74
Item 8	.36			.68
Item 15	.36			.42

Table 2 shows that the factor loadings of the factors in the Environmental Attitudes subscale varied between .47and .69 for the first factor, between .45 and .67 for the second factor and between .42 and .74 for the third factor. When the total variance was examined, the three factors explained 44.02% of the total variance. The eigenvalue of the first factor was 2.19 and it explained 15.66% of the variance, the eigenvalue of the

second factor was 2.09 and it explained 14.92% of the variance, while the eigenvalue of the third factor was 1.88 and it 13.43% of the variance. These results show that the subscale which was developed to assess the environmental attitudes of children aged 60-66 months is satisfactory.

Table 3.

Factor analysis results of environmental awareness subscale

Factor Load Values before the Rotation		Varimax Orthogonal Rotation		
		Consumption	Protecting Creatures	Environmental Pollution
Item 21	.47	.68		
Item 23	.53	.69		
Item 27	.37	.58		
Item 16	.36		.39	
Item 17	.37		.60	
Item 18	.47		.55	
Item 20	.31		.55	
Item 22	.55		.74	
Item 19	.42			.47
Item 24	.43			.66
Item 25	.35			.55
Item 26	.32			.54

When Table 3 is examined it is seen that the for Environmental Awareness subscale, factor load values of first factor varied between .58 and .69, for the second factor it is between .39 and .74, for the third factor it is between .47 and .66. The total variance of the three factors explained 40.94% of the total variance. The eigenvalue for the first factor was 1.99 and it explained 16.65 % of the total variance, the eigenvalue for the second factor was 1.48 and it explained 12.33% of the total variance and the eigenvalue for the third factor was 1.43 explaining 11.95% of the total variance. These results show that the subscale which was developed to assess the environmental attitudes of children aged 60-66 months is satisfactory.

Correlations between the Environmental Awareness and Environmental Attitudes Subscales and Their Factors

Table 4.

The correlations between environmental awareness scores and factors

Factors		Consumption	Protecting Creatures	Environmental Pollution
Environmental Awareness	r	.80**	.78**	.83**
	p	.00	.00	.00
	n	310	310	310
Consumption	r	-	.41**	.50**
	p	-	.00	.00
	n	-	310	310
Protecting Creatures	r		-	.54**
	p		-	.00
	n		-	310

***p < .001*

The table shows that there is a high positive and linear correlation between the scores that the children achieved in the Environmental Awareness subscale and the factors of this subscale (r =.80 and .78, $p < 0.001$)

Table 5.

The correlations between environmental attitude scores and factors

Factors		Consumption	Protecting Creatures	Environmental Pollution
Environmental Awareness	r	.70**	.79**	.72**
	p	.00	.00	.00
	n	310	310	310
Consumption	r	-	.40**	.38**
	p	-	.00	.00
	n	-	310	310
Protecting Creatures	r		-	.39**
	p		-	.00
	n		-	310

***p < .001*

The table shows that there is a high positive and linear correlation between the scores that the children achieved in the Environmental Attitudes subscale and the factors of this subscale (r =.70 and .79, $p < .001$).

Findings about the Reliability of the Scale

The values of the Cronbach's alpha and Spearman Brown reliability coefficients of the Environmental Awareness and Environmental Attitudes subscales are given in Table 6.

Table 6.

Reliability analyses results concerning the whole EAASPC scale and factors

Subscales	Number of Items	Spearman Brown	Cronbach Alpha
Environmental Attitude	14	.75	.73
Environmental Awareness	12	.65	.66
Total	26	.60	.67

The table shows that the Cronbach's alpha reliability coefficient and the Spearman Brown reliability coefficient was .75 and .73 respectively for the Environmental Attitude subscale. The corresponding values for the Environmental Awareness subscale were .65 and .66 respectively. The Cronbach's alpha reliability coefficient and the Spearman Brown reliability coefficient for the whole EAASPC scale was .67 and .60 respectively. The calculated internal consistency coefficients have shown that reliability level of the EAASPC scale is very high.

Item Discrimination

In this section according to total correlation method, correlations between scores obtained from each item in the factors and the scores obtained from factors were calculated and item discrimination levels were tested. Item total correlation explains the correlation between scores from the items of the scale and the total score from the scale. If the item total correlation is positive and high, it indicates that the item exemplifies similar behavior and its internal consistency is very high (Büyüköztürk, 2011). Thus, each item's service level to the scale's overall objective was tested. Item-factor correlation values determined for each item were given in Table 7.

Table 7.

Item discrimination power (r) values for environmental awareness and attitude scale

Environmental Attitude		Environmental Awareness	
m.	r	m.	r
1	.41(**)	15	.37(**)

2	.39(**)	16	.38(**)
3	.34(**)	17	.35(**)
4	.34(**)	18	.37(**)
5	.45(**)	19	.38(**)
6	.39(**)	20	.34(**)
7	.42(**)	21	.33(**)
8	.36(**)	22	.40(**)
9	.38(**)	23	.39(**)
10	.37(**)	24	.34(**)
11	.40(**)	25	.32(**)
12	.45(**)	26	.32(**)
13	.47(**)		
14	.34(**)		

*** p<.001*

As it is seen from Table 7, item factor correlation coefficients for the first factor (Environmental Attitude) is between .34 and .47 and for the second factor (Environmental Awareness) is between .32 and .40. The average item discrimination power of the scale is 38. Each item has a positive and significant correlation with the whole factor ($p<0.001$). Büyüköztürk (2011) has suggested that if the item total correlation of an item is 30 or higher, it discriminates between individuals very well.

In order to test how well each item discriminates between individuals and to measure the internal consistency, scale scores were grouped into upper 27% and lower 27%. An independent group's t-test was administered to the groups to identify the significance level of the difference between the item scores in groups. First of all, the test scores were ranked from lowest to highest and 27% of the lowest group and 27% of the highest group were determined; the significance of the difference between these groups was determined.

Table 8.

Independent t-test results of comparison of higher and lower groups' average scores from environmental awareness and attitude scale

	Groups	n	$\bar{x}$	Ss	t
Environmental Attitude	Upper Group	83	28.00	0.00	19.60**
	Lower Group	83	20.56	3.49	

Environmental Awareness	Upper Group	83	21.37	1.49	42.39**
	Lower Group	83	12.13	1.32	
Total	Upper Group	83	47.88	2.06	27.78**
	Lower Group	83	35.36	3.59	

***p< .001*

In the Environmental Attitudes subscale of Environmental Awareness and Attitude Scale (EAASPC) the average score of the upper group is higher ($\bar{x}$: 28.00), there is a with a difference in favour of the upper group (p<.001). In the Environmental Awareness subscale, the average score of the upper group is also higher ($\bar{x}$: 21.37) and there is a significant difference in favour of the upper group (p<.001). This situation shows that the internal discrimination of the items was high and that the EAASPC scale has internal validity.

Results and Discusiion

In this study, the Environmental Awareness and Attitude Scale for Preschool Children (EAASPC) were developed and validity and reliability studies were conducted. The scale is composed of 28 items with pictures in two subscales: the Environmental Attitudes subscale (with 15 items) and the Environmental Awareness subscale (with 13 items). Each subscale includes the dimensions of consumption, protecting creatures and environmental pollution. At the end of statistical analyses one item in each subscale was eliminated (5^{th} and 28^{th} items) and final form of the "Environmental Awareness and Attitude Scale for Preschool Children" was finalized with 26 items.

It was seen that factor loadings of the Environmental Attitudes subscale varied between .42-.74. In the Environmental Awareness subscale the factor loadings varied between .39-.74. When the total variance obtained at the end of components analysis was examined, in the Environmental Attitudes subscale there were three factors explaining 44.02% of the total variance. For Environmental Awareness subscale, three factors explaining 40.94% of the total variance were obtained. The Spearman Brown reliability coefficient was found to be 0.60 and the Cronbach's alpha reliability coefficient was 0.67 for the whole EAASPC scale. The power of item discrimination of the scale for the first subscale (Environmental Attitudes) is between 0.34 and 0.47 and for the second subscale (Environmental Awareness) is between 0.32 and 0.40. The average item discrimination power of the EAASPC scale is 38. Each item has a positive and significant correlation with the whole factor (p<0.001). A significance test of the difference between upper and lower 27% of total scores and t-test results concerning the significance of the difference between two subscales have shown that the scale is reliable and to discriminate between the groups. Consequently, findings about the reliability and validity of the scale have shown that the Environmental Awareness and Attitudes Scale for Preschool Children (EAASPC) developed to measure environmental attitudes and awareness of pre-school children aged 60-66 months, reliably achieves its aim.

Studies that were conducted to assess children's environmental attitudes caused development of a number of assessment tools. However, as there is not a common assessment tool and using unreliable methodological administrations, studies whose theoretical bases are not clear, using instruments that are not reliable and valid, have caused no to reach a common conclusion about the importance and content of the

environmental attitude and awareness (Bogner& Wilhelm, 1996; Evans et al., 2007; Leeming et al., 1993; Musser & Malkus 1994).

First problem in identifying children's environmental attitudes is that in each study that aimed to identify the children's attitude towards environment, an assessment tool that is unique to the content of the study was developed. This situation prevents comparison between studies and programs. Second problem is that in most of the studies environmental attitudes were only measures at a basic level (Bogner & Wiseman, 2004, Johnson & Manoli, 2008). Third problem is, in some studies data collection instruments with inadequate reliability and reliability study were utilized.

While forming EAASPC weaknesses and strengths of these assessment tools used in our country were examined.

These reasons encouraged researchers to develop different assessment tools to identify children's environmental attitudes. Children's Attitudes Toward the Environment Scale (CATES) (Malkus &Musser, 1994), Children's Attitudes toward the Environment Scale-Preschool Version (CATES-PV) (Musser& Diamond, 1999); Children's Environmental Attitude and Knowledge Scale (CHEAKS) (Leeming et al., 1995) and the New Ecological Paradigm (NEP) Scale for Children (Manoli et al., 2007) can be given as examples.

CATES-PV which was developed for preschool children was composed of 15 items. This scale was adapted into Turkish by Gülay (2011) and Kahriman-Ozturk, Olgan ve Tuncer, (2012) and has been used in the studies about the environmental attitudes of the children. However it is suggested that items in this scale includes the actions that children cannot control themselves and elements that are difficult to understand for the children (Bogner & Wiseman, 2004; Johnson & Manoli, 2008).

Howewer, with CATES-PV scale, qualitative data about the items of the scale was collected. It is thought that administration time of the scales used with children should be kept short as children's attention span is short. On the other hand, it is seen that although there are 15 basic questions in CATES-PV, with sub-questions the child was asked 79 questions in total. While answering all the questions in the scale it is high possibility that the child gets bored, and cannot focus on all the questions. It is thought that in a scale that is prepared to assess young children's environmental attitudes and awareness, requiring children to reflect their choices and ideas only about the items of the scale would be better. It is thought that in further studies, if it is necessary to identify why children prefer that behavior and their knowledge about the topic, it is more appropriate to collect qualitative data with an interview form prepared for children later at a more suitable time. Furthermore, qualitative questions in CATES-PV like "Why do/don't some people like feeding birds? Have you seen a hunting man? Do you know which animal is hunted the most? Why do people hunt animals?" are thought to be very difficult for children to understand and answer.

Children's Environmental Attitudes Scale developed by Evans et.al,(2007) and adapted into Turkish by Cevher Kalburan (2009) in order to assess environmental attitudes of first and second grade children (M=6.8 year old) ant it is composed of three games. When the items in the scale was examined it was seen that there were items which were difficult to understand for five year old children (Ex: Cleaning leaves with a rake or a leaf cleaner working with an engine, deer cannot eat enough because of the density of the population, toxic wastes in a neighbor's field spread to the whole region). The scale can be criticized about the following reasons; it was developed for primary school children, it assesses only environmental attitudes, and it includes items that are difficult for the younger children to understand.

"Identification test of the awareness level of preschool children about environment" developed by Çabuk (2001) is composed of three sub-tests and sixteen items. When the items of the scale are examined there is a doubt that it cannot be administered to the whole sampling. For example, items like "Leaving litter on the beach, swimming in a dirty lake" can be incomprehensible for the children who have never been to the seaside. Moreover, questions like "Smoking during pregnancy, leaving waste into the sea etc." are thought to cause young children problems to understand and respond.

It was observed that assessment tools were presented to the children through pictures depicting positive and negative situations. Similar to the instruments developed in these studies in EAASPC picture cards depicting positive and negative situations were used.

Besides children's environmental attitudes, questions that aim to identify children's environmental awareness are also included. Administration time to younger children was considered and qualitative questions were not included. Items of the scale were chosen considering expected difficulties related to children's socio-cultural and economic differences. Validity and reliability study was conducted by administering the scale to a big sampling group.

In further studies by using the children's environmental awareness and attitudes can be compared with different variables and new correlations can be presented.

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RESEARCH ARTICLE

Okul Öncesi Çocuklar İçin Çevre Farkındalığı ve Tutum Ölçeği Geçerlik ve Güvenirlik Çalışması

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Özet

Bu araştırmanın amacı okul öncesi çocuklar için çevre farkındalığı ve tutum ölçeğinin geçerlik ve güvenirlik çalışmasını yapmaktır. Çalışma okul öncesi eğitime devam eden 310 çocukla yapılmıştır. Faktör analizi sonuçlarına göre ölçeğin Çevreye Karşı Tutum Alt Ölçeğinde toplam varyansın % 44.02'sini açıklayan 3 faktör elde edilmiştir. Çevre Farkındalığı Alt Ölçeği'nde ise toplam varyansın % 40.94'ünü açıklayan 3 faktör elde edilmiştir. Çevre Farkındalığı Alt Ölçeği faktörler arası korelasyon katsayısı sırasıyla r=.80, .78 ve .83; Çevreye Karşı Tutum Alt Ölçeği faktörler arası korelasyon katsayısı sırasıyla r=.70, .79 ve .72'dir. Çevreye Karşı Tutum Alt Ölçeğinin güvenirlik çalışması için yapılan istatistiklerde Sperman Brown güvenirlik katsayısı .75; Cronbach alpha güvenirlik katsayısı ise .73; Çevre Farkındalığı alt ölçeği Sperman Brown güvenirlik katsayısı .65, Cronbach alpha güvenirlik katsayısı ise .66; ölçeğin tümüne ilişkin Sperman Brown güvenirlik katsayısı .60; Cronbach alpha güvenirlik katsayısı ise .67 olarak hesaplanmıştır. Ölçeğin ayırdediciliğini tespit etmek amacıyla yapılan % 27 arasındaki farkın anlamlılığına ilişkin t-testi sonuçlarına göre üst grup lehine anlamlı bir fark görülmektedir. Ölçeğin madde ayırtedicilik gücünün Çevreye Karşı Tutum Alt Ölçeği için .34 ile .47; Çevre Farkındalığı Alt Ölçeği için .32 ile .40 arasında değişmektedir. Ölçeğin ortalama madde ayırt edicilik gücü ise .38'dir. Bu durum ölçeğin ayırdedici bir özelliğe sahip olduğunu göstermektedir. Buna gore, iki alt ölçekten oluşan 26 maddelik bu ölçeğin 60-66 aylık çocuklar için geçerli ve güvenilir olduğu söylenebilir.

Anahtar Kelimeler: Okul öncesi çocukları, çevre farkındalık, çevre tutum, geçerlik ve güvenirlik.