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Recycling awareness scale: A scale development study

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ABSTRACT

This study aimed to develop a scale to determine the awareness levels of secondary school students towards recycling. The sample of the research consists of 275 secondary school students studying in Afyonkarahisar, Turkey in the 2020-2021 academic year. In the research, exploratory sequential design, which is one of the mixed methods, was employed. In the study, exploratory factor analysis and item-total correlations were calculated within the scope of determining the validity of the scale. In order to determine the reliability of the scale, the Cronbach alpha reliability coefficient, item analysis based on the difference between the lower and upper group means (based on the internal consistency criterion) were performed. As a result of the analysis, a scale was developed consisting of two factors. The first factor was named 'Awareness' consisting of 12 items, and the second subfactor was named 'Consciousness' consisting of 8 items. The Cronbach alpha coefficient of the factors was calculated as 0.916 and 0.871, respectively, and the reliability coefficient for the total scale was calculated as 0.92, and it was concluded that it was a reliable measurement tool. As a result of the research, it can be said that a reliable scale in 5-point Likert type with 20 items and 2 factors was created.

Keywords: Recycling, secondary school students, scale development.

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INTRODUCTION

Natural resources, which are thought to be never-ending in the world, have started to be consumed by human beings rapidly due to reasons such as population growth, economic growth and industrialization. This fast consumption habit has caused both the depletion of natural resources and the waste resulting from consumption to become a major environmental problem today. The sustainable transfer of natural resources and a clean environment to future generations is in danger (Karatekin, 2013). Natural resources should be protected in order to meet the needs of a sustainable environment. For this reason, as a result of the rapid consumption of resources worldwide, a new strategy has been created for the use of resources. Sustainability strategies are now called the 3Rs of sustainability as reduction, reuse and recycling (Shekdar, 2009).

Recycling is the transformation of wastes resulting from consumption into secondary raw materials or by-products as a result of a number of processes (Çimen and Yılmaz, 2012). According to Ten (2017), waste materials in the recycling process are converted into secondary raw materials by passing through various physical or chemical steps and taking part in the re-production process. It is expected to reduce the need for raw materials to the recycling of waste materials resulting from consumption as raw materials. It can be said that the decreasing need for raw materials is an important step in the protection of natural resources. Recycling wastes into raw materials will also help reduce environmental problems. Reusing the products that can be recycled with the recycling application will reduce the depletion rate of natural resources and also reduce the waste products resulting from consumption (Meriç and Kayranlı, 2003). Paper/cardboard, aluminum, metal, glass, iron, copper, wood, plastic, battery, textile products and composite packaging wastes can be recycled (Arslan, 2019; Ceylan and Atabek-Yiğit, 2019). These products are defined in the Solid Waste Control

Regulation (1991) as solid materials intended to be disposed of by the manufacturer or user.

Yaman (2007) has defined the recycling stages under four headings:

- Collection: It can be in two ways, the consumers bring the waste or they are reached and picked up.
- Separation: Carefully separate the collected wastes according to the chosen purpose, sifting the useless ones.
- Evaluation: Conversion of waste materials into a reusable product after treatment.
- Bringing the New Product to the Economy: It is the reintroduction of the product to the market.

For example, if 1 ton of paper is recycled, 17 trees are prevented from being cut down; 4100 kWh of energy, 26.5 m^3 of water, 318 liters of approximately 2 barrels of oil, which is equal to 6 months of energy used by a house, are protected, and also air pollution by 74 to 94%, water pollution by 35% and water use by 45% are reduced. Preferring recycling instead of producing paper provides 60% energy saving, 80% water saving and 95% air pollution reduction. When glass is recycled, almost 100% new glass is produced with its quality intact. With the recycling of waste glass, 80% reduction in mining waste, 25% energy consumption, 20% air pollution and 50% reduction in water consumption is achieved. By recycling plastic, 80 to 90% energy savings are achieved. Almost half of the total waste generated in Turkey is domestic waste (TMMOB, 2018). Major financial burdens arise during the separation of waste materials collected for separation. To get rid of this financial burden, waste materials should be stored in recycling bins before collection (Kaya, 2017). Recycling has a lot of benefits. Our natural resources are protected, the amount of waste is reduced, it has a great contribution to the energy savings and economy, and it is an investment for future generations (Why Recycling, 2019).

Human beings should make recycling a philosophy of life for the future of humanity in the protection of natural resources and recycling of wastes. Individuals have important responsibilities in reducing waste production and separating the compulsory wastes at their sources and sending them to recycling facilities (Harman and Çelikler, 2016). However, it is stated that sensitive and conscious individuals can fulfill these duties and responsibilities (Karatekin, 2013). In order for individuals to fulfill these duties and responsibilities, they need to be conscious and aware of recycling. Awareness, which is one of the factors affecting the relationship between attitudes and behaviors, leads individuals to the right attitudes and behaviors over time (Guven and Aydoğdu, 2012). Individuals often fail to realize the damage they cause to the environment and unconsciously continue to consider the problems that will affect the world as unimportant (Ötün et al., 2017). For example, people may love birds and nature, be worried about global warming, but still prefer products with a lot of packaging while shopping or they may ignore the recycling boxes and throw the wastes in their homes into the trash without even separating them (Karatekin, 2013).

Recently, the place of environmental problems in education in schools has been examined; the suitability of a curriculum for educating people with environmental awareness has begun to be discussed (Meydan and Doğu, 2008). Sarıgöz (2013) concluded that more time should be devoted to environmental issues in the curriculum in order to raise students with environmental awareness. Sadık and Çakan (2010), in their research, concluded that a curriculum related to the environment and its problems should be developed in a way that attracts students' attention. Meydan and Doğu (2008) stated that starting from preschool education, an integrated curriculum for environmental education should be prepared throughout the entire formal education. In the Science Education Curriculum, which was renewed in 2018, the learning outcomes of the 5th, 7th and 8th grades include the environmental and recycling outcomes (MEB, 2018). One of the objectives of the curriculum is to promote environmental education which can be described as a field that helps students become aware of their environment and have the knowledge, skills and experience they can benefit from in solving environmental problems (Vaughan et al., 2003) and is an important tool that provides environmental awareness (Katoch, 2010). Surely, environmental education aims to raise individuals who are aware of the problems encountered by the world and are willing to propose solutions and strategies to these problems (Fisman, 2005). It is no doubt that this can be only achieved by the planned education which will create behavioral changes among the students.

The Ministry of National Education in Turkey was also included in the Zero Waste Project, which started in 2017, which was developed by the Ministry of Environment, Urbanization and Climate Change and Zero Waste Education began to be given to students in schools. Zero waste is called a waste management philosophy, it is a goal that covers the efficient use of resources and the prevention or reduction of waste generation by determining the causes of waste generation, and in the case of waste, it aims to separate the wastes at the source and ensure recycling (Ministry of Environment, Urbanization and Climate Change, 2017). It is obviously can be achieved by environmental education which aims to increase students' awareness of environmental protection (Bogner and Wiseman, 2004). Furthermore, the fact that students who have a high attitude towards the environment have a high understanding of the environment also shows that there is a positive connection between attitudes and environmental awareness (Coertjens et al., 2010). Thus, environmental education must be designed to increase the students' awareness of the environment and the

awareness level of the students needs to be assessed and evaluated to examine the efficiency of the curriculum.

When the literature is reviewed, it has been concluded that there are studies on environmental problems for secondary school students, however, it has been reached that these studies consist of few items related to recycling (Ötün et al., 2017; Zengin and Kunt, 2013; Aydin and Çepni, 2012; Ağtaş et al., 2019; Önder, 2015; Artun and Özsevgeç, 2015). The recycling-themed scales for secondary school students in the literature are intended to measure attitudes and behaviors (Yavuz-Topaloğlu et al., 2020) just one scale for awareness (Arslan, 2019). It has been concluded that there is a limitation in the number of awareness scales for recycling and it must be focused on. As a result of all these conclusions, it has been concluded that a scale is needed to measure secondary school students' awareness of recycling. Therefore, this study aims to develop a scale to measure secondary school students' recycling awareness levels.

METHOD

The method of the research was designed according to the exploratory sequential design, which is one of the mixed research methods. It is a method used in the development of an exploratory sequential pattern measurement tool, in which the quantitative phase is based on the qualitative phase. Qualitative data are collected, analyzed and used to improve the quantitative phase of the study (Creswell and Clark, 2020). The process of the study is to apply the interview questions prepared after the literature review to the students and to create the scale items based on the collected data; applying the scale items to a small group to measure the intelligibility of the items; after the analysis of the collected data, the necessary corrections are made and the items are applied to a larger group and the process is completed by analyzing the data.

The sampling method and sample numbers used in the study are presented in Table 1. 'Recycling Awareness Interview Form' prepared as a result of the literature review in order to create the scale items that are aimed to be developed was applied to 10 secondary school students (2 students from 5th grade, 3 students from 6th grade, 2 students from 7th grade and 3 students from 8th grade) studying in Afyonkarahisar city center during 2020-2021 education year. Keywords were obtained as a result of the analysis of the qualitative data obtained as a result of this application. The final version of the scale was obtained by consulting the expert opinion for the items created within the scope of the keywords. In order to control the intelligibility of the scale items, the scale was applied to 21 secondary school students studying in Afyonkarahisar city center in the 2020-2021 education year. In order to determine the intelligibility of the scale items, a column for students to code was added to the scale and students' behaviors were observed while the students answered the scale items. Necessary corrections were made taking into account the coding and feedback received from the students and the scale was applied to 275 secondary school students studying in Afyonkarahisar city center in the 2020-2021 academic year. The data obtained from the students were analyzed.

Table 1. Sampling method and the number of samples used in the process of developing a recycling awareness scale for secondary school students.

Data collection tool	Sampling method	Sample
Interview questions	Convenient sampling	10 middle school students (5th, 6th, 7th and 8th Grade)
Small-group practice (Item Understandability)	Convenient sampling	21 middle school students (5th, 6th, 7th and 8th Grade)
Larger group application (Item analysis)	Convenient sampling	275 middle school students (5th, 6th, 7th and 8th Grade)

Participants

A minimum of 5 individuals per variable is considered sufficient for the number of samples (Gorsuch, 1983; cited in Child, 2006). Research data were collected from 275 secondary school students continuing their education in secondary schools in Afyonkarahisar city center in the 2020-2021 academic year. 172 female and 103 male students selected by convenient sampling method, 57 students from 5th grade, 62 from 6th grade, 60 from 7th grade and 96 from 8th grade, participated in the study (Table 2). In this sampling method, the researcher selects the participants who are willing and suitable for the study (Şahin and Karakuş, 2019) and this method is preferred as it is economical in terms of time and easily accessible (Büyüköztürk et al., 2010).

Table 2. The number of secondary school students in the sample.

Grade	N
5th Grade	57
6th Grade	62
7th Grade	60
8th Grade	96
Total	275

Development process of the measurement tool

While developing the measurement tool, qualitative and quantitative data were collected. As a result of data analysis, a 5-point Likert-type scale was developed to measure secondary school students' awareness of recycling. Scale items consist of five degrees between strongly disagree and completely agree. As the score obtained from the scale increases, the awareness level of secondary school students towards recycling increases or vice versa. The development steps of the scale are presented in Figure 1.

Qualitative data collection

The qualitative data collection and sampling method were used to select the participants during the qualitative process of the study, the data analysis and the outputs of this process are given in Table 3.

In the first step of the scale development study, a Recycling Awareness Interview Form was prepared to describe the awareness levels of secondary school students towards recycling. During the form development process, the opinions of 3 science teachers were sought and 10 open-ended questions in the prepared interview form were directed to 10 secondary school students. According to the data from the answers to the open-ended questions, key concepts were formed as a result of the coding made with two experts in the field of curriculum and instruction.

Collection of quantitative data

Quantitative methods and outputs used in the process of developing a recycling awareness scale for secondary school students are given in Table 4.

The scale items were prepared and the item pool was formed by considering the answers given by the students to the open-ended questions in the Recycling Awareness Interview Form and taking into account the expert opinions under two key concepts created as a result of the literature review. A 5-point Likert-type rating was preferred for the answer options for the scale items. It is thought that as the score obtained from the scale increases, the awareness level of secondary school students towards recycling will increase. The scale items were examined in terms of intelligibility and suitability for the purpose by experts who had done scale development studies before, and the items that were found to be problematic were corrected after the feedback. After the corrections, an awareness scale for recycling consisting of 54 items was created.

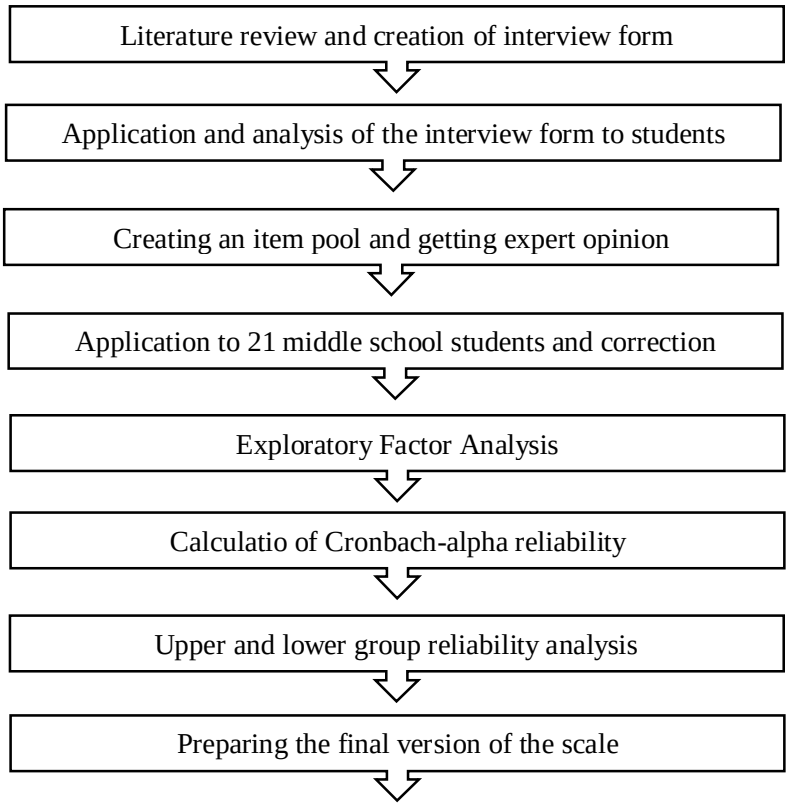

Figure 1. Development steps of the measurement tool.

Table 3. Qualitative methods and outputs used in the process of developing a recycling awareness scale for secondary school students.

	Qualitative data collection	Qualitative data analysis	Developing the measurement tool
Process	Convenience sampling	Coding	2 key concepts as sub-factors of the scale
	Awareness interview form for recycling	Creating key concepts	Creating item pool
			Intelligibility check of items
Outputs	Interview form documents	Coded document	
		2 subdimension for recycling awareness	54-item pre-application scale

Table 4. Quantitative methods and outputs used in the process of developing a recycling awareness scale for secondary school students.

	Quantitative data collection	Quantitative data analyses	Interpreting
Process	Pre-application	Exploratory factor analysis Validity analysis of the scale Reliability analysis of the scale	Interpretation of the items collected under the factors
Outputs	Analyses	Factor loadings	Description of dimensions
		Item-total correlation	
		Low-high group analyses t-test	A valid and reliable measurement tool that determines secondary school students' awareness of recycling.
		Cronbach-alpha	
		Pearson Product Moment Correlation	

Creating item pool

In order to create an item pool, a large-scale literature review was conducted and studies on recycling were examined (Harman and Çelikler, 2016; Karatekin, 2013; Ceylan and Atabek-Yiğit, 2019; Arslan, 2019; Çimen and Yılmaz, 2012; Yavuz-Topaloğlu et al., 2020; Ötün et al., 2017; Güven and Aydoğdu, 2012). As a result of the literature review, the key concepts of awareness and recycling awareness were formed. An interview form consisting of 10 open-ended questions prepared within the framework of key concepts was directed to 10 secondary school students who did not participate in the scale development study. The questions in the interview form are presented in Table 5.

Considering the answers taken from the student interview form and key concepts, 54 scale items were written for the item pool.

Table 5. Recycling awareness interview form questions.

Questions
1- What does recycling mean? Can you explain?
2- Do you know which products are recycled? Can you explain?
3- Do you know the collection places of these recyclable products? If you know, can you explain where you saw it?
4- Why do you think recycling is necessary/important?
5- What are the contributions of recycling to our family and country?
6- Do you know the recycling sign, can you draw it?
7- Do you pay attention to buying products with recycling signs?
8- What do you do about recycling? What would you like to do if you had the opportunity?
9- How do you think people who are conscious of recycling should behave?
10- Where did you learn this information about recycling?

FINDINGS

In this part of the research, the findings obtained as a result of the analysis are given.

Exploratory factor analysis

Factor analysis is the process of finding out a small number of unrelated and conceptually significant new variables (factors, dimensions) by gathering interrelated variables together and obtaining functional definitions of concepts by using factor load values (Büyüköztürk, 2014). Exploratory factor analysis, on the other hand, is the process of revealing a new structure by questioning the relationships between variables (Can, 2019). To determine the construct validity of the created scale, exploratory factor analysis was performed.

As a result of the first analysis, KMO (Kaiser – Meyer – Olkin) value was checked for sampling convenience and it was calculated as 0.929. The result of the Barlett test for the integrity of the scale was significant ($p < 0.05$). A high KMO value indicates that the sample size is sufficient for factor analysis; if the Barlett test result is significant, it indicates that there are high correlations between the variables and that the data is suitable for factor analysis (Karagöz and Bardakçı, 2020). After the items were removed during the factor analysis, the KMO (Kaiser – Meyer – Olkin) value changed to 0.926. KMO and Barlett test initial and final analysis results are presented in Table 6.

The rotation method is used in cases where the items are unrelated and the data is reduced by dividing it into units (Ho, 2006; cited in Can, 2019). The varimax rotation method, which is one of the rotation methods, was used in the analysis process. Since the aim is to develop a measurement tool that will collect the most information with the least amount of items by reducing the number of variables, and the factors are considered to be unrelated, the varimax method was chosen as the rotation method (Can, 2019; Büyüköztürk, 2014). As a result of the first-factor analysis, it was seen that some items in the scale had a low factor loading, some items were under more than one factor, and they were theoretically under an unrelated factor. A total of 34 items, including items with a high load on more than one factor, then items with a load of less than 0.35 and items with a difference of less than 0.10 between the two load values, were excluded from the scale by repeating the factor analysis. It is a good choice if the difference between two high load values is at least 0.10 and the factor load value is 0.45 or higher, but this limit can be reduced to 0.30 (Büyüköztürk, 2014). It was determined that the rate of explaining the total variance of all items on the scale was 48.545%. It is considered sufficient that the variance explained in studies conducted in social sciences is between 40 and 60% (Scherer, Wiebe, Luther and Adams, 1998 cited in Tavşancıl, 2005). The total variance explained by the secondary school students' awareness of the recycling scale is presented in Table 7.

Table 6. KMO and Barlett test initial analysis and final analysis results.

Initial results			Final results		
KMO value		.929	KMO value		.926
Barlett Testi	Approx.Chi-Sguare	7935.453	Barlett Testi	Approx.Chi-Sguare	2783.552
	Df	1431		Df	190
	Sig.	0.000		Sig.	0.000

Table 7. Secondary school students' recycling awareness scale total variance explained.

Component	Initial Eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.364	41.821	41.821	7.859	39.295	39.295	5.712	28.562	28.562
2	2.361	11.805	53.626	1.85	9.25	48.545	3.997	19.983	48.545

The rotated component matrix of the scale is given in Table 8. When the findings after the rotation are examined in Table 8, it is seen that there are 12 items in the 1st factor and 8 items in the 2nd factor, and 20 items in total. It is seen that the factor load values of 20 items in the scale vary between .527 and .794. The item loads in the 1st factor ranged from .527 to .794, and the item loads in the 2nd factor ranged from .577 to .702. Factor load

Table 8. Rotated component matrix table of secondary school students' recycling awareness scale.

Items	Components	
	1	2
A1	.794	
A2	.721	
A3	.719	
A4	.718	
A5	.697	
A6	.665	
A7	.642	
A8	.636	
A9	.618	
A10	.611	
A11	.598	
A12	.527	
B1		.702
B2		.698
B3		.693
B4		.652
B5		.634
B6		.633
B7		.580
B8		.577

values above 0.30 are considered sufficient, while load values up to 0.60 can be considered medium, and load values above 0.60 can be considered high (Büyüköztürk, 2002). When the load values of the items in the scale are examined, it can be said that they are quite high. It is seen that the scale developed as a result of the findings reflects the sub-dimensions formed in the light of the information obtained from the literature review and interview questions in the preparation stage and has two factors. Among the sub-dimensions created, the items prepared under awareness about recycling constituted the 1st factor. The 1st factor was named 'awareness' as it includes items reflecting general awareness about recycling. Among the sub-dimensions created, the items prepared under the awareness of recycling constituted the second factor. The second factor was determined as 'consciousness' as it contains items that reflect the information that conscious people should know about recycling.

The answers of the 275 secondary school students who were included in the upper and lower groups were analyzed with the independent t-test. The data obtained for both sub-dimensions are presented in Tables 9 and 10.

The total scores obtained from the awareness scale for recycling applied to secondary school students were ranked from highest to lowest, and two groups were determined as the upper group of 27% (n = 74) and the lower group of 27% (n = 74). It was concluded that the internal consistency coefficients for each factor and the total scale were found to be high. When the findings in Tables 9 and 10 were examined, it was determined that the difference between the lower and upper groups of all items was significant as a result of the independent sample t-test applied to determine the significant difference between the upper and lower groups determined according to the total scores of each item in the scale ($p < .05$).

Cronbach alpha reliability coefficient analysis was performed to analyze the reliability for each factor and the whole scale, and the obtained Cronbach alpha coefficients, as well as the variance ratios explained by all the factors and the scale, are given in Table 11.

As seen in Table 11, the variance rate explained by the first factor is 28.562%, and the variance rate explained by the second factor is 19.983%, with a total of 48.545%. The Cronbach alpha coefficient of the 1st factor (Awareness) is .916, and .871 for the 2nd factor (Consciousness).

Table 9. Validity analysis results of the awareness sub-dimension (factor 1) of the recycling awareness scale for secondary school students.

	Items	Varimax factor load	Common factor variance	Item total correlation	t	p
Awareness	A1	.794	.668	.773	8.979	.00
	A2	.721	.554	.695	8.527	.00
	A3	.719	.550	.700	8.065	.00
	A4	.718	.618	.741	10.283	.00
	A5	.697	.573	.727	10.373	.00
	A6	.665	.514	.691	8.429	.00
	A7	.642	.433	.633	7.538	.00
	A8	.636	.474	.652	9.597	.00
	A9	.618	.435	.637	8.094	.00
	A10	.611	.452	.629	10.545	.00
	A11	.598	.376	.594	7.260	.00
	A12	.527	.312	.530	8.087	.00

Table 10. Validity analysis results of the consciousness sub-dimension (factor 2) of the recycling awareness scale for secondary school students.

	Items	Varimax factor load	Common factor variance	Item total correlation	t	p
Consciousness	B1	.702	.509	.661	14.242	0.00
	B2	.698	.529	.671	16.760	0.00
	B3	.693	.548	.679	15.379	0.00
	B4	.652	.455	.616	14.611	0.00
	B5	.634	.476	.639	13.545	0.00
	B6	.633	.457	.631	13.863	0.00
	B7	.580	.416	.585	13.771	0.00
	B8	.577	.359	.555	9.861	0.00

Table 11. Explained variance rates and reliability coefficients of secondary school students' recycling awareness scale and its sub-factors.

Factors	Item number	Explained variance	Cronbach alpha
Awareness	12	28.562	.916
Consciousness	8	19.983	.871
Total	20	48.545	.920

The total Cronbach alpha reliability coefficient of the scale is .920. Considering that scales with a reliability coefficient of .70 and above are considered reliable in scale development studies (Büyüköztürk, 2014), it can be said that secondary school students' awareness of the recycling scale has very high reliability.

Pearson Product Moment Correlation analysis was performed to calculate the relationship between the factors of the scale and the results are given in Table 12.

As given in Table 12, it is seen that there is a moderate positive correlation between the factors of the secondary school students' awareness scale for recycling ($r = .537$; $p < .05$).

Table 12. Mean and correlation values of secondary school students' recycling awareness scale and its factors.

Factors	N	$\bar{x}$	1st Factor - 2nd Factor Correlation	P
1.Factor	275	54.643	.537*	0.000
2.Factor	275	32.298		

DISCUSSION AND CONCLUSION

In this study, a 5-point Likert-type 'Recycling Awareness Scale' was developed to determine the awareness levels of secondary school students towards recycling. In the first stage, the scale consisting of 54 items was applied to 275 secondary school students and as a result of the analysis of the obtained data, 34 items were removed from the scale. As a result, a two-factor and 20-item awareness scale for recycling was obtained. The first factor was named awareness and the second factor was named consciousness. The exploratory factor analysis and item-total correlation results applied to the scale show that the scale provides validity. To analyze the reliability of the scale, the results of the Cronbach alpha reliability coefficient and the lower-upper group mean difference also determined that the scale is reliable. The Cronbach alpha reliability coefficient for the whole scale was calculated as 0.920, and for the factors as 0.916 and 0.871, respectively. All analyzes and findings show that the developed scale consists of items suitable for measuring awareness about recycling. The score that can be obtained from the scale is a minimum of 20 and a maximum of 100. As the score obtained from the scale increases, the awareness level of the students toward recycling increases. The application of this scale, which was developed to determine the awareness levels of secondary school students towards recycling, on different sample groups in new studies will increase the validity and reliability of the scale. Considering that the awareness scale for recycling is one of the first scales developed for secondary school students, it can be said

that the findings in this scale can be a source for new scale development studies. Future studies on recycling can be conducted in areas such as the benefits of recycling, its contribution to society, and examine the relationship of recycling with different variables.

The results of the study conclude that this data collection tool can be used to get data about the students' recycling awareness level. The scale on recycling is generally on attitude (Ugulu, 2015; Avan et al., 2011) and the studies usually focus on the behavior of the people about recycling (Kumar, 2019; Sujata et al., 2019; Minelgaitė and Liobikienė, 2019), it is also vital to examine the awareness towards recycling especially among the young. The behaviour of the people is affected by such factors as their attitudes, beliefs, self-efficacy, etc. However, the awareness of something has as much importance as the other variables in their behaviour as someone needs to be aware of something to take action and act accordingly. So, it is essential to determine the recycling level of the students especially at the early ages to be able to understand them and to describe the current situation so as to make the arrangemets and the development in the curriculum and to intervene in the educational environment. Consequently, the scale developed through this study will contribute to the literature on recycling and will also help the researchers focus on how to promote environmental subjects in the curriculum.

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