



# THE DEVELOPMENT AND INITIAL TESTS FOR THE PSYCHOMETRIC PROPERTIES OF THE EQUAL OPPORTUNITY IN EDUCATION SCALE

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## Abstract

*Although equality of opportunity in education is a current and important issue, most of the studies on this subject are based on theoretical studies rather than empirical studies. The main reason for this can be said to be the lack of a valid and reliable measurement tool in this field. For this reason, this study aims to develop a valid and reliable measurement tool for determining pre-service teachers' perceptions of equality of opportunity in education. For this purpose, data were collected from four different samples using a simple random sampling technique. First, a literature review was conducted, and qualitative interviews were conducted with the first sample on equal opportunities in qualitative education. After the item pool was created, the first application was made in order to determine the factor structure of the measurement tool. Data were collected from a separate sample to test the resulting structure and perform confirmatory factor analysis. Then, in the context of reliability studies of the measurement tool, calculation of the internal consistency coefficient, extracted mean variance, composite reliability and test-retest processes were used. As a result, a valid and reliable scale for determining the perception of equality of opportunity in education consisting of three factors and 23 items has been brought to the education literature.*

**Keywords:** *equal opportunity in education, factor analysis, validity and reliability, scale development*

## Introduction

Although some concepts seem to be understood in the literature, they are not fully clarified. The concept of equality, which is one of them, has been discussed for a long time, but its exact meaning has not been revealed. In his Defense (Phaedo), Socrates (1957), while discussing equality, did not dwell on what it means and did not try to make a definition. Rather, he emphasized the nature and intuitiveness of equality. In other words, he is more concerned with the application of the concept in principle rather than its definition. Contrary to Dworkin's (2002:142) statement that "people who praise or despise it cannot agree on what they praise or despise" to indicate that equality is a controversial and difficult concept, Socrates stated that equality is easy and understandable. If equality needs to be defined, it can be said that equality is having similar qualities in at least one aspect (Dann, 1975; Westen, 1990). In this respect, although the concept of equality is closer to "similar" than "same", there are sharp differences between them (Alsheh et al., 2013). For example, saying that two different groups of people are equal in something is not the same as saying that they are similar to each other. The concept of

equality also emphasizes the differences between the things being compared. The absence of differences between the things being compared eliminates the need for the concept of equality. Because absolute qualitative equality leads to the concept of "same" (Tugendhat & Wolf, 1983).

Today, the concept of equality has become a tool used to combat discrimination based on race, gender, and ethnicity. Especially under the pressure of groups with feminist views, this concept is frequently used to support women (Bregant, 2014; Fineman, 2008; Rogošić et al., 2020). Dworkin's (2002) theory of equal distribution of resources and equal treatment of individuals is very difficult to apply in practice. This is because it is not possible to treat everyone equally since each person has different qualities compared to the other, i.e. some are smarter and some are less intelligent, some are hardworking, and some are lazy. Equality is not the equal distribution of wealth to everyone living in a country, but the ability to offer equal opportunities to each citizen. Equality also means that the state meets the basic needs of its citizens and provides equal opportunities according to their abilities. For this reason, sometimes treating and distributing wealth equally by ignoring individual abilities can lead to injustice. Equality emerged as a natural reaction to the fact that people are physically or mentally different. Equality is therefore based on the principle that differences should not be turned into discrimination and that no human being should be excluded.

The concept of equality is used in different ways in different places and times, which leads to confusion with other concepts. One of the most frequently confused concepts of equality is the concept of justice. While equality refers to discrimination and non-discrimination, justice is rather a state of judgment and value. Miller (1997) divided equality into two types and argued that the first type of equality is distributive according to justice and that rights should be distributed equally. The second type of equality, on the other hand, is not distributive and has nothing to do with the concept of justice, but rather refers to a society in which people do not discriminate against each other. Erdoğan (2008) also agreed with this idea and stated that equality, as a requirement or principle of justice, is one of the requirements of justice in a certain sense, although not in every sense. Barker (1951) stated that justice depends on the principle of freedom and freedom depends on the principle of equality. Therefore, although the concepts of equality and justice are similar in terms of some characteristics, there are relative differences between them.

There is no equality that emphasizes the physical and mental differences of the individual. This concept should be understood as equal social status and equal distribution of rights. Therefore, it would not be correct to say that equality cannot be found by emphasizing physical and mental differences. Gutmann (1995) stated that a state cannot apply full equality to its citizens of different races, ethnicities, religions, or genders. In this case, education has a major role to play and should foster mutual respect among citizens. In particular, it would be pointless to expect equality of opportunity only from the state and its full implementation.

Equality has different dimensions such as social equality, which means equal distribution of rights and opportunities; political equality, which gives everyone an equal share in public administration; economic equality, which means that wealth should be distributed more moderately by protecting the interests of weak people; legal equality, which stipulates that there should be no discrimination before the law; and international equality, which emphasizes that there should be no discrimination between states. While each of these concepts draws attention to a different aspect of equality, one of the most frequently used concepts related to equality is the discourse on equality of opportunity in education. The short definition of equal opportunity in education is that educational opportunities are accessible to everyone according to their abilities and interests (Aksu & Canturk, 2015). Brookover and Lezotte (1981) defined equality of opportunity in education as the guarantee that the state offers equal educational opportunities to all its citizens regardless of gender, race, perception, and economic conditions. In this context, it is also a matter of debate whether the privatization of schools will contribute to the reduction

of discrimination among students (Anderson et al., 2019). Dovemark (2017) pointed out that privatization of schools will increase competition while also increasing inequality. According to Kubiak (2023), inequality can cause students to become disinterested in school.

A large part of individuals' lives is spent in school. While education prepares individuals for the future, it also teaches them the skills, concepts, and virtues necessary for them to be free, equal, and responsible citizens (Neufeld, 2013). Being aware of one's rights and opportunities depends on receiving a good education because, educated individuals have more knowledge about citizenship rights and are more interested in the governance and future of the country than uneducated individuals (Verba et al., 2002). The importance of education for the individual and society is not open to debate. However, the issue of who has access to the rights and opportunities to receive high quality education is an important and debated issue.

The debate on improving the educational process is often conducted on the basis that children from different social strata should have the same educational conditions. This approach implies the equality of educational opportunities for children from various socio-economic groups (Froomkin, 1976). Although the discourse on equal opportunities in education is associated only with educational opportunities, in fact, this definition expresses only one aspect of the concept of equal opportunities in education. As a matter of fact, Campbell and Klein (1982) criticized those who emphasized only this aspect of equality of opportunity in education and stated that this concept cannot be limited to access to education and educational opportunities. For example, while Brookover and Lezotte (1981) examined existing education programs, they evaluated equality of opportunity in education only in the context of educational opportunities, resulting in an incomplete understanding of this concept. Equality of opportunity in education refers to a process that starts from the birth of an individual and does not pause as long as his/her education life continues. The inequalities that emerged among students in terms of technology and internet facilities in the distance education process during the coronavirus pandemic period constitute only one dimension of equality of opportunity in education.

Inequalities in the birth of a child; the opportunities in the country or place of birth, the educational status of his/her family, socio-economic levels, the sociocultural structure of the environment in which he/she grows up, the age at which he/she receives education, the equipment of the schools he/she attends, the competence of teachers, and many other reasons affect the opportunities of individuals to receive equal education. For example, it would not be correct to say that a child born in a poor village in Africa and a child born in a developed canton of Switzerland would have equal opportunities to receive education. When there are (natural) inequalities arising from the way human beings are born, states and legal bodies work to make people who are naturally unequal legally equal. When natural inequalities are combined with social inequalities, which Rousseau (1950) also mentioned in his Social Contract Theory, it is not possible to talk about students' equality of opportunity in education. Therefore, it is obvious that complete equality of opportunity in education cannot be achieved. However, it is possible to minimize inequality.

Today, it can be said that the development of technology and the internet have a positive effect on the solution of equality of opportunity in education. This is because the online lessons uploaded online by good teachers allow students, regardless of socioeconomic status, to access the lessons. Valdez (2004) stated that technological opportunities increase the accessibility of educational opportunities. Students who have access to computers and the Internet can access information more easily than other students. On the other hand, it is also possible to think that the development and affordability of technology trigger inequality of opportunity in education (Schofield & Davidson, 1998). In other words, scientific and technological developments open the door to new inequalities in education.

There are many studies in the literature on equal opportunities in education. Some of these have been observed to explore equality of opportunity in education from a historical

perspective (Yen-Ting, 2018), conceptual perspective (Chand & Karre, 2019; Lazenby, 2016a; Shields et al., 2017; Shields, 2023; Shrage, 2017; Temkin, 2016a), from a political perspective (Maclean, 2003; Singh, 2014), from the perspective of the results of international exams (Schütz et al., 2005; Woessmann, 2004), from a democratic perspective (E. Anderson, 2007), and from a teacher training perspective (Watras, 2006). Most of these studies in the literature examined equality of opportunity in education from a theoretical perspective. The rarity of empirical research in the field shows that there are no valid and reliable measurement tools in this field.

### *Research Aim and Research Questions*

This research aimed to develop a valid and reliable scale to empirically contribute to the issue of equality of opportunity in education. In the first stage of the study, the definition of equal opportunity in education and how it is understood by academic circles were focused on. Then, it was examined whether there were any quantitative studies in this field and whether there was a valid and reliable scale. At this stage, the item pool was created, and it was determined whether such a scale was needed. In the literature review, it was observed that there is no such scale and there is a need for a scale to measure the level of equality of opportunity in education. As a result of the research, a valid and reliable scale that will contribute empirically to the literature has been provided.

In addition, since scale development is a complex multi-step process, it was aimed to strengthen the field both theoretically and statistically by developing the scale of equality of opportunity in education in the hope of advancing the sociology of education research. In this context, the following research question was created:

- Can a valid and reliable tool be developed to measure the "perception of equal opportunity in education"?

## **Research Methodology**

### *General Background*

This study was designed in accordance with the quantitative approach of the positivist theory (Aliaga & Gunderson, 2002; Creswell, 2003; Gül, 2023a, 2023b). In addition, since scale development studies have an exploratory feature depending on their purpose (Carpenter, 2018), this study was carried out in accordance with the nature of scale development studies. The study was designed, and data were collected in the 2021-2022 academic year. It was aimed to develop a measurement tool regarding equality of opportunity in education. The validity and reliability of the scale were tested with statistical analyses performed on the collected data.

### *Sample*

The study was conducted on four different samples consisting of university students in the spring semester of the 2021-2022 academic year. The first sample consisted of 17 primary school teachers. This sample was used to enrich the item pool by conducting qualitative interviews. Yamane's (1967) formula was used to determine the sample size for the data to be collected for EFA and CFA. This formula is as follows:

$$n = N / (1 + N(e)^2)$$

Where N is the population size, n is the sample size, and e is the level of precision. When this formula is applied to the study universe, we get the following equation:

$$n = 5000 / (1 + 5000(.05)^2) = 370$$

According to Yamane's formula, the number of samples must be at least 370. In this study, the total of both samples is 651. For this reason, the sample size of the study was deemed sufficient. According to Fabrigar et al. (1999), the samples determined for EFA and CFA should be different from each other. For this reason, different samples were used for EFA and CFA in the study. An attempt was made to reach a sufficient sample size to apply EFA to the second application data. In the literature, researchers (McCrosky & Young, 1979; Worthington & Whittaker, 2006) recommend a sample size of over 300 for EFA. Therefore, the second study group consisted of 356 students, 266 (74.7%) of whom were female and 90 (25.3%) of whom were male, from 3 different universities. The third sample consisted of a total of 295 university students, 227 (42.4) women and 68 (12.7) men. Since CFA will be performed on the data obtained from this sample, the number of samples was deemed sufficient because CFA requires a smaller sample size than EFA (Kyriazos, 2018; Tabachnick & Fidell, 2007). Additionally, the statistical power and precision of a CFA model parameter estimates are affected by the sample size (Brown, 2015), whereas in CFA a hypothetical model is tested. In the fourth application, the measurement tool was administered twice for two weeks to 30 people consisting of 22 women and 8 men.

Exploratory Factor Analysis (EFA) was conducted on the data obtained from the application with the first sample, and Confirmatory Factor Analysis (CFA) was conducted on the data obtained from the application with the second sample. Then, a different third study group was used to measure the stability of the measurement tool. However, it may be more difficult to administer the EOSE twice to the same sample group within a certain time interval than administering it once. For this reason, test-retest reliability analyses were conducted on a smaller third study group.

**Table 1**  
*Study Groups Participating in the Research*

Study Groups	Scale Applied	Statistical procedures
<b>First Study Group</b>	Interview form	Interviews were conducted with this sample group to enrich the pool of items expected to measure the perception of equality of opportunity in education.
<b>Second Study Group</b>	Scale (EOSE)	Ensuring construct validity and applying EFA
<b>Third Study Group</b>	Scale (EOSE)	Performing CFA to test construct validity and calculating composite reliability coefficients
<b>Fourth Working Group</b>	Scale (EOSE)	Calculating the correlation between the first and second application for test-retest reliability between measurements

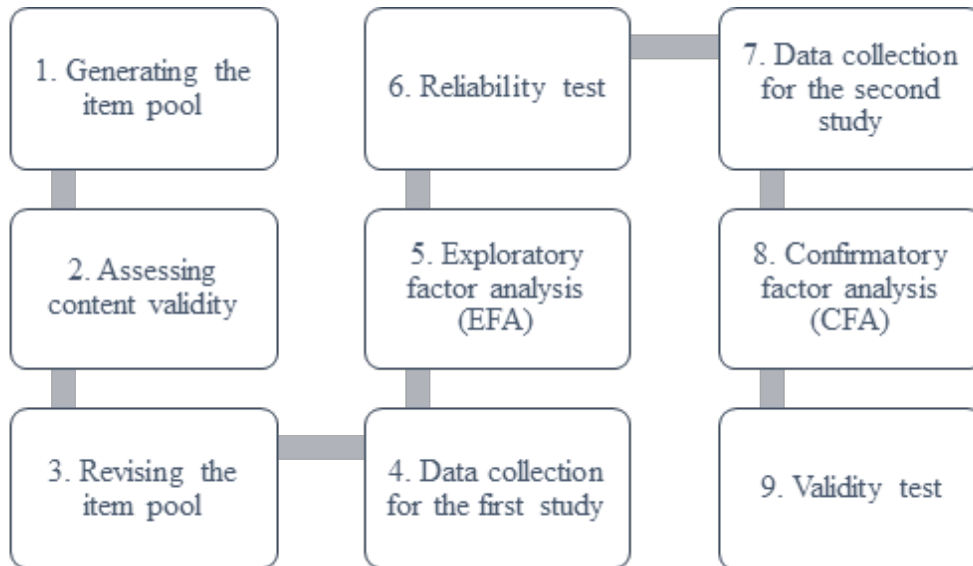
### *Data Analysis*

Development of the item pool and form for the development of the Equal Opportunity in Education Perception Scale (EOSE) and the validity and reliability analyses are presented. While content validity and construct validity were utilized within the scope of the validity of the measurement tool, Cronbach's Alpha internal consistency reliability, average variance extracted (AVE), composite reliability (CR), item analysis and test-retest techniques were utilized within the scope of reliability analysis. The scale has 3 sub-dimensions and 23 items in total. The maximum score that can be obtained from the scale designed as a 7-point Likert scale is 91, while the minimum score is 23. The first sub-dimension of the scale is named as Familial Factors, the second sub-dimension as Geographical-Social Factors, and the third sub-dimension as Administrative Factors. A high score in the sub-dimensions of the scale emphasizes that the perception of that sub-dimension is negative, while a low score emphasizes that the perception of that sub-dimension is positive. In other words, since all of the scale items consist of negative statements, the total score obtained in each sub-dimension indicates that the perception of equality of opportunity in education is negative, while a low score indicates a positive perception.

### **Research Results**

Each stage of the research process depicted in Fig. 1 significantly contributes to establishing the validity and reliability of the EOSE. The sequential approach for developing the measurement instrument comprises nine key steps: (1) generating the item pool, (2) assessing the content validity of the item pool via expert panel reviews, (3) revising the item pool, (4) collecting data for the first study, (5) performing exploratory factor analysis (EFA), (6) reliability test, (7) collecting data for the second study, (8) conducting CFA, and (9) performing a validity test. Figure 1 outlines the general path to follow in the process of developing the measurement instrument. The process begins with the creation of scale items. In order to create the item pool, the literature was first reviewed, and domestic and international studies on equality of opportunity in education were examined. As a result of the literature review, a pool of 27 items was created. While determining the statements to be included in the item pool, care was taken to ensure that they were in a way to exemplify all possible qualitative content in the light of other known alternative assumptions about equality of opportunity in education because the item pool should be more comprehensive than the theoretical framework in the target area (Clark & Watson, 1995). According to Fabrigar et al. (1999), an important factor may not occur if the researcher inadequately samples the variables in the relevant field. Therefore, in order to enrich the item pool, a group of 17 primary school teachers were asked about their opinions on equal opportunity in education. A semi-structured form consisting of 6 questions was prepared to obtain teachers' opinions. The interview form included questions such as: what do you understand when it comes to equality of opportunity in education, do you think that rich people receive better education than those who are poorer than them, etc. In line with the opinions of the teachers, the number of statements in the item pool increased from 27 to 42.

**Figure 1**  
*The Process of Developing a Measurement Instrument*



*Content Validity*

In order to ensure the content validity of the created item pool, it was given to 4 faculty members from the fields of Measurement and Evaluation, Psychological Counseling and Guidance, Curriculum Development and Educational Philosophy from the field of Educational Sciences to evaluate the items in terms of representing the feature to be measured. Davis's (Davis, 1992) technique was utilized in the evaluation of content validity and expert opinion form. According to this technique, expert opinions are evaluated as (a) the item represents the characteristic, (b) should be corrected a little, (c) should be corrected a lot, and (d) the item does not represent the characteristic. The sum of the a and b values in the forms received from the experts is divided by the number of experts to calculate the content validity index. Items where this value is more than 0.80 are considered to be sufficient in terms of content validity, while items below this value are removed from the form. Accordingly, as a result of the expert feedback, 5 items with a value less than 0.80 were removed from the scale, leaving 37 items in total. In addition, the agreement percentages of the forms received from the experts were calculated as 91%.

In order to conduct validity and reliability analyses of the scale with the remaining items in the scale form, a pre-application form was created before it was applied to the target group. The scale was designed as a 7-point Likert scale with the following options: "Strongly Disagree", "Disagree", "Somewhat Disagree", "Neither Agree nor Disagree", "Agree", "Somewhat Agree" and "Strongly Agree". For the scoring of the scale items, each option was given a number from 1 to 7, starting with "Strongly Disagree". The scale was then administered to a group of 48 university students to determine whether the items were understood and whether there were any difficulties in understanding. In addition, the total score of each student was calculated based on the duration of the administration of the scale. As a result of the pilot application, the process of transforming the scale into an appropriate format that facilitates statistical procedures and prevents confusion was completed.

### *Construct Validity*

EFA and CFA tests were applied to test the construct validity of the data obtained from the EOSE, respectively. In the application of EFA and CFA and using ML (maximum likelihood) as a parameter estimation technique, it is assumed that the observed variables have a multivariate normal distribution (Bayram, 2016; Kılıç, 2019). In the studies conducted in the field of Social Sciences, these values were examined since the understanding of whether the data have normal distribution characteristics is mostly provided by Skewness and Kurtosis values. According to some researchers (Field, 2009; George & Mallery, 2010) the presence of these values between +2 and -2 is accepted as sufficient evidence that the data fulfill the normality distribution condition. Since the kurtosis (-.443 - 1.683) and skewness (-.019 - 1.949) values of each of the observed variables in this study were between +2 and -2, it was assumed that the data had a multivariate normal distribution.

### *Exploratory Factor Analysis (EFA)*

EFA is conducted to test whether there is an order among the responses of the respondents to the items of the scale being developed (Tavşancıl, 2002) and to determine the factor structure of the measurement tool. Prior to EFA, the KMO value was calculated as 887 and Bartlett's test results were statistically significant ( $\chi^2 = 2171.603$ ,  $SD = 253$ ). As a result of the first EFA, an 8-factor structure explaining 54.65% of the total variance was reached (Table 2). However, it was determined that there were items that formed factors alone or with two items. The items that formed a factor with a single item or two items and the items that had loading values in more than one factor were removed from the measurement tool. Then, in the repeated EFA, a 3-factor structure explaining 50.60% of the total variance was obtained as a result of the direct oblimin rotation technique ( $\delta=0$ ,  $\kappa=4$ ) due to its factorization technique and factor relationships (Carpenter, 2018).



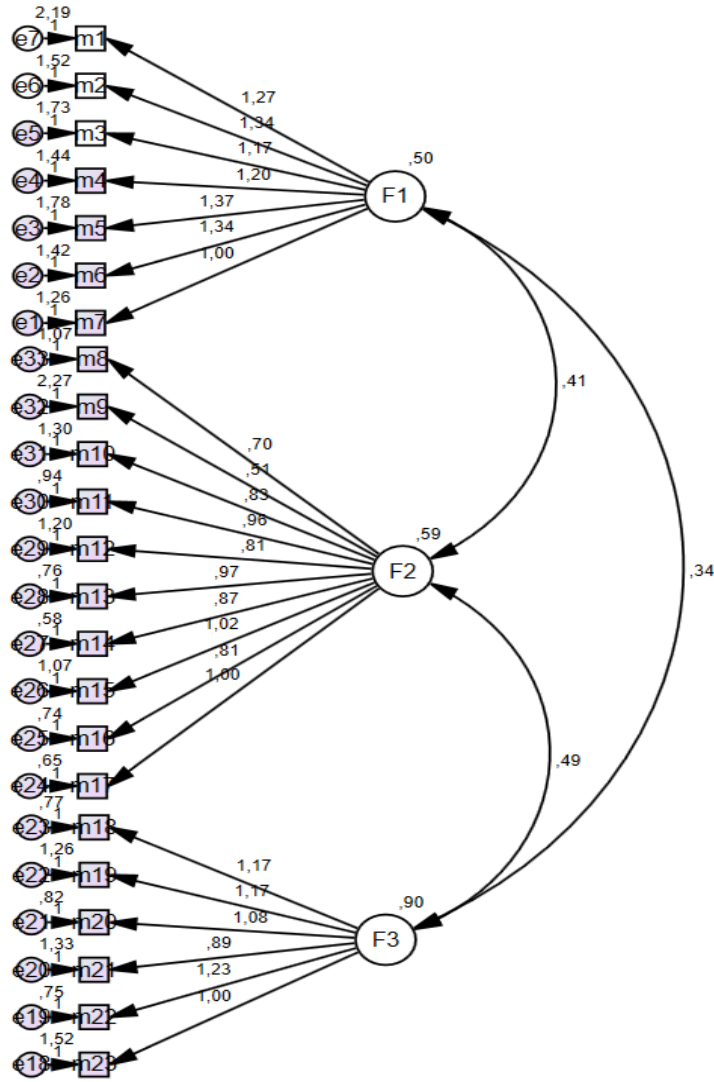
**Table 2**  
*Factor Structure and Factor Loadings of EOSE*

Item No	Factor Loadings		
	Factor 1	Factor 2	Factor 3
M7	.755		
M4	.712		
M2	.707		
M1	.664		
M6	.552		
M5	.460		
M9	.456		
<b>Variance Explained</b>	<b>9.791</b>		
M20		.704	
M17		.686	
M24		.627	
M18		.620	
M19		.598	
M25		.534	
M30		.529	
M15		.521	
M29		.516	
M16		.482	
<b>Variance Explained</b>		<b>32.176</b>	
M32			.739
M33			.682
M36			.684
M34			.606
M37			.587
M35			.513
<b>Variance Explained</b>			<b>8.640</b>
<b>Total Variance Explained</b>		<b>50.60</b>	

*Confirmatory Factor Analysis (CFA)*

CFA was applied to determine whether the data obtained as a result of the application on the second sample group confirmed the structure consisting of 23 items and 3 factors obtained after EFA.

**Figure 2**  
*Standardized Factor Loadings Obtained as a Result of CFA*



The fit index values of the EOSE were calculated as  $\chi^2/SD = 2.71$ , GFI = .90, AGFI = .88, CFI = .90, NFI = .85, PNFI = .77, IFI = .90, RMSEA = .057, RMR = .097, PNFI = .76 and PGFI = .74. The factor loadings of the three-dimensional model obtained after CFA ranged between .52 and .61 in the first factor, .25 and .69 in the second factor, and .59 and .80 in the third factor, respectively.

### Reliability Studies

Within the scope of the reliability studies of the measurement tool, internal consistency coefficient calculation, average variance extracted, composite reliability, test-retest and item analysis procedures were included.

Cronbach Alpha, average variance extracted (AVE), composite reliability (CR) and test-retest methods were used to test the reliability of the measurements made with the EOSE. The Cronbach Alpha reliability coefficient of the measurement tool was calculated as .890 for the overall scale. The AVE and CR reliability values of the scale are calculated based on the factor loadings obtained from CFA. Their formulas are as follows:

$$CR = (\sum\lambda)^2 / [(\sum\lambda)^2 + \sum(1 - \lambda^2)]$$
$$AVE = \sum\lambda^2 / n$$

It is recommended to calculate AVE and CR values, especially in scale development studies (Hair et al., 2009). In order for the Cronbach Alpha and CR values calculated for the measurement tool to be accepted as reliable, the AVE value should be calculated as  $\geq 0.70$  and  $\geq 0.50$  (Table 3) (Claes & Larcker, 1995).

**Table 3**  
*Test Results for Scale Reliability*

Subscales	Cronbach Alpha	CR	AVE	Test-Retest
Factor 1	.768	.72	.86	82
Factor 2	.800	.94	.55	86
Factor 3	.855	.70	.71	81

#### *Discriminant Validity*

In order to determine the predictive and discrimination levels of the items in the EOSE, the comparison of the 27% lower and upper groups was made. As a result of the analysis, the t value between the lower and upper groups of the scale was calculated as 14.86 (SD = .286,  $p < .05$ ) significant. In scale development studies, a significant t value for the difference between the lower and upper groups is accepted as evidence for the discrimination of the scale in the measured construct (Erkuş, 2012). Based on these results, it can be said that the scale has the feature of discrimination between low and high scores of equality of opportunity in education.

#### **Discussion**

In this study, it was aimed to develop a valid and reliable measurement tool to determine the perception of equality of opportunity in education. For this purpose, firstly, an item pool was created as a result of literature review and teacher interviews, and then the content validity of the draft form was ensured in line with expert opinions. Some researchers (Cohen & Swerdlik, 2018; Slaney, 2017) define content validity as determining how representative the scale items are to measure target behaviors. According to Thorndike and Hagen (1961), content validity reveals the relevance of the prepared items to the measured structure. For this reason, Rubio et al. (2003) stated that researchers should receive constructive feedback during the scale development process while ensuring content validity. Fitzpatrick (1983) pointed out that expert opinions alone are not sufficient to ensure content validity, and that there must also be a scoring based on quantitative data. For this purpose, Davis technique was used in this study, and expert opinions were scored.

After ensuring content validity, the first application was carried out to determine the factor structure of the scale. Considering the compatibility of KMO and Bartlett tests for exploratory factor analysis of the data set, EFA was applied, and the three-factor structure of the measurement tool was reached because, in scale development, it is recommended that EFA be

applied first, considering the possibility of researchers to be mistaken about scale dimensionality (Carpenter, 2018). Looking at the scales developed to measure psychological constructs in the literature, it is observed that approximately 70% of them include sub-dimensions (Clark & Watson, 1995). In order to test the accuracy of the three-factor structure, CFA was conducted on the data obtained from a new sample group. Studies in the literature (Costello & Osborne, 2005; Kline, 2013; Worthington & Whittaker, 2006) recommend using a separate sample group for CFA. As a result of CFA, it was understood that the fit index values were adequate.

It is thought that the development of such a scale in the field of education will contribute to increasing the number and quality of empirical studies in the field of equality of opportunity in education. The analyses carried out during the scale development process are proof that the measurement tool produces accurate measurements. Additionally, this study provides rich theoretical information for understanding equality of opportunity in education. According to Lazenby (2016), it is not clear what educators and politicians mean when they say they are in favor of equal opportunities in education. Using similar expressions, Temkin (2016) pointed out that equality of opportunity in education has many faces. This study was conducted to draw a framework for equality of opportunity in education and also to develop a scale to measure perceptions and attitudes on this issue.

## Conclusions and Implications

The study includes validity and reliability studies of the scale being developed. Within the scope of reliability studies, the Cronbach Alpha internal consistency coefficient was calculated, and it was observed that this value was at a good level. Within the scope of reliability studies, AVE average variance was extracted, and CR composite reliability coefficients were also calculated. It was determined that the CR and AVE values calculated based on the factor loadings obtained from CFA were at a sufficient level. Then, the test-retest technique was used to check whether the measurement tool made stable measurements. As a result of this process applied on a separate sample group, the correlation value between the tests was found to be sufficient. Finally, an independent samples t-test was performed on the data between the lower and upper groups to determine the discrimination feature of the measurement tool, and the difference was found to be significant.

As a result, a valid and reliable measurement tool consisting of 23 items with three sub-dimensions was developed. A high score on the scale emphasizes that the perception of equal opportunity in education is negative and a low score emphasizes that it is positive. Since the scale development process is a complex and multi-step process, researchers need to pay great attention. The Equality of Opportunity in Education Scale was developed as a result of a process in which the researchers handled each step with great seriousness and attention. This scale has made a contribution by examining the concept of equality of opportunity in education and providing a scale to this field. One of the important issues to be considered here is that the construct measured is exploratory and the resulting measurement is open to development over time. The measurement results should be brought to the attention of not only educational researchers but also policymakers.

## Ethical Statement

This research was conducted with the permission of Kyrgyzstan Turkey Manas University Scientific Research and Publication Ethics Committee with the decision numbered 8146 dated 01/06/2022.

## Author Conflict of Interest Information

There is no conflict of interest between the authors.

## Author Contribution

*The first author:* wrote the methodology and the results of the validity and reliability studies.

*The second author:* wrote the theoretical framework and item pooling.

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## Appendix 1. Draft-Item Pool

	Equal Opportunity in Education Belief Scale
1	The education that children with higher socioeconomic status receive is more qualified than those with lower socioeconomic status.
2	Private schools provide more qualified education than public schools.
3	The state cannot provide necessary education to children with poor socioeconomic status.

4	In terms of teacher qualifications, teachers in urban areas are in a better situation than teachers in rural areas.
5	School facilities vary depending on the residential area (village, district, province) where the school is located.
6	The excess number of students per teacher in rural schools has a negative impact on the quality of education.
7	The number of schools is not sufficient in rural areas.
8	Children of poor families cannot receive as good an education as children of rich families.
9	Well-educated families are more interested in their children's education.
10	Families with different levels of education also have different interests in their children's education.
11	Children with a higher socioeconomic status have a greater say in the governance of the country because they receive a good education.
12	Qualified teachers are assigned to big cities.
13	The education received by children growing up in different sociocultural environments is also different.
14	No matter how intelligent students in rural areas are, the environment they grow up in prevents them from using their intelligence.
15	I think that the state cannot provide equal opportunity in education.
16	I think that economic inequalities in society are also reflected in education.
17	I think having fee-paying schools increases inequality.
18	The geography the student lives in affects the quality of the education he receives.
19	In order to learn a foreign language in the country I live in, the economic situation must be good.
20	Students with low socioeconomic status cannot benefit equally from distance education opportunities.
21	Women cannot receive as good education as men.
22	Students in rural areas cannot access sufficient educational materials.
23	It is difficult to discover the talents of children with low socioeconomic status.
24	I think applying the same education program to everyone causes inequality.
25	The versatile upbringing of children (language, sports, music, etc.) varies according to socioeconomic levels.
26	I think that many of the children who commit crimes turn to crime because they cannot receive a good education.
27	Teachers do not treat every student equally in the classroom.
28	I think the central exams are unfair.
29	I think that equality of opportunity cannot be achieved in education.
D30	The fact that children have to work while studying has a negative impact on their education.
31	Schools should help students with low socioeconomic status.
32	I think every child who receives quality education will be successful.
33	The attention shown to students varies depending on the teacher.
34	The city where the school the student attends affects the quality of the education he receives.



35	The profession of the student's family affects the quality of the education he receives.
36	The student's access to educational materials depends on the effectiveness of the school administrator.
37	I think that the economic power and opportunities of the country I live in are not distributed equally for the education of individuals in the same age group.
38	There are people who cannot obtain education opportunities simply because their socioeconomic level is low.
39	I think that the scope and quality of the national exams held in the country I live in do not provide equal opportunity in education.
40	In the country I live in, the share allocated to the education of children in need of special education is lower than the share allocated to the education of other children.
41	I think that the country I live in has not made enough efforts to create an appropriate mechanism to distribute opportunities equally.

## Appendix 2. Final version of instrument

		Equal Opportunity Scale in Education
Family Factors	1	Since children of families with higher socioeconomic status receive better education, they have a greater say in the governance of the country.
	2	The education that children of families with higher socioeconomic status receive is more qualified than those of those with lower socioeconomic status.
	3	I think one of the most important variables when it comes to dealing with children's education is the education level of the family elders.
	4	The socioeconomic level of the family is decisive in discovering children's talents.
	5	In order for children to develop in all aspects (language, sports, music, etc.), it is necessary for families to have good socioeconomic levels.
	6	The profession of the student's family elders is a determining variable in the quality of the education they receive.
	7	Students with low socioeconomic status cannot equally benefit from distance education opportunities in out-of-school settings.
Geographic-Social Factors	8	It is impossible to ensure justice and peace in societies where equality of opportunity cannot be achieved.
	9	I think that many of the children who commit crimes turn to crime because they cannot receive a good education.
	10	There are people who cannot obtain education opportunities simply because their socioeconomic level is low.
	11	The education received by children growing up in socioculturally different social environments (city, neighborhood, village, etc.) is also different.
	12	The fact that children have to work while studying has a negative impact on their education.
	13	An important reason for inequalities in education is the existence of economic inequalities in society and in the country.
	14	School facilities vary depending on the residential area (village, district, province) where the school is located.
	15	The excess number of students per teacher in rural schools has a negative impact on the quality of education.
	16	The economic and social opportunities of the settlement where the school is located strongly affect the quality of education provided in schools.
	17	There are significant inequalities in terms of the number of teachers in rural or urban areas.

Administrative Factors	18	I think that the state has not been able to create the necessary mechanisms and regulations to ensure equality of opportunity in education.
	19	I think that the central exams conducted by the state do not provide equal opportunities.
	20	I think that the economic power and opportunities of the country I live in are not distributed equally for the education of individuals in the same age group.
	21	In the country I live in, the "average" share allocated to the education of children in need of special education is lower than the "average" share allocated to the education of other children.
	22	I think that the country I live in has not made enough efforts to create an appropriate mechanism to distribute opportunities equally.
	23	I do not believe that opportunities such as scholarships, loans, transportation support and housing for disadvantaged groups are distributed in a way that provides balance.

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