

ARTICLE HISTORY

Received December 14, 2021

Accepted March 07, 2022

Published Online June 28, 2022

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How to cite: Kardas, A., & Yildirim, B. (2022). Intellectual Level Scale (ILS-19) for School Administrators: Validity and Reliability Study. *Educational Process: International Journal*, 11(2): 26-43.



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RESEARCH ARTICLE

Intellectual Level Scale (ILS-19) for School Administrators: Validity and Reliability Study¹

Abdurrahman Kardas¹ · Bilal Yildirim¹

ABSTRACT

Background/purpose – In addition to many competencies of school administrators, the level of intellectuality can increase the commitment of educational actors to the organization in schools with sociocultural diversity, which is considered as a wealth of Turkey. Considering the sociocultural developments of the present day, it is important to know the intellectual level of school administrators. The aim of this research is to develop a valid and reliable scale to determine the intellectual level of school administrators.

Materials/methods – In the development of the Intellectual Level Scale (ILS-19), which consists of 19 items, 500 data were collected from teachers and analyzed using IBM's SPSS statistical program. In this context, exploratory factor analysis (EFA) was conducted for construct validity and confirmatory factor analysis (CFA) for construct verification.

Results – According to the results of the exploratory factor analysis, the Eigen value of the scale consists of two subdimensions greater than one, and which was found to explain 66.743% of the total variance. The factor loading values of the scale items ranged from 0.610 to 0.864. According to the results of the confirmatory factor analysis, the chi-square value, AGFI (Adjusted Goodness-of-Fit Index), GFI (Goodness-of-Fit Index), NFI (Normed Fit Index), and RMSEA (Root Mean Square Error of Approximation) values of the model were found to be at an acceptable level, whilst the IFI (Incremental Fit Index) excellent and RMR (Root Mean Square Residual) values were found to be at an excellent level.

Conclusion – The developed Intellectual Level Scale is a measurement tool that can be used to determine the intellectual level of school administrators. Subject to adaptation, the scale may be applied as a measurement tool in studies to determine the intellectual level of any adult group.

Keywords – Intellectual level scale, school administrator, teacher, scale development.

To link to this article – <https://dx.doi.org/10.22521/edupij.2022.112.2>

¹The study was conducted under the supervision of Associate Professor Bilal Yildirim as part of the doctoral research of Abdurrahman Kardas, a PhD student in the joint program of Marmara University and Istanbul Sabahattin Zaim, Institute of Higher Education, Department of Educational Sciences, Educational Administration and Supervision.

1. INTRODUCTION

In preparing students who will be the future of today's society, school administrators need to ensure that they are provided with an appropriate learning environment in which to educate them as a whole. This task is closely related to the skills and competencies of school administrators.

As an effective communicator, the school administrator is considered to be an open person who can listen, empathize, and build productive and evolving relationships with students, parents, and with the teachers they employ, and at the same time, motivate people in larger-sized groups. School administrators should be independent leaders with a keen mind and deep personal knowledge of teaching and learning who have mastered the research-based curriculum. They should be visionaries who are motivated, focused on a vision of what their school can be, and driven by a mission that addresses the real needs of all students enrolled at their institution. The school administrator is a leader who should possess exceptional people skills, including the ability to build individual relationships with parents, teachers, and students, and a flexible, forward-thinking, and realistic person who is able to motivate and manage change in an orderly, positive, and lasting manner. As school administrators, they should communicate and model to their teaching and support staff a strong and sustainable vision based on performance, expectations, personal responsibility, and accountability, and be willing to share their drive, motivation, enthusiasm, energy, courage, and humor with staff, parents, and students alike. School administrators should be results-oriented, with a strong sense of responsibility towards parents, students, and teachers, and who can effectively translate high expectations into the intellectual development and academic success of all students. The school administrator should be seen as a role model whose values and actions are characterized by reliability, integrity, authenticity, respect, and humility, and is a servant leader, an encourager, and a facilitator whose goal is to contribute to the success of others (McEwan, 2003; Yeap & Thien, 2021). As leaders in education, school administrators should possess the ability to influence an audience in order to encourage subordinates to question problems effectively, to become more openly aware of problems, challenge the existing patterns of behavior and thinking in dealing with problems, and to create new perspectives on existing problems (Çelik & Eryılmaz, 2006; Yirci, Karakose, & Malkoc, 2021). School administrators should be able to provide intellectual guidance to teachers and other educational stakeholders within their intellectual competence (Barrow, 1987; Karakose, 2021).

2. LITERATURE REVIEW

The concept of intellectual, which is defined differently within the different branches of science, is defined as the characteristics of individuals who can express opinions and thoughts on general problems related to society and the public, and to contribute to the solution of these problems (El-Ahmeri, 2020). The word intellectual is derived from the Latin word "interlectio." It consists of the combination of the words "inter," which examines the relationship between two things, and "lectio," which means collected information. Entelect is the French form of the word "intellectus," which is the Latin equivalent of the Greek term "nous" (Özcan, 2006, p. 41). "Intellectuel," the French origin of the word "intellectual," refers to those who are interested in and enjoy the fields of culture and thought (Hilav, 2008, p. 11). Individuals can be considered intellectuals if they are dedicated to the development and formulation of knowledge (Barrow, 1987).

The term intellectual entered the political literature at the end of the 19th century with an article entitled “I Accuse” by Emile Zola following the Dreyfus Affair (Timur, 2012). However, it should be noted that the term “intellectual” was already used in the English language prior to this event at the beginning of the 19th century. Byron’s statement in 1813, “I wish I were in a position to listen to these intellectuals” (Collini, 2006, p. 18), is one of the indicators of this. Saint-Simon thought about this term as a sociological term in 1821 and used the term intellectual for those who collaborated with industrialists by destroying a feudal structure (Özcan, 2006).

The term intellectual, which has passed from Latin to Turkish, characterizes a type of person whose basis involves mental activities (Taftalı, 2006), who predominantly deals with things related to the mind and acts in accordance with reason and logic (Arslan, 2002). Cevizci (2007) defined the intellectual as someone who is knowledgeable, has the ability to criticize and evaluate, and aspires to a leading role in social events. The concept of intellectual is defined as “educated and enlightened” in the Dictionary of the Turkish Language Institute (Türk Dil Kurumu, 2019). Bauman (2003) stated that there are many and varied definitions of an intellectual, and that the term includes poets, artists, journalists, writers, scientists, and people who collectively influence the mind of a nation. Edward W. Said stated that intellectuals are people who defend the principles of eternal truth and justice (Said, 2013). Ülgener (2012) defined the concept of intellectuals as those who lead cultural change and influence people’s social and political preferences by equating the word intellectuals.

Mardin (2016) stated that differences in the various definitions are linked to conceptualizations formed outside of the Turkish culture, and explained that the use of terms such as “educated” or “enlightened” instead of “intellectual” can cause undue complexity. Meriç (2014) defined the term intellectual as a person who knows the language, history, and literature of their country, has the wisdom of their time, and is aware of the currents of thought in the world. The intellectual should be able to examine and evaluate events using their mind without bias. The most important qualities of the intellectual can be described using words such as honesty, vigilance, and courage. The term intellectual has also been explained as people who think universally about society by going beyond individuality (Sartre, 2010, p. 15). Intellectuals should possess a deep knowledge of philosophy and history, as well as the religions and arts that shape society (Tokat, 2017). Intellectuals are characterized by their “excellent reverence and earnest effort to contact the sacred.” Intellectuals are thus defined by their “frequent contact with symbols that are more general than the immediate concrete situations of daily life” (Barrow, 1987).

As can be seen, the terms “intellectual capital,” “intellectual stimulation,” “intellectual humility,” and “intellectual and visionary leadership” do not fully correspond to the intellectual qualities that a school administrator should possess. In the Turkish language, the terms writer, educated, academic, scientist, artist, philosopher, enlightened, civil society leader, intellectual, and scholar are closely related to the term intellectual, and are sometimes used interchangeably. Identifying these characteristics of school administrators can help contribute to a better understanding of the leadership behaviors of administrators within the field of educational administration, and to a better definition and reorganization of the management principles and practices intended for the management of educational institutions. The intellectual level of school administrators can help to increase their engagement with educational stakeholders in schools characterized as having cultural

diversity, which is seen as Turkey's wealth, but this may also lead to negative behaviors being exhibited.

Due to sociological developments, it is important to be able to know the intellectual level of school administrators. It is believed that the "intellectual level scale" of school administrators, that is developed within the current study, will significantly contribute to the field of educational administration, and will offer an important tool that can be applied in studies regarding educational administrators. In addition, the current study may contribute to future studies in the areas of cultural values, equity, and tolerance in shaping school culture internationally. In accordance with the aforementioned reasons, the aim of the current study is to develop a valid and reliable intellectual level scale (IRS) that can be used to determine the intellectual level of school administrators.

3. METHODOLOGY

This research, which aims to determine the intellectual level of school administrators, is a quantitative study based on the descriptive survey model. In the context of the screening model, a descriptive study is one that describes a situation as it currently is (Karasar, 2017). The study was conducted with 527 teachers working at the preschool, elementary, secondary, and high school levels within the Provincial Directorate of National Education in Batman, Turkey. In composing the study group, care was taken to reach teachers of all school types and levels. While Kline (2005) stated that the group size for data collection should be at least twice the number of items to be measured, Comrey and Lee (1992) stated that having a study group of 1,000 individuals is considered excellent, whilst 500 is good, 300 average, and 100 individuals in a group is seen as inadequate (Akbulut, 2010; Çokluk et al., 2010). Tavşancıl (2014) stated that the sample size for scale development studies should be five or even 10 times that of the total number of scale items. Considering these criteria, it was concluded that the current study's group of 500 teachers was considered suitable for analysis.

The process of developing the Intellectual Level Scale was conducted according to the following phases:

Creation of an Item Pool

In creating the items of the Intellectual Level Scale, the literature on the concept of intellectual was reviewed. In defining the item pool, the opinions of academics who had studied educational administration and philosophy were sought, as were their suggestions on ways in which an item pool could be created. The prospective items to be included in the scale were emailed to academics working in the field of philosophy. In order to identify the intellectual characteristics of school administrators, sources from the fields of philosophy and sociology were reviewed. By identifying items that focused on intellectual characteristics, a pool of 88 items was created.

Seeking Expert Opinion

In creating a list of items that can best express the intellectual characteristics of school administrators, the opinions of serving school administrators and experts in the field of educational administration and philosophy were sought, in addition to the literature review. The statements of the item pool in the study were submitted to the opinions of two teachers with experience in the field of Turkish Language and Literature. The expressions were arranged according to the appropriate language rules and converted into scale items. The draft items were then pre-selected according to the opinions received from 10 teachers

and 10 school administrators. Following this stage, a draft scale consisting of 79 items was submitted to the academicians and experts for their opinion.

The opinions were sought from two experts in educational administration and supervision, two experts in philosophy, and one language expert. The experts were each asked to select “applicable,” “applicable but needs correction,” or “deleted” for each item presented in the draft scale, and also to suggest any new items as they saw appropriate. By combining the feedback into a single form, it was determined how many of the experts agreed with each item. The number of experts who thought the item was necessary was determined as well as the number who thought it was unnecessary. Items with a content validity below .80 were extracted using the technique developed by Lawshe (1975). In accordance with the experts’ opinions, 20 items were deleted from the 79-item draft scale during this process, and a revised 59-item draft scale was prepared in order for a preliminary application to be made.

Preliminary Application

During this phase, it was checked whether or not each item in the draft scale was considered “sufficient” (Büyüköztürk, 2009). The 59-item sample form was applied to a group of 68 teachers who were not included in the sample group, who were tasked with evaluating their linguistic form and to offer corrections to any incomprehensible items. During individual interviews, the originally incomprehensible items were discussed and it was confirmed that all items were clearly understandable at that stage having reflected the teachers’ feedback.

Data Collection and Analysis

According to the preliminary application, 590 teachers working in schools located either in the center or districts of Batman province were reached. Item analysis was conducted with 500 teachers after having removed erroneous and extreme values from the 527 forms collected. Considering these criteria, a sufficient sample for factor analysis (EFA and CFA) was achieved in the study. Normality analysis, EFA, CFA, and reliability analysis were then performed on the collected data.

4. FINDINGS

Construct Validity

The concept of construct validity is that it describes the extent to which a scale captures the structure being measured with a small number of factors (Büyüköztürk, 2009). In order to determine the construct validity of the scale, CFA was conducted according to the results of the EFA. Prior to the EFA of the Intellectual Level Scale, the reliability values of the items and their normal distribution were checked.

Table 1. Draft Scale Cronbach Alpha Value

Cronbach Alpha Value (R)	Number of Items
0.975	59

According to Table 1, the reliability value of the data of the draft 59-item Intellectual Level Scale was calculated as .975. Prior to the exploratory factor analysis of the draft scale, the normality values were checked; the results of which are presented in Table 2.

Table 2. Results of Predescriptive Analysis: Overall Scale Data

		Value	Std. Error
Mean		3.8844	03060
95% Confidence Interval for Mean	Lower Bound	3.8243	
	Upper Bound	3.9446	
5% Trimmed Mean		3.9459	
Median		3.9492	
Variance		0.493	
Std. Deviation		0.70243	
Minimum		1.25	
Maximum		4.95	
Range		3.69	
Interquartile Range		0.68	
Skewness		-1.373	0.106
Kurtosis		2.574	0.212

The skewness value of the obtained data was found to be between -1 and +1 and the kurtosis value not higher than +1, which is interpreted as presenting a normal data distribution (Büyüköztürk, 2009). In Table 2, it can be seen that the skewness value of the data with respect to the scale was established as being -1.373, which means that the data was not normally distributed. From this analysis, extreme values for the data were determined and subsequently removed from the dataset. The results of the analysis based on the remaining 500 data items are presented in Table 3.

Table 3. Final Results of Descriptive Analysis: Overall Scale Data

		Statistic	Std. Error
Mean		3.9967	.02306
95% Confidence Interval for Mean	Lower Bound	3.9514	
	Upper Bound	4.0420	
5% Trimmed Mean		4.0132	
Median		3.9661	
Variance		0.266	
Std. Deviation		.51568	
Minimum		2.49	
Maximum		4.95	
Range		2.46	
Interquartile Range		0.59	
Skewness		-.414	0.109
Kurtosis		0.026	0.218

As can be seen from Table 3, the skewness value of the Intellectual Level Scale was found to be -0.414, the kurtosis value was 0.026, the mean value was 3.9967, and the median value was 3.9661. According to the analysis results, the values present a normal distribution of data. After determining that the items of the scale had a normal distribution, the items were adopted for construct validity. Construct validity is concerned with the extent

to which a scale accurately measures intended behaviors. EFA and CFA were then conducted for the construct validity of the scale.

Prior to performing factor analysis, there is a requirement to conduct the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test for sphericity, which are used to determine the suitability of the data for factor analysis. In order to meet the requirements, the Kaiser-Meyer-Olkin (KMO) value should be above .60, and the Bartlett's test value for sphericity ($p < .50$) should be significant (Büyüköztürk, 2009). The adequacy of the sample for the research is presented as shown in Table 4.

Table 4. Adequacy of KMO and Bartlett's Tests

Test	Data	Value
Kaiser-Meyer-Olkin	Measure of Sampling Adequacy	0.978
Bartlett's Test of Sphericity	Approx. Chi-Square	23,320.758
	<i>df</i>	1.711
	Sig.	0.000

Examination of Table 4 reveals a KMO value of .978 for sample adequacy. For the KMO test, the closer the value is to 1, the more perfect it is considered to be, whilst values below .50 are considered unacceptable (Tavşancıl, 2014). The KMO value obtained as a result of the analysis performed was therefore classified as perfect. The Bartlett's test value was found to be 23,320.758 ($p < .000$), and the significance of the Bartlett's value means that the obtained data was normally distributed (Büyüköztürk, 2009), $p < .50$, $df = 1711$. Accordingly, the data obtained from the study group were considered suitable for EFA and CFA.

Item Analysis

The loading value for the items identified in factor analysis is the critical value that should be considered as to whether or not an item is included within the defined subdimension, and shows the relationship of the item with the corresponding subdimension. Although it is assumed that the lower limit of the loading value is .30, it is expected to be .45 or higher (Otrar & Argın, 2015). In the current study, the initial factor loading value was set at .40.

In the factor analysis for the Intellectual Level Scale, no limit was set on the number of factors. In the first factor analysis, six factors with an Eigenvalue greater than 1.00 were identified. The Varimax vertical rotation technique was used to examine the distribution of items among the factors, and it was found that some items were not included in any of the factors. At this stage, items 20 and 22 were removed from the scale and the scale reanalyzed. Subsequently, items 1, 33, 57, and 59 were also removed and the scale then reanalyzed. Factor analysis continued with a loading value of .50. When analyzed using the Varimax vertical rotation technique, it was found that items 13, 19, 21, and 29 could not be assigned to any dimension and were subsequently removed and the scale reanalyzed. From this analysis, items 55 and 56 were removed from the scale and the analysis continued because they were located in different areas of the dimensions. From the analysis, items 4 and 5, which were not included in any factor, were removed from the scale. Since the value between the factor loading value of the items in the scale and the next item should be at least .10 (Büyüköztürk, 2009), the analysis continued with the loading value of the scale at .55. As a result of the analysis, items 14, 15, 16, 26, and 30 were removed from the scale and

the analysis again continued. From this analysis phase, items 6, 8, and 18 were found to be in different dimensions, and these items were also removed from the scale after seeking expert opinion. In the next step, items 3, 7, 31, 36, 44, and 48 were removed from the scale because they were found to be in different dimensions in terms of importance.

The exploratory factor analysis (EFA) conducted with the remaining 28 items revealed a structure that consisted of two dimensions. The first dimension was referred to as “social sensitivity” and the second as “tolerance and justice.” Items 28, 34, 40, 42, 46, and 51 of the first dimension were then excluded from the scale because they had a different meaning to that of the “social sensitivity” dimension. Since items 9, 11, and 17 of the second dimension had no relation to the “tolerance and justice” dimension, these items were also removed. The values of the exploratory factor analysis, which was performed again after these procedures, are presented in Table 5.

Table 5. KMO and Bartlett’s Test Data

Test	Data	Value
Kaiser-Meyer-Olkin	Measure of Sampling Adequacy	.970
Bartlett’s Test of Sphericity	Approx. Chi-Square	7.600.245
	<i>df</i>	171
	Sig.	0.000

As can be seen from Table 5, the KMO sample adequacy of the Intellectual Level Scale was found to be .970 and Bartlett’s test was $p < .000$. The values obtained in the KMO test were considered acceptable, based on .90 being excellent, .80 as very good, .70 as good, .60 as moderate, and .50 or less as weak (Kirmızı, 2012). Accordingly, the sampling adequacy required for factor analysis was shown to be at an excellent level. The Eigenvalues of the subdimensions of the Intellectual Level Scale and the percentage of variance they explain are presented in Table 6.

Table 6. Eigenvalues and Variance Shares of Intellectual Level Scale Subdimensions

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance		Total	% of Variance		Total	% of Variance	
		Cumulative %			Cumulative %			Cumulative %	
1	11.294	59.443	59.443	11.294	59.443	59.443	6.573	34.593	34.593
2	1.387	7.301	66.743	1.387	7.301	66.743	6.108	32.150	66.743
3	0.683	3.597	70.340						
4	0.612	3.223	73.563						
5	0.556	2.924	76.487						
6	0.543	2.860	79.347						
7	0.466	2.453	81.800						
8	0.424	2.229	84.029						
9	0.388	2.044	86.074						
10	0.352	1.852	87.926						
11	0.326	1.718	89.644						

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 %
12	0.322	1.693	91.337						
13	0.307	1.618	92.955						
14	0.268	1.413	94.367						
15	0.262	1.377	95.744						
16	0.247	1.302	97.046						
17	0.201	1.059	98.105						
18	0.191	1.005	99.110						
19	0.169	0.890	100.000						

Extraction Method: Principal Component Analysis.

The Eigenvalues of the subdimensions of the 19-item Intellectual Level Scale and the percentage of variance they explain were obtained using the Varimax vertical rotation technique. According to the EFA results, the scale consists of two subdimensions. The first subdimension explains 34.593% of the total variance, whilst the second explains 32.150%. In the two-factor structure, 66.743% of the total variance of the scale was explained. The factor loading values according to the exploratory factor analysis of the Intellectual Level Scale are shown in Table 7.

Table 7. Loading Scores from Factor Analysis of Intellectual Level Scale

Item No.	Component	
	1	2
ENT_53	0.769	
ENT_54	0.744	
ENT_43	0.739	
ENT_38	0.732	
ENT_58	0.691	
ENT_39	0.678	
ENT_52	0.672	
ENT_32	0.666	
ENT_47	0.657	
ENT_49	0.642	
ENT_45	0.641	
ENT_37	0.610	
ENT_24		0.864
ENT_23		0.844
ENT_10		0.809
ENT_2		0.757
ENT_25		0.748
ENT_35		0.713
ENT_41		0.653

The factor loading values of the 19-item Intellectual Level Scale presented in Table 7 range from .610 to .864, with the scale formed under two dimensions, "1-Social Sensitivity"

(12 items) and “2-Justice and Tolerance” (seven items). The corresponding data are presented in Table 8.

Table 8. Results of Factor Analysis of Intellectual Level Scale

		Factors & item loadings		Item-total correlation
		1	2	
1	My manager explains their thoughts in decisions to be made regarding social problems	0.769		0.730
2	My manager wants important issues to be discussed in public	0.744		0.800
3	My manager develops ideas for a better, more livable society	0.739		0.803
4	My manager acts as a spokesperson for public awareness in social life	0.732		0.760
5	My manager advocates for intellectual development in education	0.691		0.831
6	My manager is at the center of solidarity efforts	0.678		0.598
7	My manager reflects basic human rights in their own life	0.672		0.807
8	My manager has a unique perspective on life	0.666		0.807
9	My manager holds the view that education prepares individuals for life	0.657		0.720
10	My manager holds the view that the primary purpose of education is to raise individuals of strong and correct character	0.642		0.820
11	My manager accurately articulates the suffering of powerless people in society	0.641		0.761
12	My manager focuses on innovation rather than the status quo	0.610		0.840
13	My manager is tolerant of people		0.864	0.747
14	My manager deals fairly with people		0.844	0.735
15	My manager respects the diverse opinions of people around them		0.809	.774
16	My manager makes decisions by listening to all opinions, even if they are contrary		0.757	0.852
17	My manager stands up against all forms of injustice		0.748	0.725
18	My manager allows people to express their thoughts freely		0.713	0.698
19	My manager always sides with the law		0.653	0.793

Confirmatory factor analysis (CFA), one of the methods performed to assess construct validity, was used to determine confirmation of the factor structure following the explanatory factor analysis (EFA) of the Intellectual Level Scale.

Reliability

A reliability study was conducted after the factor analysis of the Intellectual Level Scale. The reliability coefficient for the total scale and its subdimensions are presented in Table 9.

Table 9. Reliability of Factor Analysis for Intellectual Level Scale

Dimension	No. of Items	Cronbach Alpha
Social awareness (subdimension 1)	12	0.942
Justice & tolerance (subdimension 2)	7	0.933
Overall scale	19	0.96

For the reliability study of the Intellectual Level Scale, the Cronbach alpha coefficient was found to be .96 for the overall scale, .94 for the first subdimension, "Social Sensitivity," and .93 for the second subdimension, "Justice and Tolerance." In reliability studies, Cronbach alpha coefficient values of .70 or above are considered reliable scales (Büyüköztürk, 2011). Since the Cronbach alpha coefficient for the Intellectual Level Scale were found to be high, both overall and for the two subdimensions, these criteria showed the Intellectual Level Scale to be a very reliable instrument.

Confirmatory Factor Analysis

As one of the methods of construct validity, confirmatory factor analysis (CFA) was used to examine the factor structure of the Intellectual Level Scale. In CFA, it is important to determine whether there is a sufficient level of correlation between the factors by testing the fit between the data. At this stage, some or all of the fit indices can be used together (Schumacker, 2006) as there is no consensus on the fit indices of a model (İlhan & Çetin, 2014).

The chi-square (χ^2) test for fit should be performed according to the results of the confirmatory factor analysis. Chi-square (χ^2) indicates there being no significant difference between the observed and estimated covariance (Tabachnick & Fidell, 2007). In addition to the chi-square (χ^2), Comparative fit index (CFI) is used to test the model fit (Byrne, 2001). The extent to which the model captures the variance matrix in the sample is determined using the Goodness fit index (GFI) and Adjusted goodness fit index (AGFI) (Kline, 2005). Other indices are the Root Mean Square Residual (RMR), the Root Mean Square Error of Approximation (RMSEA), IFI (Incremental fit index), and NFI (Normed fit index). Table 10 presents the values of the Intellectual Level Scale according to the fulfillment criteria.

Table 10. Fit Criteria and Fit Values of the Model

Fit Criteria	Value	Perfect Fit Value	Acceptable Value	Fit Level
Chi-square (χ^2 / df)	480.043 / 148 = 3.24	$0 < \chi^2 / SD < 2$	$3 < \chi^2 / SD < 5$	Acceptable
AGFI	0.878	$0.90 < AGFI < 1.00$	$0.85 < AGFI < 0.90$	Acceptable
GFI	0.905	$0.95 < GFI < 1.00$	$0.90 < GFI < 0.95$	Acceptable
CFI	0.956	$0.95 < CFI < 1.00$	$0.90 < CFI < 0.95$	Perfect
NFI	0.938	$0.95 < NFI < 1.00$	$0.90 < NFI < 0.95$	Acceptable
IFI	0.956	$0.95 < IFI < 1.00$	$0.90 < IFI < 0.95$	Perfect
RMSEA	0.067	$0.00 < RMSEA < 0.5$	$0.05 < RMSEA < 0.8$	Acceptable
RMR	0.023	$0.00 < RMR < 0.05$	$.005 < RMR < 0.10$	Perfect

According to the data presented in Table 10, the chi-square fit criterion (χ^2 / df) of the scale was calculated as 3.244. If this value is below 3, it is considered perfect, whilst between

3 and 5 is considered acceptable (Çokluk et al., 2010). The chi-square value found in this study ($\chi^2/df = 3.244$) was found to be at an acceptable level. The AGFI value was 0.878, which is at an acceptable level (Schermelleh-Engel & Moosbrugger, 2003). The GFI value of 0.905 and CFI value of 0.956 are both considered excellent, whilst the NFI value of 0.938 is acceptable, and the IFI value of 0.956 represents the criteria for a perfect fit (Baumgartner & Homburg, 1996). The RMR value of 0.023 appears to be a perfect fit, and the RMSEA value for the model was shown to be at an acceptable fit criterion of 0.067 (Browne & Cudeck, 1993). The results of the confirmatory factor analysis of the Intellectual Level Scale are illustrated in Figure 1.

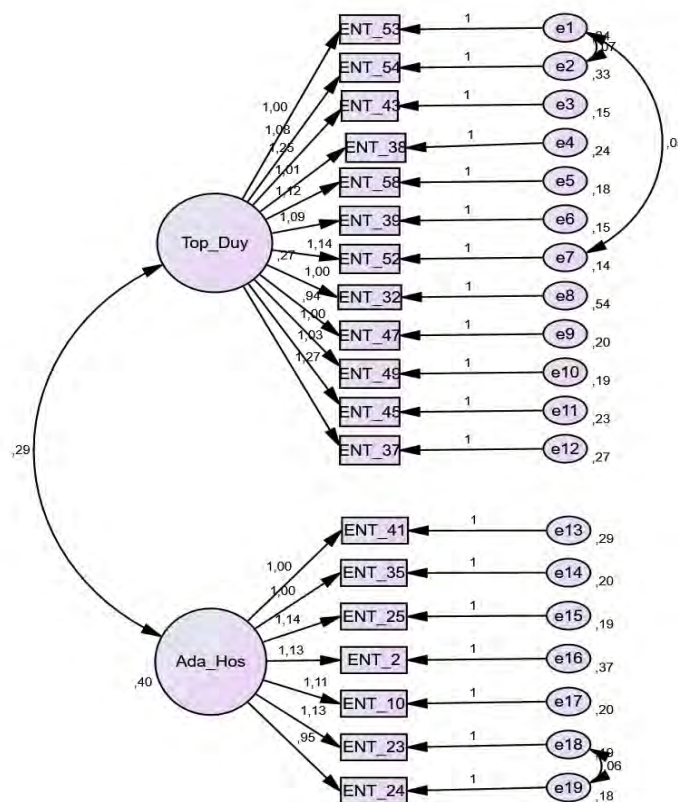


Figure 1. Intellectual Level Scale Confirmatory Factor Analysis Path Diagram

5. DISCUSSION

The term intellectual, which emerged in Europe as a result of cultural accumulation and is widely used in philosophy and the social sciences, has been used to refer to writers, lawyers, artists, and the educated elite who freely express their opinions on social problems (Conner, 2014). In the Turkish language and culture, the terms writer, academic, scientist, artist, philosopher, civil society leader, and scholar are closely related to the term intellectual, and are sometimes used interchangeably.

In reviewing the relevant literature, it is clear that the concept of intellectual capital is considered in the context of the concept of capital or the subdimension of leadership styles. It appears that the concept of intellectual capital, intellectual stimulation, and intellectual in visionary leadership do not fully correspond to the intellectual characteristics of a school administrator. The current study aimed to help determine the intellectual level of school administrators through the development of a scale instrument, divided into the dimensions

of “social sensitivity” and “justice and tolerance.” Yılmaz (2007) concluded that a significant relationship exists between school administrators’ positions and their focus on social problems in the classroom, and their research showed similarities to the emerging dimension of social sensitivity in the current study. The same research by Yılmaz (2007) also found that 54% of academic administrators lead meetings on national problems and 65% participate in meetings seeking solutions to national problems.

In a scale development study by Yoldaş and Merç (2018) that was conducted to determine the universal intellectual characteristics of teacher candidates, the items “I respect different opinions,” “I adopt sensitivity in my daily life,” “I try to understand beliefs other than my own” are similar to some of the items in the current research. From the “Intellectual Sympathy,” “Intellectual Awareness,” and “Intellectual Perseverance” dimensions in Yoldaş and Meriç’s (2018) study, the “Intellectual Awareness” dimension may be said to be similar to the “Social Sensitivity” dimension in the current research.

The nine items of Derin’s (2016) developmental Intellectual Leadership Scale study, however, were not found to be similar to the scale items in the current study. Likewise, items in the Intellectual Competence Scale developed for managers by Aksu et al. (2021) were found to be dissimilar to the scale items of the current study. There was also no similarity found between the items of the Intellectual Competencies of Managers Scale that was developed by Güngör (2020) and the scale items developed in the current study. However, one item from the developmental study by Çakan et al. (2018) that resulted in the Comprehensive Intellectual Humility Scale may be said to be similar to that of the current study’s scale, with “I can respect others even if we seriously think differently” being similar to “My manager is tolerant of people.” These findings offer evidence that the Intellectual Level Scale developed in the current study is an original instrument.

6. CONCLUSION

The draft Intellectual Level Scale consisted of 59 items, and was developed based on a literature review and also expert opinion. The draft scale was distributed to 590 teachers in Turkey’s Batman province during the 2020-2021 academic school year. In total, 500 of the 527 returned questionnaires were analyzed using IBM’s SPSS statistical program. The Intellectual Level Scale was developed as a 5-point, Likert-type scale with gradations of “strongly agree,” “agree,” “partially agree,” “disagree,” and “strongly disagree.” According to the results of the conducted exploratory factor analysis, the KMO value of the scale was 0.970 and Bartlett’s test was 7,600.245, $p < .000$. The developed scale consists of two subdimensions, with the first explaining 34.593% of the total variance and the second explaining 32.150%. Together, the two subdimensions explained 66.743% of the total variance of the developed scale. The factor loading value of the scale varied from .610 to .864. The Intellectual Level Scale consists of 19 items within two dimensions. The first dimension being “social sensitivity” and the second labeled as “justice and tolerance.” From the results of confirmatory factor analysis, the chi-square value ($\chi^2 = 480.043 / 148 = 3.244$) was found to be significant (RMSEA = 0.067, AGFI = 0.878, GFI = 0.905, CFI = 0.956, NFI = 0.938, IFI = 0.956, and RMR = 0.023). The Cronbach alpha internal consistency coefficient of the whole Intellectual Level Scale was found to be .96, with .94 for the “Social Sensitivity” subdimension and .93 for “Justice and Tolerance.”

According to the study’s analytical results, the developed Intellectual Level Scale is a valid and reliable measurement that may be used to help determine the intellectual level of school administrators.

7. SUGGESTIONS

Future research may be conducted that aims to relate the Intellectual Level Scale to variables such as organizational behavior, school climate, leadership skills, and job satisfaction. In addition, the scale may be adapted for teachers and other educational administrators.

DECLARATIONS

Author contributions Each step of the research was conducted by the authors together, based on an understanding of common responsibility.

Conflicts of interest The authors declare no conflict of interest.

Funding No external funding was received for the study.

Ethical Approval The study was conducted according to the guidelines of the Declaration of Helsinki, and the scales used in the study were reviewed and their application approved by the Sabahattin Zaim University, with legal permission granted for the study to be performed with graduate students (Ref: E-20292139-050.01.04-5481).

Data availability statement The data of the study are available upon reasonable request from the corresponding author.

REFERENCES

- Abramo, G., D'Angelo, A. C., & Murgia, G. (2017). The relationship among research productivity, research collaboration, and their determinants. *Journal of Informetrics*, 11(4), 1016-1030. <https://doi.org/10.1016/j.joi.2017.09.007>
- Akbulut, Y. (2010). *Sosyal Bilimlerde SPSS Uygulamaları [SPSS Applications in Social Sciences]*. İdeal Kültür.
- Aksu, A., Aslan, M., & Akdemir, A. (2021). Yöneticinin Algılanan Entelektüel Yetkinliklerinin, Y Kuşağının Görev Performansına Etkisinde Ekstra Rol Davranışının Aracılık Etkisi [The effect of the manager's perceived intellectual competencies on the task performance of the generation-y and the mediating effect of extra role behavior]. *Journal of Life Economics*, 8(2), 219-235. <https://doi.org/10.15637/jlecon.8.2.07>.
- Arslan, A. (2002). Aydınlar, Entelektüeller ve Müminler, *[Intellectuals, Intellectuals and Believers] Cogito*, 31, 201-214.
- Barrow, C. W. (1987). Intellectuals in contemporary social theory: A radical critique. *Sociological Inquiry*, 57(4), 415-427. <https://doi.org/10.1111/j.1475-682X.1987.tb00247.x>.
- Bauman, Z. (2003). *Yasa Koyucular ile Yorumcular [Legislators and Commentators]* (K. Atakay, Trans.). Metis.
- Baumgartner, H., & Homburg, C. (1996). Applications of structural equation modeling in marketing and consumer research: A review. *International Journal of Research in Marketing*, 13(2), 139-161. [https://doi.org/10.1016/0167-8116\(95\)00038-0](https://doi.org/10.1016/0167-8116(95)00038-0).
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Sage.
- Büyüköztürk, Ş. (2009). *Sosyal Bilimler İçin Veri Analizi El Kitabı [Manual of data analysis for social science]*. Pegem A Akademi.

- Byrne, B. M. (2001). Structural equation modeling with AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. *International journal of testing*, 1(1), 55-86.
- Çakan, O., Baytemir K., & Şahin R. (2018, September 6-8). *Entelektüel Tevazu Ölçeği Uyarlama Çalışması [Intellectual Humility Scale Adaptation Study]* [Conference presentation]. Uluslararası Öğrenme, Öğretme ve Eğitim Araştırmaları Kongresi'nde sunuldu, Amasya, Turkey.
- Çelik, S., & Eryılmaz, F. (2006). Öğretmen algılarına göre endüstri meslek lisesi müdürlerinin dönüşümcü liderlik düzeyleri (Ankara ili örneği) [*Transformational leadership levels of industrial vocational high school principals according to teacher perceptions (Ankara province sample)*]. *Politeknik Dergisi*, 9(4), 211-224. <https://dergipark.org.tr/en/pub/politeknik/issue/33023/367118>.
- Cevizci, A. (2007). *Felsefeye Giriş [Introduction to Philosophy]*. Sentez.
- Çokluk. Ö., Şekercioğlu, G., & Büyükköztürk, Ş. (2010). *Sosyal Bilimler için Çok Değişkenli İstatistik: SPSS ve LISREL Uygulamaları [Multivariate Statistics for Social Sciences: Applications of SPSS and LISREL]*. Pegem Akademi.
- Collini, S. (2006). *Absent Minds: Intellectuals In Britain*. Oxford University Press.
- Comrey, A. L., & Lee, H. B. (1992). *A First Course In Factor Analysis*. Erlbaum.
- Conner, T. (2014). *The Dreyfus affair and the rise of the French public intellectual*. McFarland and Company, Inc., Publishers Jefferson, North Carolina.
- El-Ahmeri, M. H. (2020). *Entelektüelin Sorumluluğu [The Intellectual's Responsibility]* (M. Çelik, Trans.). Mana.
- Hilav, S. (2008). *Entelektüeller ve Eylem [Intellectuals and Action]*. Yapı Kredi.
- İlhan, M., & Çetin B. (2014). LISREL ve AMOS Programları Kullanılarak Gerçekleştirilen Yapısal Eşitlik Modeli (YEM) Analizlerine İlişkin Sonuçların Karşılaştırılması [*Comparison of Results of Structural Equation Model (SEM) Analyzes Using LISREL and AMOS Programs*]. *Eğitimde ve Psikolojide Ölçme ve Değerlendirme Dergisi*, 5(2), 26-42. <https://dergipark.org.tr/en/pub/epod/article/77255>.
- Karakose, T. (2022). Assessing the Relationships between Internet Addiction, Depression, COVID-19-Related Fear, Anxiety, and Suspicion among Graduate Students in Educational Administration: A Structural Equation Modeling Analysis. *Sustainability*, 14(9), 5356. <https://doi.org/10.3390/su14095356>
- Karasar, N. (2017). *Bilimsel Araştırma Yöntemi [Scientific Research Method]*. Nobel Akademik.
- Kırmızı, F. S. (2012). Öğretmen Adaylarının Kitap Okuma Alışkanlığına Yönelik Tutum Ölçeği: Geçerlik ve Güvenirlik Çalışması [*Teacher Candidates' Attitude Scale Towards Reading Habits: A Validity and Reliability Study*]. *Turkish Studies- International Periodical For The Languages, Literature and History of Turkish or Turkic*, 7(3), 2353-2366. <http://dx.doi.org/10.7827/TurkishStudies.3372>.
- Kline, R. B. (2005). *Principles and Practice of Structural Equation Modeling*. Guilford.
- Lawshe, C. H. (1975). A Quantitative Approach To Content Validity. *Personnel Psychology*, 28(4), 563-575. <https://doi.org/10.1111/j.1744-6570.1975.tb01393.x>.
- Mardin, Ş. (2016). *İdeoloji [Ideology]*. İletişim.
- McEwan, E. K. (2003). *Ten Traits of Highly Effective Principals: From Good to Great Performance*. Corwin.
- Meriç, C. (2014). *Mağaradakiler [those in the cave]*. İletişim.

- Otrar, M., & Arın, F. S. (2015). Öğrencilerin Sosyal Medyaya İlişkin Tutumlarını Belirlemeye Yönelik Bir Ölçek Geliştirme Çalışması [A Scale Development Study to Determine Students' Attitudes Towards Social Media]. *Eğitimi ve Öğretim Araştırmaları Dergisi*, 4(1), 1-13. <http://www.jret.org/FileUpload/ks281142/File/01.otrar.pdf>.
- Özcan, Z. (2006). Sosyo-Kültürel Fenomen Olarak Entelektüeller [Intellectuals as a Socio-Cultural Phenomenon]. *Doğu Batı Düşünce Dergisi*, 36, 35-62.
- Sartre J. P. (2010). *Aydınlar Üzerine [On Intellectuals]* (A. Bora, Trans.). Can.
- Schermelleh-Engel, K., & Moosbrugger, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, 8(2), 23-74.
- Schumacker, R. E. (2006). Conducting Specification Searches With Amos. *Structural Equation Modeling: A Multidisciplinary Journal*, 13(1), 118-129. https://doi.org/10.1207/s15328007sem1301_6.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics*. Pearson.
- Taftalı, O. (2006). Batı Medeniyetinin Mutsuz Çocuğu Entelektüel [The Unhappy Child of Western Civilization Intellectual]. *Doğu Batı Düşünce Dergisi*, 35, 165-174.
- Tavşancıl, E. (2014). *Tutumların Ölçülmesi ve SPSS ile Veri Analizi [Measuring Attitudes and Data Analysis with SPSS]*. Nobel.
- Timur, T. (2012). *Habermas'ı Okumak [Reading Habermas]*. Yordam.
- Tokat, L. (2017). Entelektüel Kimdir? Türkiye'nin Entelektüel Sorunu [Who is an Intellectual? Turkey's Intellectual Problem]. *Dinbilimleri Akademik Araştırma Dergisi*, 17(3), 9-42. <https://dergipark.org.tr/en/pub/daad/issue/37794/478316>.
- Türk Dil Kurumu. (2019). *Türkçe Sözlük [Turkish Dictionary]*. <https://sozluk.gov.tr/>
- Ülgener, S. (2012). Aydınlar Sosyolojisi ve Çağımız Aydını [Sociology of Intellectuals and the Intellectual of Our Age]. *İstanbul Üniversitesi İktisat Fakültesi Mecmuası*, 35 (1-4). <https://dergipark.org.tr/en/download/article-file/8633>.
- Yeap, S.B., & Thien, L.M. (2021). Enhancing Commitment to Teaching Entrepreneurship through Mindfulness and Readiness for Change in Higher Education Institutions. *Educational Process: International Journal*, 10(4): 35-54.
- Yılmaz, H. (2007). Akademik yöneticilerin entelektüel düzeylerinin ölçülmesi. (Doktora Tezi), [Measuring the intellectual level of academic administrators. (PhD Thesis)], Kocaeli Üniversitesi Sosyal Bilimler Enstitüsü, Kocaeli.
- Yirci, R., Karaköse, T., & Malkoc, N. (2021). Examining the Influence of Cyberbullying Perpetration and Victimization among High School Adolescents—Associations with Gender and Grade Level. *Educational Process: International Journal*, 10(4): 55-72.
- Yoldaş, C., & Merç, A. (2018). Entelektüel Düşünme Eğilimi Ölçeği Geliştirme Çalışması [Intellectual Thinking Tendency Scale Development Study]. *Turkish Studies-International Periodical for the Languages, Literature and History of Turkish or Turkic*, 13(27), 1729-1740. <http://dx.doi.org/10.7827/TurkishStudies.14349>.

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Appendix 1.

Intellectual Level Scale (ILS-19)

		Strongly Disagree	Disagree	Partially Agree	Agree	Strongly Agree
1	My manager explains their thoughts in decisions to be made regarding social problems	1	2	3	4	5
2	My manager wants important issues to be discussed in public	1	2	3	4	5
3	My manager develops ideas for a better, more livable society	1	2	3	4	5
4	My manager acts as a spokesperson for public awareness in social life	1	2	3	4	5
5	My manager advocates for intellectual development in education	1	2	3	4	5
6	My manager is at the center of solidarity efforts	1	2	3	4	5
7	My manager reflects basic human rights in their own life	1	2	3	4	5
8	My manager has a unique perspective on life	1	2	3	4	5
9	My manager holds the view that education prepares individuals for life	1	2	3	4	5
10	My manager holds the view that the primary purpose of education is to raise individuals of strong and correct character	1	2	3	4	5
11	My manager accurately articulates the suffering of powerless people in society	1	2	3	4	5
12	My manager focuses on innovation rather than the status quo	1	2	3	4	5
13	My manager is tolerant of people	1	2	3	4	5
14	My manager deals fairly with people	1	2	3	4	5
15	My manager respects the diverse opinions of people around them	1	2	3	4	5
16	My manager makes decisions by listening to all opinions, even if they are contrary	1	2	3	4	5
17	My manager stands up against all forms of injustice	1	2	3	4	5
18	My manager allows people to express their thoughts freely	1	2	3	4	5
19	My manager always sides with the law	1	2	3	4	5

Appendix 2.

Entelektüel Düzey Ölçeği (EDÖ-19)

		Hiç Katılmıyorum	Katılmıyorum	Kısmen Katılıyorum	Katılıyorum	Tamamen Katılıyorum
1	Yöneticim, toplumsal sorunlarla ilgili alınacak kararlarda düşüncelerini açıklar.	1	2	3	4	5
2	Yöneticim, önemli konuların halk tarafından konuşulmasını ister.	1	2	3	4	5
3	Yöneticim, yaşanabilir daha iyi bir toplum için fikir üretir.	1	2	3	4	5
4	Yöneticim, toplumsal hayatta kamu vicdanının sözcülüğünü yapar.	1	2	3	4	5
5	Yöneticim, eğitimde muhakeme gücünün geliştirilmesini savunur.	1	2	3	4	5
6	Yöneticim, dayanışma çabalarının odak noktasında yer alır.	1	2	3	4	5
7	Yöneticim, temel insan haklarını yaşamına yansıtır.	1	2	3	4	5
8	Yöneticim, yaşamında özgün bir bakış açısına sahiptir.	1	2	3	4	5
9	Yöneticim, eğitimin bireyi hayata hazırlamak olduğunu savunur.	1	2	3	4	5
10	Yöneticim, eğitimin en öncelikli amacının sağlam ve doğru karakterli insanlar yetiştirmek olduğunu savunur.	1	2	3	4	5
11	Yöneticim, toplumda güçsüz insanların acılarını doğru bir şekilde dile getirir.	1	2	3	4	5
12	Yöneticim, statüko yerine yeniliğe odaklanır.	1	2	3	4	5
13	Yöneticim, insanlara karşı hoşgörülüdür.	1	2	3	4	5
14	Yöneticim, insanlara adil davranır.	1	2	3	4	5
15	Yöneticim, çevresindekilerin farklı düşüncelerine saygı gösterir.	1	2	3	4	5
16	Yöneticim, aykırı bile olsa tüm fikirleri dinleyerek karar alır.	1	2	3	4	5
17	Yöneticim, her türlü adaletsizliğe karşı tavır alır.	1	2	3	4	5
18	Yöneticim, insanların düşüncelerini özgürce ifade etmelerine imkân sağlar.	1	2	3	4	5
19	Yöneticim, her zaman haklının yanında yer alır.	1	2	3	4	5

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