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Organizational Health Scale: A Scale Development Study

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Abstract

The purpose of this study is to develop a valid and reliable measurement tool for measuring organizational health of schools. The study group consists of 429 teachers working in secondary schools in the central districts of Eskişehir/Turkey in the 2015-2016 academic year. The construct validity of the scale was examined by exploratory factor analysis. According to the results of the analysis, the scale measures a four-factor structure. The four-factor structure of the scale was confirmed by confirmatory factor analysis. The total variance ratio explained by the scale was determined as 71.101%. In order to determine the reliability of the scale, the internal consistency coefficient of Cronbach's alpha was evaluated and this value was determined as .915. The results of all validity and reliability analyzes show that the Organizational Health Scale can be used as a valid and reliable measurement tool in the studies that teachers will be taken as a working group.

Keywords: organizational health, organizational health scale, school

1. Introduction

In order for organizations to develop continuously, to catch up with change and to be successful, all their units must be functional. When the organization is viewed from this perspective, one of the prominent concepts is organizational health.

Organizational health is a concept that addresses the harmony of the organization with all its internal components and environment, its ability to achieve its goals and objectives. At the same time, organizational health addresses the state of the organization's physical environment and the tools appropriate to realize the organization's purpose, the state of communication between the organization and the senior management, the potential for problem solving, development, growth and innovation. Organizational health also deals with the quality of inputs (competence status) and raw material safety, management and decision-making activities of the organization, the moral, psychological and physical health of its employees, as well as employees' welfare, performance and positions within the organization (Akbaba-Altun, 2001; Argyris, 1958; Argyris, 1959; Miles, 1965; Ardıç & Polatcı, 2007, Uras, 2000; Xenidis & Theocharous, 2014). Miles (1965) stated that it would not be enough for an organization to be considered healthy to exist only within its own boundaries for a certain period of time; and he defined the healthy organization as an organization that has been in existence for a long time continuously developing and extends its abilities of survive and overcome. It is seen that the first studies on organizational health were made at the beginning of the second half of the 20th century. It is thought that Argyris used the concept for the first time.

According to Argyris (1964), organizations that achieve their goals, maintain their internal structure and adapt to the environment are considered healthy organizations (Owens, 1981 as cited in Ordu & Tanrıöğen, 2013). The health of organizations depends on, providing the necessary resources for the effective realization of the determined objectives, maintaining the internal integrity and establishing and maintaining the organization's value system (Hoy & Feldman, 1987; Hoy & Hannum, 1997; Hoy & Miskel, 1987 as cited in Özdemir, 2012). According to Childers (1985), organizations can be healthy or sick, just like the people who make them up. The level of health in an organization is related to its ability to achieve its goals and objectives. Therefore, the ability of an organization to achieve its goals, which is the reason for its existence, depends first of all on the healthiness of that organization (as cited in Uras, 2000).

1.1 Organizational Health in Schools

It is not enough for an organization to be considered healthy to exist only within its own boundaries for a certain period of time. Healthy organization is an organization that exists for a long time, constantly develops and expands its ability to survive and overcome. The most information about the possible success of any particular exchange effort in an educational institution is obtained from the health conditions of that institution. In addition, trying to improve organizational health is more economical than short-term change efforts (Miles, 1965).

Educators have evaluated the concept of organizational health within the framework of school management, effectiveness, culture and climate; the harmony between teacher-student-management and they have used as the productivity resulting from this harmony (Tsui & Cheng, 1999 as cited in Aytaç, 2003). The concepts of health and effectiveness are closely related and have been used interchangeably at different times. There are also mutual relationships between organizational health and organizational climate (Akbaba-Altun, 2001). School health is used to conceptualize the organizational climate of schools, a concept that has been identified as an important variable related to school effectiveness (Brokover, 1978 as cited in Hoy & Feldman, 1987). A healthy school is one in which the technical, managerial, and institutional levels are in harmony; and the school is meeting both its instrumental and expressive needs as it successfully copes with disruptive external, forces and directs its energies toward its mission (Hoy & Feldman 1987). In Healthy Schools, people love each other and their schools. Trust, commitment, cooperation, loyalty, and teamwork are the hallmarks of such schools. Schools are transformed into educational communities where individuals come to respect and help each other (Hoy, Tarter, & Kottkamp, 1991).

Some authors have divided organizational health into various dimensions. The best known of them was made by Miles.

1.2 Miles' Dimensions of Organizational Health (Miles, 1965)

Miles asserts that there are 10 dimensions of organizational health which are not, mutually exclusive, and interact with each other vigorously within any particular organization. He divides these dimensions into three groups by observing the behaviors of individuals or small groups from various angles and making comparisons there are three dimensions in the first and second groups and four dimensions in the last group.

1.2.1 Dimensions Related to the Execution of the Work

The first three dimensions are relatively "task", in that they deal with organizational goals, the transmission of messages, and the way in which decision are made.

1) Goal focus: In a healthy organization, it may be reasonable for the purpose of the system (or more usually purposes) and well accepted by the members of the system. However, this is not enough for a healthy organization. Goals must be accessible with existing and available resources and also meet the demands of the environment.

2) Communication adequacy: It refers to the fact that communication is relatively uninterrupted, with the environment surrounding itself within the system and along the boundary of the system as "vertical "and" horizontal" without distortion.

3) Optimal Power Distribution: The effect distribution in a healthy organization is relatively fair. Subordinates can influence their upward. More importantly, subordinates think that their managers can also influence their own superiors. In such an organization, cooperation is at the forefront rather than pressure in interpersonal or subordinate relationships.

1.2.2 Dimensions That Center the Task

The dimensions in the second group consist of resource use, commitment and moral dimensions that centered the task. This group is mainly concerned with the protection, support and care needs of those in the system:

1) Resource utilization (most effective use of staff): In a healthy organization, the inputs of the system, especially the staff, are used effectively. The harmony between employee trends and expectations of the system itself (their role in the system) is good. The organizational system is coordinated in such a way that it neither overburdens employees nor leaves them empty. Employees work in accordance with the goals of the organization and their potential. Thus, employees not only feel good about themselves, but also have a sense of reasonably 'self-actualization' as they experience a sense of learning, development and growth while contributing to the organization.

2) Cohesiveness: A healthy employee loves himself. He is also aware of his own characteristics and is self-aware. Similarly, the healthy organization knows its employees well. The characteristics of employees (emotion, thought, lifestyle, etc.) treat the individual in a sense by paying attention. A healthy organization is more attractive to employees and employees are open to cooperation. As a result, commitment to the institution increases. As a

result, the loyalty to the organization increases.

3) Morale: It refers to the welfare or satisfaction of employees. Instead of feelings of discomfort, reluctance, tension and discontent, taking the center of feelings of happiness, satisfaction and pleasure and addressing these feelings raises the morale of the organization. In this way, employees look at life positively and their dominant personal reaction to events becomes "goodness".

1.2.3 Dimensions Related to Growth and Variability

In the third group, there are dimensions of innovation, autonomy, mutual harmony with the environment and problem-solving competence, which are related to growth and changefulness.

1) Innovativeness: A healthy system tends to find new methods, move towards new goals, produce new types of products, diversify itself and differentiate over time. In a sense, it can be said that a system with this tendency has grown, developed and changed rather than continuing in the normal course.

2) Autonomy: The healthy person moves "from his or her center towards to out" In other words, it establishes a relationship with the environment by taking its own self into consideration. He does not obey authority figures unconditionally. He does not take what he says to others as instruction and does not see it as a predictor of his own behavior. Similarly, the healthy organization will not respond to demands from outside in a destructive or unruly manner, but will not take a passive stance, feeling itself as part of the environment. As a result, it will tend to have some kind of independence from the environment.

3) Adaptation: There must be a certain harmony between what the organization presents to the environment that surrounds it and the expectations of the environment. When environmental demands and organizational outcomes do not match, a separate problem-solving and restructuring process begins, both within the environment and within the organization. Thus, the organization and the environment undergo an adaptation process. Healthy individuals, groups or organizations have a realistic and effective relationship with their environment.

4) Problem-solving adequacy: Even in healthy organisms, there can always be problems, difficulties, tensions. What matters is not the existence or absence of problems, but how the person, group or organization deals with these problems. Argyris (1964) stated that in an effective system, problems are solved with minimal energy, problems solved cease to be problems permanently, problem-solving mechanisms used are not weakened, on the contrary maintained or strengthened (as cited in Miles, 1965).

1.3 Dimensions of Organizational Health Scale

The dimensions of Organizational Health Scale developed with this study are briefly explained below.

1.3.1 Academic Emphasis

This dimension is concerned with factors aimed at revealing the academic status of the school. Determining the academic status of the students and the school from the perspective of the teachers working in the school, in other words, from the perspective of the employees working in the organization is considered within the scope of this dimension. Academic emphasis has been conceptualized as a key feature of effective schools that link productive teacher and student interactions. The guidance services and equipment support provided to the students are also handled within the scope of this dimension.

1.3.2 Morale

It is aimed to make sense of the relationship of teachers with each other and organizational climate. It is also within this dimension that the co-worker supports and the impact that the headmaster has on the teachers.

1.3.3 Supportive Leadership

This dimension deals with participatory school management. The indicators of the supportive school management are that the school administrator gives importance to the communication with the teachers, respect of the rights of the teachers and also includes the teachers in the decisions making. Preventing the emergence of unethical behavior in the school by the principal, and is respect teachers' rights, in terms of understanding the support given to teachers is important.

1.3.4 Environmental Factors

This dimension is related to organizational health indicators other than academic activities of the school. In this context, the school's safety and discipline system, physical conditions, supports that received from field experts and student parents are within this dimension.

The literature survey concluded that there are not enough valid and reliable scales related to the organizational

health developed based on teacher perceptions in Turkey and other countries. Therefore, it can be said that there is a need to develop a multidimensional scale that can be used to detect organizational health of schools. The aim of this research is to develop a valid and reliable measurement tool that can measure the organizational health of schools based on teacher perceptions.

1.4 Goal of the Research

The goal of this study is to develop a valid and reliable measurement tool for measuring the organizational health of schools based on the perceptions of teachers working in public secondary schools.

2. Method

2.1 Method of the Research

The research is a scale development study and includes the development process of Organizational Health Scale developed by the researchers.

2.2 Participants

The participants of the study consists of 429 teachers working in secondary schools located in Odunpazarı and Tepebaşı districts of Eskişehir/Turkey province in 2015-2016 academic year. 64.8% of the study group are female and 35.2% are male; 83.9% are married and 16.1% are single; 88.6% have undergraduate and 11.4% graduate education; 68.3% of the teachers were union members and 31.7% were teachers who were not members of the union.

2.3 Measurement Tool

In the first phase of the process of developing the "Organizational Health Scale", a literature review was conducted. In the literature review, the books written about organizational health (Akbaba-Altun, 2001; Hoy, Tarter, & Kottkamp 1991), theses (Akbaba, 1997; Ayduğ, 2014; Çiftçi, 2014; Özdemir, 2006; Gürkan, 2006; Karakuş, 2008; Kurum, 2013; Tacar, 2013; Taneri, 2011; Yıldırım, 2006; Yıldız, 2014) and articles (Argyris, 1959; Cemaloğlu, 2007; Güçlü, Recepoğlu, & Kılınç, 2014; Hoy & Feldman, 1987; Karaman & Akıl, 2005; Korkmaz, 2005; Korkmaz, 2006; Miles, 1965; Ordu & Tanrıöğen, 2013; Polatcı, Ardıç, & Kaya, 2008; Uras 2000) has been examined in this study. As a result of literature reviews, dimensions that can best measure the health of the organization have been tried to determine and in this direction, a pool of 61 items has been established based on institutional basis (Tezbaşaran, 1997). In the second stage, the draft scale was reduced to 43 items as a result of the elimination of the items that were not related to the dimensions that were based on the research, or which were estimated to have a low relationship and screening between similar expressions. In the third stage, the opinion of the field experts (Balcı, 2001) was taken for the scope and appearance validity of the measurement tool. In this context, 8 expert faculty members in the field of Educational Sciences (3 Prof. Dr., 5 Dr.) have been consulted for opinion. After the examination of the experts, the number of items was reduced to 42 with the regulation of the expressions on the said scale. In the fourth stage, in order to ensure the comprehensibility of the measurement tool in terms of language, the opinion of the Turkish language and literature expert was consulted. In line with the opinions on spelling rules and the use of punctuation marks, the scale items have been reviewed. Finally, without any dimensioning on the draft scale, the items were listed directly and 4 items were added to the scale to obtain personal information about the participants with a directive explaining the purpose of the study and the answers expected from the participants.

The draft scale prepared for implementation is called the Organizational Health Scale (OHS). The scale, which was designed to determine the responses of the participants with the Likert-type five-point rating consisted of I do not agree at all (1), I agree very little (2), I agree at medium level (3), I agree substantially (4), and I fully agree (5) options. To determine whether questions on the draft scale were understood by teachers, a pilot study was conducted into a group of 20 teachers. In this application, there was no criticism by the teachers of the pre-application of the items on the scale, and it was stated that the items were quite understandable. Thus the final form of the draft scale is given.

2.4 Data Analysis

In order to determine the validity and reliability of the measurement tool, questionnaire was applied to 448 teachers employed in secondary schools located in Odunpazarı and Tepebaşı districts of Eskişehir province by the researchers in the 2015-2016 academic year. In order to collect data in practice, necessary written permissions were obtained from the relevant authorities and the scales distributed were then collected by the researchers. When the filled scales are examined, it is found that 19 measuring tools were missing or incorrect (more than one option was checked). The number of scales to be analyzed was determined as 429 as a result of subtracting the incorrectly

filled scales. After the data was obtained, statistical analyses were carried out to reveal the psychometric properties of the measurements. It is important that the sample group represents the universe. Therefore, the appropriate sample group and number should be determined.

In the literature, there are also opinions that suggest that the number of people to be applied in relation to the number of items in the scale, which can also be expressed as sample size, be determined. Some authors consider it sufficient for the number of people to be applied to be at least five times the number of items on the scale (Bryman & Cramer, 2001), but there are also authors who suggest that it should be 10 times (Nunually, 1978) or even 15 times (Gorusch, 1983, as cited in Delice & Ergene, 2015). According to the specified criteria, it can be said that the number of participants in the research group is sufficient for factor analysis.

The appropriateness of the correlation matrix for factor analysis was established using the Kaiser-Meyer-Oklin (KMO) test of sampling adequacy and the Bartlett test of Sphericity (BS). To determine the reliability status of the scale, Cronbach's alpha value, which determines the internal consistency measure, and item total correlations were examined. The structure validity of the OHS was examined by exploratory factor analysis (EFA). Exploratory factor analysis was used to determine whether OHS which is composed of 43 items, is single or multi-factor. Accordingly, principal components analysis and varimax rotation method were used.

Researchers often make use of confirmatory factor analysis (CFA), especially when the tests are supposed to be multidimensional. For this, a covariance matrix is calculated over the scores of a number of subjects and CFA is then applied to test whether a presumed factor structure or pattern is not contradicted by this matrix. CFA is executed by means of structural equation modeling (SEM), a very sophisticated statistical procedure for testing complex theoretical models on data. Since a computer program became available for SEM (LISREL), and this method has gained much in popularity. LISREL has been updated several times, and there are several similar programs available now, e.g., EQS, and Mplus (Prudon, 2015). In this study, data analysis and the suitability of the factor structure in the measurement tool was tested through the SPSS and LISREL. There are a lot of adaptation statistics in SEM literature and new ones are constantly being developed. Compliance is called the ability of a model to reproduce data, i.e. the variance covariance matrix. Because of the diversity in compliance statistics, it is important for the researcher to decide which compliance statistics are appropriate to use in the studies. In this study, Chi-Square, CFI, NFI, NNFI, IFI, GFI, PNFI, PGFI, AGFI, RMSEA and SRMR fit indices were used to test the suitability of the model.

3. Results

3.1 Construct Validity

In order to test the construct validity of the measurements obtained from the OHS, explanatory factor analysis and confirmatory factor analysis were applied.

3.1.1 Explanatory Factor Analysis

Analysis studies were started by examining BS and KMO test results. The KMO test determines whether the selected sample data is appropriate to infer a factor, or the degree of conformity with a different expression. High test result value ranging from 0 to 1.0 means that each variable on the scale is perfectly predictable by the other variables on the scale (Giesen, 2004, as cited in Şencan, 2005). In this study, KMO value of the collected data .936 and BS test results were significant ($p < .05$, $df = 861$). These values indicate that the data are suitable for factor analysis. Eigenvalues were first examined to determine the number of factors. According to Köklü (2002), factors with eigenvalues above 1 and 1 should be considered stable.

In the first factor analysis based on the data within the scope of the research, emerged 6 factors with a factor eigenvalue greater than 1. Although factors with an eigenvalue above 1 are considered stable, Thompson (2004) stated that the scree plot reduces (determines) the number of factors more successfully than the eigenvalue (as cited in Çokluk, Şekercioğlu, & Büyüköztürk, 2014). When the scree plot was examined (Figure 1), it was observed that the slope started to flatten from point 4. Therefore, it was decided that the number of factors on the scale should be 4.

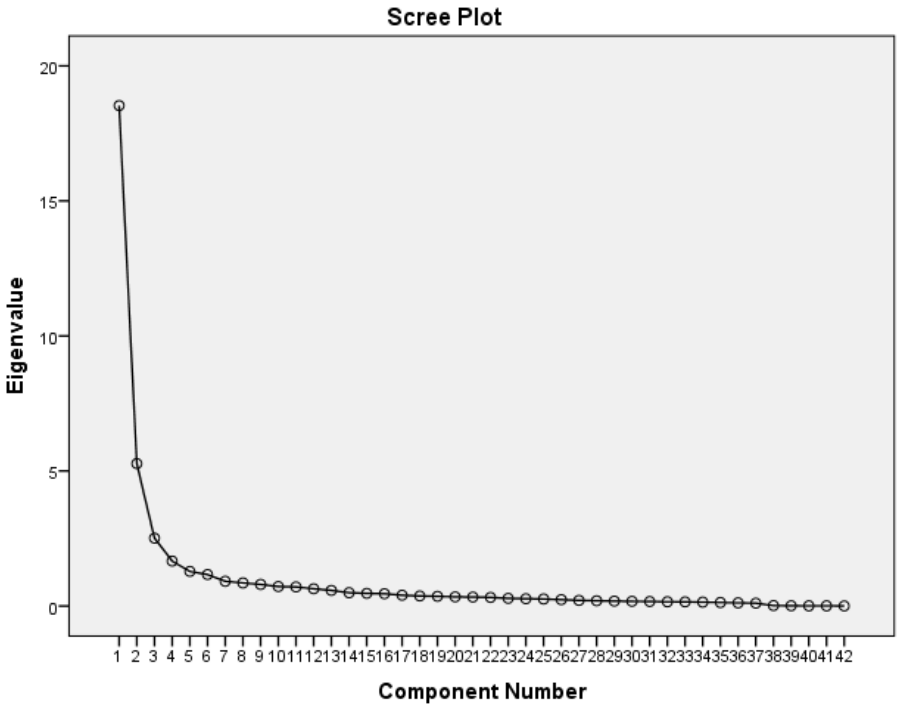

Figure 1. Scree plot (SPSS output)

In the second analysis, the rotation process was performed to better determine the factor loads of the items. "Varimax" was chosen as the rotation method. As a result of the second analysis, 11 items on the scale consisting of 4 factors (8, 10, 11, 12, 13, 14, 21, 23, 24, 29 and 32) were found to be the confluent. Items with less than 0.1 differences between the load values of two or more factors are called confluent items. In exploratory factor analysis, component is undesirable because it is desirable that an item measure only one property (as cited in Çokluk, Şekercioğlu, & Büyüköztürk, 2014). For this reason, 11 items, which are confluents, were removed from the scale and the analysis was renewed.

The third analysis showed that there was no confluent item left on the scale. By examining the correlation between the items of the correlation matrix, the number of items with an acceptable relationship ($r > 30$) was quite high. In addition, the fact that the determinant of the matrix is 1.190 indicates that factor analysis is possible according to Can (2014) (Determinant>0.0001).

The existence of strong relationships between independent variables is called connection or multiple linear connections and shows the undesirable situation in regression analysis (Orhunbilge, as cited in Albayrak, 2005, p. 109). When the correlation matrix table is examined, 40 to 1 (0.804); 38 to 3 (0.839); 19 to 5 (0.829) 27 to 4 (0.807) and 36 to 2 (0.899), in items multiple co-linearities ($r>0.8$) between the items were observed. Çokluk, Şekercioğlu, and Büyüköztürk (2014) also stated that if items were decided to be removed in exploratory factor analysis–on the grounds that the removal of one item may result in changes in the factor load values of other items–the items should be excluded from the analysis one by one. Therefore, the communalities table was examined and the lower factor load was eliminated. When the communalities table is examined, it is seen that factor loads of items 1, 2, 3, 5 and 27 are lower than factor loads of items 4, 19, 36, 38 and 40. Therefore, these items were excluded from the analysis and then the analysis was renewed.

In the communalities table are basically given the rates of together explanation the variance in a common factor of each item. Among the items in this table, it should be carefully evaluated whether the items that are found to be of lower value than others are functioning (Çokluk, Şekercioğlu, & Büyüköztürk, 2014). When the table of Communalities was examined, the factor load of item 39 was observed to be quite low (0.226) compared to other substances. This item was excluded from the scale because it significantly reduced the mean of common variances (Can, 2014).

In the analysis and evaluations, items 7 and 20, which were found to have the highest load value in different dimensions than theoretically expected dimensions, were removed from the scale in accordance with expert opinion.

The communalities of the items in the scale, the factor load values after the rotation process and the item total correlations obtained from the subsequent analysis are given in Table 1.The Factors which that forming the scale were named by making use of the studies Hart, Wearing, Conn, Carter, and Dingle (2000), Ardıç and Polatcı (2007), Polatcı, Ardıç, and Kaya (2008), Tutar (2010), Güçlü, Recepoğlu, and Kılınç (2014) and Guidetti, Converso, and Viotti (2015). In this context, the first dimension is called “academic emphasis”; the second dimension is called “supportive leadership”; the third dimension is called “morale” and the fourth dimension is called “environmental health”.

Table 1. Factor and item analysis results of organizational health scale

Factor	Item	Communalities	Factors Loadings after Varimax Rotation	Item Total Correlation
Academic Emphasis	30	772	.851	582
	31	727	.816	581
	34	732	.807	576
	42	765	.803	592
	33	600	.719	517
	35	523	.614	602
	41	638	.607	669
Supportive Leadership	25	823	.895	527
	6	814	.881	564
	28	792	.877	519
	26	760	.863	446
	19	781	.860	485
	4	507	.632	226
Morale	18	822	.865	596
	17	812	.858	581
	16	811	.841	615
	15	752	.833	554
	9	618	.729	518
Environmental Factors	37	771	.812	553
	38	731	.750	626
	40	646	.639	606
	36	664	.623	630
	22	574	.476	641

Communality values of the data obtained within the scope of the research were also examined. Communalities vary between .507 and .823 as shown in Table 1.According to Field (2005), in studies where the number of samples exceeds 250, the means communalities averages above 0.6 may increase the reliability of the criteria used in the research (as cited in Can, 2014). In this study, the community average was calculated as 16434/23 = 714. In accordance with this determination, there was no need to remove any item from the scale according to the communalities of the substances.

After rotation with Varimax method, it is observed that the factor loads of items in “academic emphasis” dimension changed between .607 and .851 factor loads of items in “supportive leadership” dimension changed between .632 and .895 factor loads of items in “morale” dimension changed between .729 and .865 and factor loads of items in “environmental factors” dimension changed between .476 and .812 It is generally desirable in researches that the factor loads of the items should be at least.45 (Büyüköztürk, 2010; Seçer, 2013). From these data, it is understood that factor load values of Organizational Health Scale are sufficient.

When the item total correlations of the Organizational Health Scale were examined (Table 2), the values were positive and generally high; however, it is seen that item 4 has a lower value (0.226) than other items. Since it was evaluated by the researchers that item 4 was necessary for the scale, it was decided to remain in the scale in accordance with the expert opinion.

In its final form, the Organizational Health Scale consists of 23 items (Appendix A). 7 of the 23 items in Appendix A (1, 2, 3, 4, 5, 6, 7) constitutes the Academic Emphasis factor; 6 (8, 9, 10, 11, 12, 13) are constitutes the Supportive Leadership factor; 5 (14, 15, 16, 17, 18) are constitutes the Morale factor and 5 are constitutes the Environmental Factors (19, 20, 21, 22, 23). In addition, the items 5, 16, 18 in scale are intended as reverse items. Thus, the scoring of these items was done in reverse order. The eigenvalues and variance ratios of the factors of the Organizational Health Scale (final version) are presented in Table 2.

Table 2. Eigenvalues and variance ratios of organizational health scale factors

Factor	Eigenvalues	Variance (%)
Academic Emphasis	8.974	20.681
Supportive Leadership	3.975	18.939
Morale	2.266	18.774
Environmental Factors	1.138	12.756
Total		71.101

When Table 2 is examined, it is seen that the Organizational Health Scale, which took the final form before the confirmatory factor analysis with the exclusion of 19 items from the scale as a result of exploratory factor analysis, shows a four-factor structure. It is understood that the variance ratio explained by each factor is 20.681% in the first factor; 18.939% in the second factor, 18.774% in the third factor and 12,756% in the fourth factor. According to Table 2, the first three factors are stronger than the fourth factor in terms of the explained variance. Total variance explained by four factors was determined as 71.101%. “The variance ratio explained by a measurement tool must be higher than the unexplained variance ratio (Seçer, 2013)”. In this case, the total variance explained is sufficient.

In order to allow the total score to be obtained from the whole organizational health scale or from each dimension separately, the ranges of scores and their meanings were determined. For this purpose, firstly the range coefficient was calculated. Likert-type five-point scoring technique is used in the scale, grading items “1 point”, “2 points”, “3 points”, “3 points”, “5 points” options. Based on the (Maximum measurement - smallest measurement)/desired number of groups rule, the range coefficient is determined as 5-1 = 4 and 4/5 = 0.80 and the option ranges are arranged in this way. The organizational health scale’s score ranges, rating options and their meanings are given in Table 3.

Table 3. Organizational health scale evaluation intervals

Score Range	Rating	Meaning
1.00-1.80	Completely Disagree	Very low
1.81-2.60	Strongly Disagree	Low
2.61-3.40	Averagely Agree	Middle
3.41-4.20	Strongly Agree	High
4.21-5.00	Completely Agree	Very high

3.1.2 Confirmatory Factor Analysis (CFA)

In the literature, many fit indices are used to determine the fit adequacy of the model tested in CFA. According to the results of goodness of fit tests, the model is accepted or rejected (Ayyıldız, Cengiz, & Ustasüleyman, 2006). In this study, Chi-Square, CFI, NFI, NNFI, IFI, GFI, PNFI, PGFI, AGFI, RMSEA and SRMR fit indices were used to test the model’s suitability. It should be clear that these rule of thumb cutoff criteria are quite arbitrary and should not be taken too seriously. Fit indices may be affected by model misspecification, small-sample bias, effects of violation of normality and independence, and estimation method effects (Hu & Bentler, 1998 as cited in Schermelleh-Engel & Moosbrugger, 2003) Therefore it is always possible that a model may fit the data although one or more fit measures may suggest bad fit (Schermelleh-Engel & Moosbrugger, 2003). The results of confirmatory factor analysis of Organizational Health Scale are given in Table 4 and Table 5. For the factor structure tested in DFA, modifications were made between items 41 and 35, 38 and 37 and 31 and 30 in line with the modifications recommendations for improvement. After modification, the Chi-square value of the scale ($\chi 2$ = 626.46, N = 429, df = 221, p = 0.00) significant; the ratio of $\chi 2$-sd was found to be $\chi 2/sd = 2.83$.

Table 4. The results of the confirmatory factor analysis of the organizational health scale and standard goodness-of-fit value ranges

Fit Measures	Acceptable Fit	Good Fit	Determined Value
RMSEA	.05 <RMSEA ≤ .08	0 ≤ RMSEA ≤ .05	0.065
SRMR	.05 < SRMR ≤ .10	0 ≤ SRMR ≤ .05	0.055
NFI	.90 ≤ NFI < .95	.95 ≤ NFI ≤ 1.00	0.97
NNFI	.95 ≤ *NNFI* < .97c	.97 ≤ *NNFI*≤ 1.00	0.97
CFI	.95 ≤ CFI < .97	.97 ≤ CFI ≤ 1.00	0.98
GFI	.85 ≤*GFI* < .95	.95 ≤*GFI* ≤ 1.00	0.89
AGFI	.85 ≤ *AGFI* < .90	.90 ≤*AGFI* ≤ 1.00	0.86
IFI	.90 ≤ IFI < .95	.95 ≤ IFI ≤ 1.00	0.98
X^2/sd	2< X^2/sd ≤ 3	0≤ X^2/sd ≤ 2	2.83

References: Schermelleh-Engel, Moosbrugger, and Müller, (2003), Hu and Bentler (1999), Kline (1998) cited in Wakslak, Jost, Tyler, and Chen (2007), Marsh, Balla, and McDonald (1988) cited in Ergül, Baydık, and Demir (2013), Meyers, Gamst, and Guarino (2006).

Table 4 shows that NFI, NNFI, CFI and IFI fit index values are within the range of "good fit" while other fit indexes are within the range of "acceptable fit". The results of the confirmatory factor analysis of the Organizational Health Scale were also shown in Table 5.

Table 5. Organizational health scale parsimonious fit indices (PNFI, PGFI) values

Fit Measures	Acceptability Suggestion	Degree of Fit	Determined Value
PNFI	Obtain acceptable or good fit values from other fit indices.	Higher values are indicative of better fit, but values of .50 and above are acceptable.	0.84
PGFI	Obtain acceptable or good fit values from other fit indices.	Higher values are indicative of better fit, but values of .50 and above are acceptable.	0.71

References: Mulaik et al. (1989), James, Mulaik, and Brett (1982), Schermelleh-Engel, Moosbrugger, and Müller (2003), Meyers, Gamst, and Guarino (2006).

As can be seen from Table 5 and Table 6, the findings show that the fit index values of the model are within the desired range. Considering these results, it can be argued that the four-factor structure obtained as a result of confirmatory factor analysis is an acceptable model. The diagrams of the model are shown in Figure 2 and 3.

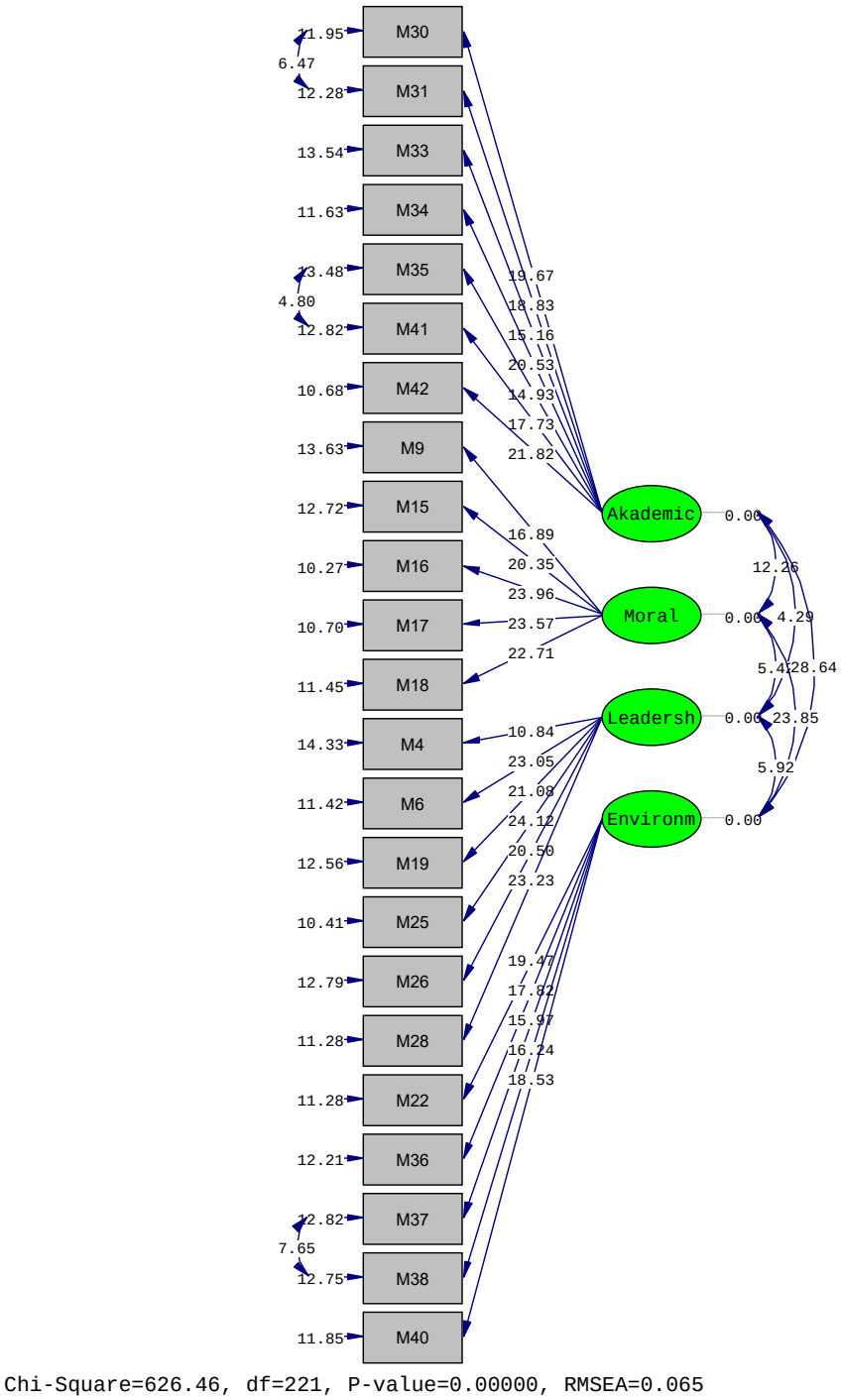

Figure 2. Organizational health scale t-values diagram (LISREL output)

In the confirmatory factor analysis, t values of the model were examined. Parameter estimates are significant at 0.05 level if t-values exceed 1.96; If it exceeds 2.56, it is significant at 0.01 level. In the analysis carried out within the framework of the structural equation model, non-significant t-values should be excluded from the analysis (Çokluk, Şekercioğlu, & Büyüköztürk, 2014, p. 304). When the t-values of the Organizational Health Scale are examined (Figure 2), it was seen that the values ranged between 10.84 and 24.12, and the t-values of the scale were significant at 0.01 level.

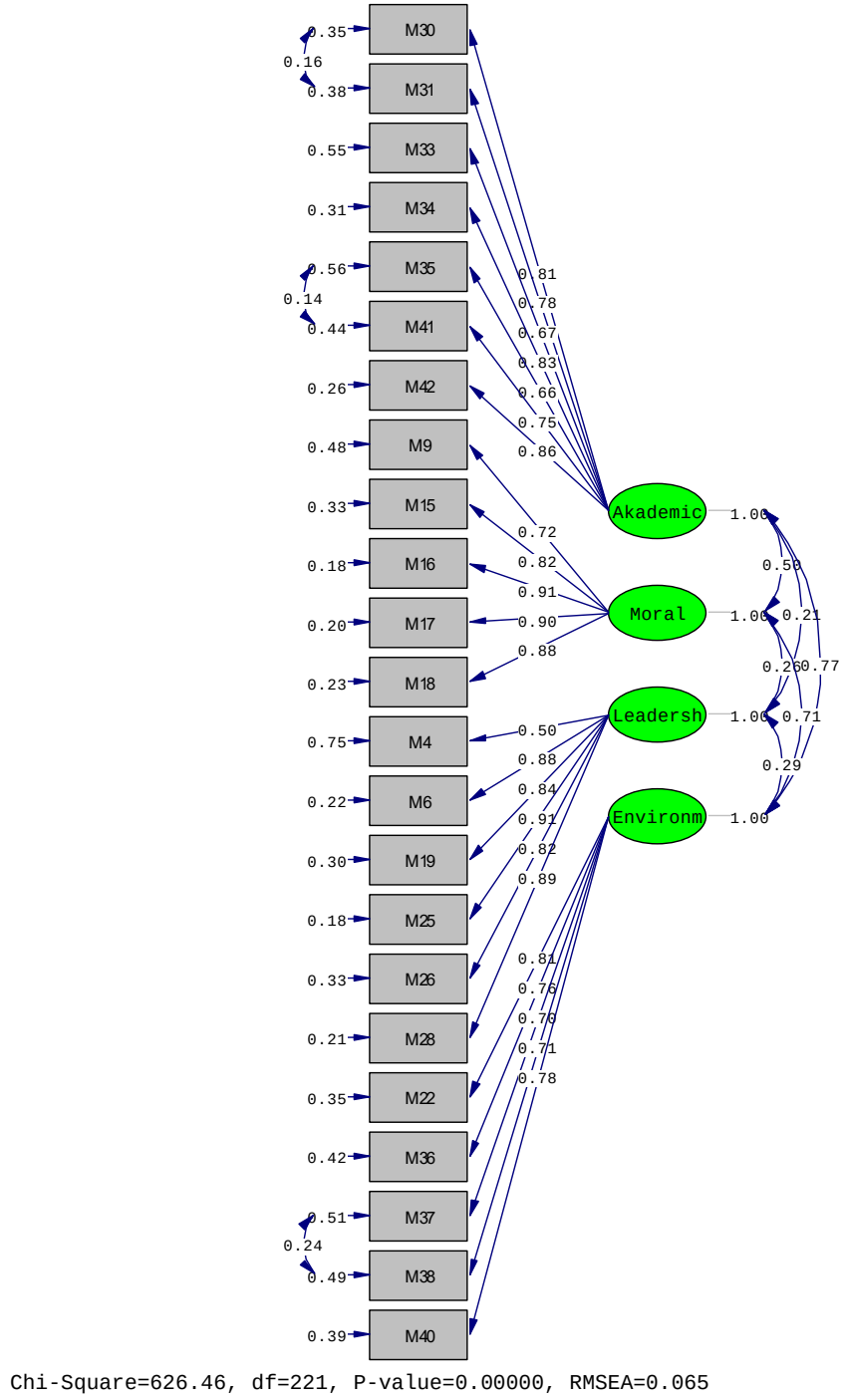

Figure 3. Organizational health scale standardized solution diagram (LISREL output)

It is useful to check the error variances in confirmatory factor analyzes. The error variance represents the unexplained portion of the variance for the data set. Error variances should not be too high (very close to 1.00) (Büyüköztürk, 2002; Çokluk, Şekercioğlu, & Büyüköztürk, 2014; Çepni, 2010, p. 50). When the error variances of the scale are examined (Figure 3), the value of the 4th item is slightly higher than the others (0.75); values of other items ranged from 0.18 to 0.56; however, it is seen that there is no item with very high error variance in the scale.

For multifactor models, correlations between factors are expected not to exceed 0.85. If factor correlations exceed 0.85, it is thought that the model data can be matched with fewer factors, and that the factors claimed are not

separate concepts (Çepni, 2010). When the factor correlations of Organizational Health Scale are examined, it is seen that there is no value exceeding 0.85 (Figure 3, Table 6).

Table 6. Organizational health scale factor correlations

Factors		Correlations Between Factors
Academic Emphasis	Morale	0.50
Academic Emphasis	Supportive Leadership	0.21
Academic Emphasis	Environmental Factors	0.77
Morale	Supportive Leadership	0.26
Morale	Environmental Factors	0.71
Supportive Leadership	Environmental Factors	0.29

This shows that model-data fit can be achieved by 4 factors and 4 factors are separate concepts and that the results of exploratory factor analysis are validated.

3.2 Reliability

Cronbach Alpha is the most widely used objective reliability criterion. George and Mallery (2003) provided the following rules of thumb: "_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor, and _ < .5 – Unacceptable" (p. 231). While increasing the value of alpha is partially dependent upon the number of items in the scale, it should be noted that this has diminishing returns. It should also be noted that an alpha of .8 is probably a reasonable goal (Gliem & Gliem, 2003). The Cronbach's alpha values obtained of the organizational health scale are given in Table 7.

Table 7. Alpha coefficients of organizational health scale factors

Factor	Cronbach's alpha
Academic Emphasis	0.910
Morale	0.919
Supportive Leadership	0.918
Environmental Factors	0.870
OHS	0.915

As seen in Table 7, Cronbach alpha reliability coefficient of the organizational health scale was determined as 0.915.The Cronbach's alpha coefficients for the dimensions of the scale have values between .919 and .870. As shown in Table 8, the Cronbach alpha coefficient calculated for Academic Emphasis factor was .910, for Morale factor .919, for Supportive Leadership factor .918 and for Environmental Factors factor .870.

4. Discussion, Conclusion and Suggestions

In this study, it is aimed to develop a valid and reliable measurement tool for determining the organizational health of schools. The scale was prepared as a five-point likert type. The scale, which consisted of 42 items as a draft, was applied to a total of 448 teachers; however, it was found that 19 scales were answered inadequately or incorrectly (more than one choice was marked). Therefore, the total number of scales analyzed was determined as 429.

The results of the KMO and BS tests were examined before EFA was performed and it was concluded that the data was suitable for EFA as a result of the KMO value being less than .936 and BS value being less than $p<.05$.In order to determine the construct validity of the organizational health scale, 19 items were excluded from the scale and it was determined that the scale consisted of 4 factors. The scale was dimensioned according to these factors. While the first dimension of the scale (Academic) explained 20.681% of the total variance; second dimension (Supportive Leadership) 18.939%; third dimension (Morale) 18.774% and fourth dimension is explain 12,756% of the total variance. The total variance explained by the four dimensions (Environmental Factors) were determined as 71.101%. As a result of the DFA after EFA, the factor structure of the scale revealed by the EFA was confirmed and it has been seen that the scale is 4-dimensional. In the DFA, the fit indices of the scale were examined and The Chi-Square value ($\chi 2 = 626.46$, $N = 429$, $DF = 221$, $p = 0.00$) has been seen to be significant. Fit indices values have emerged as, RMSEA: 0.065, SRMR; 0.055, NFI: 0.97, NNFI: 0.97, CFI: 0.98, GFI: 0.89, AGFI: 0.86, IFI: 0.98, PNFI: 0.84, PGFI: 0.71, x2/df = 2.83. According to these values, it can be stated that the model fits well.

Cronbach's alpha coefficient was used for the reliability of the scale. The Cronbach's alpha coefficient of the organizational health scale was determined that .915 for the whole scale. Cronbach's Alpha coefficients of the dimensions of the scale are were determined as; for dimension of Academic Emphasis 0.910, for dimension of Morale 0.919, for dimension of Supportive Leadership 0.918 and for dimension of Environmental Factors is 0.870.

When the studies and analyzes are evaluated together, it is possible to say that the organizational health scale is a valid and reliable measurement tool that can be used to determine the opinions of teachers working in schools on organizational health.

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Note

Note 1. This study was presented by Ercan Doğanay and Abidin Dağlı at the Oral Communication Sessions of the International Contemporary Education Research Congress (Education from Tradition to the Future) held by Muğla Sıtkı Koçman University Faculty of Education between September 29 and October 2, 2016.

Appendix A

Organizational Health Scale in original language

Açıklama: Her sorunun başına "Bu okulda" ifadesinin konulduğunu göz önünde bulundurarak size uygun olan seçeneklerden birisine "X" işareti koyunuz. **Bu okulda;**		Hiç katılmıyorum (1)	Çok az katılıyorum (2)	Orta düzeyde katılıyorum (3)	Büyük oranda katılıyorum (4)	Tamamen Katılıyorum (5)
No	**Maddeler**					
	Akademik vurgu					
1	öğrenciler sorumluluk sahibidir.					
2	öğrencilerin güdülenmeleri yüksektir.					
3	öğrenciler akademik alanda başarılı öğrencilere saygı duyarlar.					
4	öğretmenler öğrencilerin başarılı olacağına inanırlar.					
5	öğrencilere sunulan psikolojik danışma ve rehberlik hizmetleri yetersizdir. *					
6	öğretim araç-gereçleri ihtiyaç anında mevcuttur.					
7	öğrencilerin akademik başarı düzeyi yüksektir.					
	Moral					
8	öğretmenler okulun örgütsel ikliminden memnundurlar.					
9	öğretmenler birbirlerine güvenirler.					
10	öğretmenler meslektaşlarından destek alırlar.					
11	öğretmenler birbirlerine karşı hoşgörülü davranırlar.					
12	öğretmenler birbirlerinin başarısından gurur duyarlar.					
13	müdür öğretmenleri etkileme gücüne sahiptir.					
	Destekleyici Liderlik					
14	müdür öğretmenleri ilgilendiren konularda onları karara katar.					
15	etik olmayan davranışların ortaya çıkmasına izin verilmez.					
16	müdür ile öğretmenler arasında sağlıklı bir iletişim ağı yoktur. *					
17	müdür ve öğretmenler işbirliği içinde çalışırlar.					
18	müdür öğretmenlerin temel hak ve özgürlükleri konusunda duyarlı değildir. *					
	Çevresel Faktörler					
19	öğretmenler meslekleri ile ilgili uzman desteği alma imkânına sahiptir					
20	sorun çıkmasını engelleyen önleyici bir disiplin sistemi egemendir.					
21	veliler, öğrencilerinin eğitimleri için işbirliğine açıktır					
22	öğretmenler okulun fiziksel ortamından (okul bahçe ve binasının durumu, ısınma şartları, gürültü vs.) memnundurlar.					
23	okul dışından gelebilecek olumsuzluklara karşı güvenlik önlemleri yeterlidir.					

* Ters maddeler.

Appendix B

English translation of Organizational Health Scale

Annotation: Please mark "X" on the appropriate choice for you, considering that each question is preceded by the phrase "at this school". **At this school;**		**I do not agree at all (1)**	**I agree very little (2)**	**I agree at medium level (3)**	**I agree substantially (4)**	**I fully agree (5)**
No	**Items**					
	Academic Emphasis					
1	students are responsible people.					
2	students are highly motivated.					
3	students respect academically successful students.					
4	teachers believe students will success.					
5	psychological counseling and guidance services provided to students are inadequate.*					
6	teaching tools are available when needed.					
7	students' academic achievement level is high.					
	Morale					
8	teachers are satisfied with the school's organizational climate.					
9	teachers trust each other.					
10	teachers receive support from their colleagues.					
11	teachers are tolerant of each other.					
12	teachers take pride in each other's success.					
13	principal has the power of influence over teachers.					
	Supportive Leadership					
14	the principal allows teachers to participate in the decision the matters concerning of them.					
15	unethical behaviors are not allowed to occur.					
16	there is no healthy communication network between the principal and the teachers. *					
17	the principal and teachers work collaboratively.					
18	the principal is not sensitive to the fundamental rights and freedoms of teachers.*					
	Environmental Factors					
19	teachers have the opportunity to receive expert support related to their profession.					
20	a preventive discipline system that prevents problems is dominant.					
21	parents are open to cooperation for their students' education					
22	teachers are satisfied with the physical environment (the condition of the school garden and building, heating conditions, noise, etc.) of the school.					
23	safety measures are sufficient to prevent the negativity that may come from outside the school.					

* Reverse items