Leadership and School Climate in Effective Schools: A Meta-Analysis

Ercan Yılmaz[1] , Gulnar Jafarova[2]

[1] Prof Dr., Necmettin Erbakan University, Konya, Turkey.
ercanyilmaz70@gmail.com
[2] PhD Student, Necmettin Erbakan University, Konya, Turkey.
gulnar.ceferova94@gmail.com

Received 25 January 2019; accepted 14 June 2019; published online 05 July 2019

ABSTRACT

The purpose of this study is to determine the relationship between effective schools and the variables of leadership and school climate. In the study, the meta-analysis method which is one of the quantitative methods was used. With the purpose of collecting data, the dissertations and articles written in the national and international level in 1990-2016 were reviewed and 11 studies on the relationship between effective schools and leadership and 6 studies on the relationship between effective schools and school climate were subject to effect size analysis. In the study, the correlation coefficient was used as the effect size index. The correlation coefficients were joined with the Fisher z method according to the random effects model. The Comprehensive Meta-Analysis 2.00 (CMA) software was used in the analysis of data. Based on the relationship between effectiveness of school and leadership, the Fisher Z effect size was determined as 0.595; and based on the relationship between effectiveness of school and school climate, the effect size was determined as 0.559. As a result of the study, a positive, strong and significant relationship was determined between effectiveness of school and leadership and school climate ($p<.05$).

Key words: school effectiveness, leadership, climate, meta-analysis, education.

JEL classification: H75, C26

INTRODUCTION

In the modern times, since the development of all areas is influenced from the development of the area of education, education is regarded as one of the most important factors of our education life. It is not possible for positive developments and changes to take place in other areas before the area of education develops in a country. Since the process of education is carried out in schools, the development of schools gains an important quality. Studies on increasing the quality of the process of education taking place in schools bring the concept of effective school to the top.

Özdemir (2009) in his study states that effective schools are places where the cognitive, emotional, psycho-motor and aesthetic developments are supported in the best manner in which the optimal learning environment is created.

The concept of effectiveness which is defined as creating an effect which historically goes back to the past and is expected verbally has been expressed by Barnard in 1930's as "the degree with which an organization reaches its targets" (Bernard 1948, narrated by Duranay, 2005:7). Since schools, which function as a type of organization, produce various goods and services in terms of teaching, learning and extracurricular activities (Miskel et. al, 1979: 98), their effectiveness expressed as reaching their targets in terms of product number and quality, productivity, adaptability and flexibility (Hairston, 2016: 6). Based on schools' level of reaching the targets they determine, it can be concluded whether they are effective or not. Without doubt, schools' level of reaching their targets display differences and numerous factors play a significant role in this.

In order to reach a conclusion as to whether schools are effective or not, the characteristics of effective schools need to be taken into consideration. Many studies have been carried out on the characteristics effective schools need to have. Weber, who is considered as one of the pioneers of these studies, has carried out a study on 4 schools located in New York, Kansas and Los Angeles in 1970-1971. Based on the findings of his study, Weber has identified the characteristics of effective schools as follows: strong leadership, high expectations, positive atmosphere, strongly focusing on education, having an additional education personnel, making use of phonetics in education, individualization, in-depth evaluation of the development and progress levels of students (Weber, 1971: 26). Edmonds has added a strong administrative leadership, student success, a school atmosphere which is not rigid and oppressive, giving importance to making it possible for the students to acquire basic skills in comparison to other school activities, transferring the power and resources of the school from other activities to the basic needs of the school when there is such a need and the constant follow-up of the development of the students to the characteristics of effective schools (Edmonds, 1979: 22). Lezotte (1991) has stated that characteristics such as a safe and ordered environment, a climate of high expectations for success, educational leadership (educator, student), open and focused mission/vision, presenting the students with the opportunity of learning, constant follow-up of the development of the students and family-school relations make schools effective.

When we take a look at the results of this study which aims at identifying the characteristics of effective schools, it can be seen that factors such as climate and leadership come to the prior as common findings. Taking the assumption that administrative effectiveness has a great influence in terms of achieving organizational effectiveness (Helvacı, 2011; Krüger,2007), school administrators who organize employees, give instructions, guide their activities, coordinate and supervise them need to have the required skills in creating effective schools (Gürsel, 2012). In respect to the organization to be able to reach its targets, the members need to know about the targets, believe that the targets are accurate and focus on these, have a high level of motivation about realizing these targets and work in a cooperative manner and this can be stated to be closely related with the administrator's skills of influencing the employees in line with his/her beliefs, in other words, with his/her skills of leadership. Leadership is the skills of influencing the group members or the followers in line with realizing the common target (Celep, 2014). Knapp (2007) defines leadership skills as "the skill of achieving pre-determined results using the least amount of time and energy or both" (quoted by Bolanle, 2013).

When the literature is reviewed, it can be seen that leadership has types such as transformational, transactional, distributed, cultural, ethical, educational and visionary leadership, etc. Transformational leadership underlines motivation and the positive development of the followers and these leaders motivate their followers to do more than they aim at (Bass and Riggio, 2006). Distributed leadership means that leadership can be distributed among all the group members (Bennet et. al, 2003). According to what Blase (1999) quotes from different researchers (Smith & Andrews, 1989; Glickman,1985; Pajak, 1989), educational leadership in general involves situations such as the supervision of teaching in classes, development of curriculum, personnel, group development, direct help to the teachers, motivating the personnel, planning, organizing, facilitating change, etc. In transactional leadership, there is an exchange between the leader and the followers and while the followers do as the leader wishes, the leader tries to meet their expectations (Eraslan, 2004). Visionary leadership is directed at the future and these leaders transform their own visions into common visions based on thought and emotions and carry the followers towards the future. While ethical leadership foresees the leader to carry certain ethical values and principles and to be a model through these ethical behaviors, cultural leadership makes it possible for the members of the school to work within a more positive culture (Çelik, 2015).

One of the factors which is deemed as important in terms of organization members displaying a performance in line with their target is the climate the school has (Şentürk, 2012; Şenel, 2016). School climate is a relatively permanent characteristic of school atmosphere based on the common perceptions of the members of the organization and consists of internal characteristics which differentiate one school from another. In this respect, climate can be stated to resemble the definitions of personality. "What personality is for the individual; climate is the same for the school." School climate embodies norms, values and expectations which makes people feel socially, emotionally and physically safe (Cohen et. Al, 2009, p 182). Balcı (2011) states that effective schools are those in which the academic success of all students are contributed to, students with a low level of success are shown interest, students are given the chance to work in harmony without discriminating them in terms of their ethnic and socio-economic conditions and there is a positive social climate.

When the local and foreign literature is reviewed, it can be seen that there are numerous studies on effective schools and school climate (Bryant,2001; Okafor, 2006; Karadağ,2008; Manaf ve Omar,2015; Hairston,2016; Şenel,2016) and leadership (Buzzi,1990; Herbst,2003; Okafor,2006; McVey,2009; Ngang,2010; Ngang,2011; Bolanle, 2013; Özkan,2014; Abdurrezzak,2015; Al-Harthi ve Al-Mahdy, 2016; Çerit, 2017) which are independent of each other in which the relationship between effective schools and school climate are dealt with but that there are no studies in which a meta analytical research has been done. It can be seen that there are studies in which the aspects of school climate and leadership in effective schools are dealt with together with other factors and try to identify their effect levels (Scheerens,2013) and studies which only deal with transformative leadership (Chin,2007; Leithwood and Sun,2012). In this respect, it is considered that a meta-analytical study is need to better present the importance of the factors of leadership and school climate in making schools effective, make it possible to integrate research findings, expand the sample size and make generalizations and to facilitate the efficient use of accumulation of knowledge obtained from the findings of numerous studies.

In this study, it was aimed at analyzing the relationship between school effectiveness and the factors of school climate and leadership through the meta-analysis method. Within the scope of this aim, the answers to the following questions will be sought:

1. What kind of a relationship is there between school effectiveness and leadership and if there is a relationship, what is the level of effect size?

2. Is there a relationship between school effectiveness and school climate and if there is a relationship, what is the level of effect size?
3. Does the relationship between school effectiveness and leadership display differences according to publication type, publication place and school type variables?
4. Does the relationship between school effectiveness and school climate display differences according to publication type and publication place variables?

METHOD

In this study carried out with the purpose of determining the relationship between effective schools and leadership and school climate according to the perceptions of teachers and administrators, the meta-analysis method was used. Meta-analysis is a quantitative method which is used to integrate the results of the preciously conducted studies (Sánchez-Meca and Marín-Martínez, 2010:152).

In order to achieve the aim of the study, the national and international dissertations based on the relationship between school effectiveness and leadership and school climate written in 1990-2016 and the studies involving the suitable statistical data were included within the scope of the study. In the review process, the words *"school effectiveness, effective schools, leadership, school climate"* were used as the key words.

In the review of the data, the Board of Higher Education National Dissertation center, Google Scholar, the journals of the faculties of education, educational sciences and social sciences of universities, Eric, Taylor&Francis Online, Emerald, PreQuest, Sage Journals, publication houses and data bases were used.

In the analysis of the data, the Comprehensive Meta-Analysis 2.00 (CMA) software was used. The Q ve I^2 statistical analyses were done to firstly determine a model for the analysis. The determined model based on the result of this analysis and effect size calculations and moderator analysis were done. Lastly, for the evaluation of the partiality of the publication, Rosenthal's Fail Safe N and Orin's Fail Safe N analyses were done based on underemployment. For the partiality of the publication based on symmetry, Duval and Tweedie's trim and fill method, Begg and Mazumdar's rank correlation and Egger's intercept analysis were done.

Coding Method and Identification of the Characteristics of the Study

In the meta-analysis method, the screening process requires coding. In order to be able to determine whether the data screened or this purpose will be included in the analysis, a coding form was created. Information such as the name of the study, the writer, publication year, sample number, correlation values, school type in which the

study is carried out, publication type and the place where the study is carried out were recorded on the form.

Inclusion Criteria

The inclusion criteria for the studies to be analyzed within the scope of the research are as follows:

- Articles written in 1990-2016 which were published in refereed and national and international journals.
- Post-graduate and doctorate dissertations written in 1990-2016 at the national and international levels.
- Studies which were carried out making use of the quantitative method according to the perceptions of teachers and/or administrators who work in official and private pre-schools, primary schools, middle-schools and high-schools giving education in the area of educational sciences.
- Studies which involve suitable statistical methods and data with the condition that they comply with the above criteria.

Exclusion Criteria

The exclusion criteria determined for the study are as follows:

- Studies carried out with samples other than teacher and/or administrators,
- Studies which only aimed at measuring school effectiveness,
- Studies which do not have suitable statistical data for meta-analysis to be done.

FINDINGS

In this section, school homogeneity analyses based on the relationship between effective schools and leadership and school climate, effects sizes related to each variable and the forest graphs related to these values and findings on moderator analysis and publication partiality analyses were given place to. In the evaluation of correlation levels, Cohen, Manion and Morrison's (2005:202) classification was used. This classification is as follows:

Correlation between ±0.20 – ±0.35: Very low level of correlation
Correlation between ±0.35 – ±0.65: Medium level of correlation
Correlation between ±0.65 – ±0.85: High level of correlation
Correlation over ±0.85: Very high level of correlation

Calculations based on correlation were transformed into Fisher's Z effect size. In the evaluation of studies for which Fisher's Z effect size was calculated, Cohen, Manion and Morrison's (2007:521) classification was used. This classification is as follows:

Between ± 0.00 - ±0.10: Weak
Between ±0.10 - ± 0.30: Low
Between ±0.30 – ±0.50: Medium
Between ±0.50 - ±0.80: Strong
≥ ±80: Very strong.

Effect Size based on the Relationship between Leadership and School Climate in Effective Schools

The effect size calculation based on the relationship between effective schools and leadership was obtained from 11 studies. 9.09% of these studies (N=1) were written as post-graduation dissertations, 36.36% (N=4) as doctorate dissertations and 54.55% (N=6) as articles. 36.36% of the studies (N=4) were written in Turkey, while 63.64% (N=7) were written in other countries. 27.27% of the studies (N=3) involved primary schools, 27.27% involved middle-schools (N=3) and 36.36% (N=4) involved primary, middle and high-schools. In 9.09% of the studies (N=1), although the inclusion criteria involved the suitable schools, the school type was not indicated. The statistical information related to these studies is given in the table below.

Table 1: Meta-Analysis Statistical Findings based on the Relationship between School Effectiveness and Leadership

Study	**N**	**r**	**Z_r**	**95 % Confidence Interval for Fisher's Z Effect Size**		**P**
BUZZI, 1990	621	0,64	0,758	0,679	0,837	0.000
HERBST,2003	884	0,34	0,354	0,288	0,420	0.000
OKAFOR, 2006	107	0,24	0,245	0,053	0,437	0.013
McVey, 2009	374	0,235	0,239	0,138	0,341	0.000
NGANG, 2010	181	0,554	0,624	0,477	0,771	0.000
BOLANLE, 2013	770	0,518	0,574	0,503	0,644	0.000
OZKAN, 2014	450	0,337	0,351	0,258	0,443	0.000
ABDURREZZAK, 2015	580	0,68	0,829	0,748	0,911	0.000
HARTHI VE AL-	635	0,80	1,099	1,021	1,177	0.000
CERİT,2017	257	0,516	0,571	0,448	0,694	0.000
NGANG, 2011	546	0,70	0,867	0,783	0,951	0.000

When the correlation coefficients of the study are analyzed, it can be seen that 36.36% is at a low level (N=4), 36.36% is at a medium level (N=4) and 27.27% is at a high level. When these are analyzed in terms of Fisher's Z effect size, it is noteworthy that 18.18% has a low effect (N=2), 18.18% has a medium effect (N=2), 36.36% has a strong effect and 27.27% has a very strong effect (N=3).

Effect size calculation based on the relationship between effective schools and school climate was obtained from 6 studies. 50% of these studies (N=3) were written as articles, 50% as doctorate dissertations (N=3), 33.33% were written in Turkey (N=2) and 66.67% (N=4) were written in other countries. 33.33% of the studies involved primary schools (N=2), 33.33% involved middle-schools (N=2), 16.67% involved high-schools (N=1) and 16.57% involved primary, middle and high-schools (N=1). The statistical information related to these studies is given below.

Table 2: Meta-Analysis Statistical Findings based on School Effectiveness and School Climate

Study	**N**	**r**	**Z_r**	**95 % Confidence Interval for Fisher's Z Effect Size**		**P**
				Alt Limit	**Üst Limit**	
BRYANT,2001	39	0,65	0,775	0,449	1,102	0.000
OKAFOR,2006	107	0,34	0,354	0,162	0,546	0.000
KARADAG,2008	89	0,733	0,935	0,724	1,147	0.000
MANAF VE OMAR, 2015	150	0,422	0,450	0,288	0,612	0.000
HAIRSTON, 2016	1143	0,42	0,448	0,390	0,506	0.000
SENEL,2016	400	0,51	0,563	0,464	0,661	0.000

When the correlation coefficients of these studies are analyzed, it can be seen that 16.67% of them have a low level of correlation values (N=1), 50% of them have a medium level of correlation (N=3) and 33.33% of them have a high level of correlation (N=2). In terms of effect size, 50% of the studies have a medium level of effect (N=3), 33.33% of them have a strong level of effect and 16.67% have a very strong level of effect (N=2),

In order to determine which model to use in the effect size calculation based on the relationship between school effectiveness and school climate, homogeneity test was done and I^2 statistics were calculated. The results are given in the table below.

Table 3: Results of the Homogeneity Test, Q and I^2 Statistics for School Effectiveness and Leadership and School Climate

Independent Variables	Q value	df (Q)	p value	I^2 value
Leadership	379.666	10	0.000	97.37
School Climate	26.225	5	0.000	80.93

According to the results of the homogeneity test, the Q value calculated in accordance with the effect size based on the relationship between school effectiveness and leadership was determined as 379.666 with a degree of freedom of 10. This value being determined as significant in the 95% confidence interval ($p<.05$) shows that the distribution is heterogeneous. In addition, the value corresponding to degree of freedom of 10 in a 95% significance level ($p<.05$) in the Chi-square table was determined 18.307. Since this value is lower that the Q value obtained from the homogeneity test (379.666 (x20.95=32.671), it can be stated that the studies included in the study do not display a homogeneous distribution. In addition, I^2 value calculated as 97.37 shows that 97.37% of the variance in the effect size calculated from the studies included in the meta-analysis can be explained with the data we obtained.

Q value calculated for the effect size based on the relationship between school effectiveness and school climate with a degree of freedom of 5 was determined as 26.225. This value being at a significant level in the 95% confidence interval ($p<.05$) points out to heterogeneity. In addition, the value corresponding to degree of freedom of 5 in a 95% significance level (11.070) in the Chi-square table being lower than the 26.225 value calculated in the study is accepted as an indication of heterogeneity. Moreover, I^2 value calculated as 80.93 shows that 80.93% of the variance can be explained with the variables we have.

If the Q value calculated in the homogeneity test in studies using the meta-analysis method is found as statistically significant, the assumption that fixed effect is to be used and should be reviewed (Borenstein et. al, 2013:86). The basic assumption in the fixed effects model is that all studies included in meta-analysis have the same effect size. In other words, standard deviation is zero. Whereas the basic assumption in the random effects model is that the effect size is different (Bakioğlu and Özcan,

2016:165). In the light of this information and data, it was decided to calculate effect size based on the relationship between school effectiveness and leadership according to the random effects model. Effect size calculations based on this, the forest graph and moderator and publica tion partiality analyses are given below.

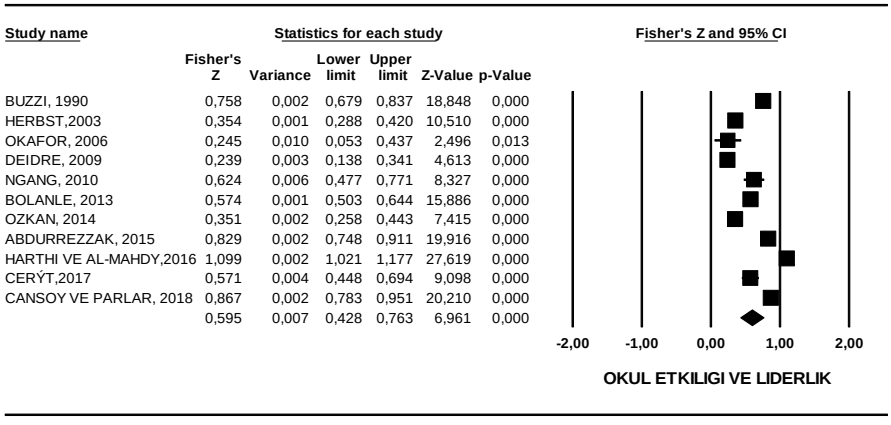
Table 4: Finding Related to Effect Size between School Effectiveness and Leadership and School Climate according to the Random Effects Model

Independent Variable	k	R	Z_r	∑N	Variance	95 % Confidence Interval for Fisher's Z Effect Size		Z	P
						Lower Limit	Upper Limit		
Leadership	11	0.534	0.595	5405	0.007	0.428	0.763	6.961	0.000
School climate	6	0.507	0.559	1928	0.004	0.429	0.690	8.404	0.000

The Fisher's Z effect size based on the relationship between school effectiveness and leadership was calculated as 0.595. When the table is analyzed, it can be seen that there is a positive and significant level ($p<.05$) of effect size between school effectiveness and leadership.

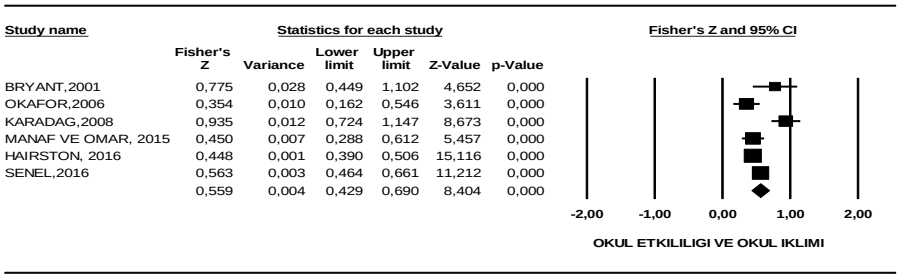
The effect size calculated based on the relationship between school effectiveness and school climate was determined as 0.559. When Table 4 is analyzed, it can be seen that the effect size is at a positive, strong and significant level ($p<.05$). the forest graphs created in line with these data are given below.

Graph 1: Fisher's Z Effect Sizes Forest Graph based on the Relationship between School Effectiveness and Leadership.



When the graph is analyzed, it can be seen that all of the effect sizes are at a positive and significant level. While the lowest effect size is 0.245, the greatest effect size was calculated as 1.099.

Graph 2: Fisher's Z Effect Sizes Forest Graph based on the Relationship between School Effectiveness and School Climate



When Graph 2 is analyzed, it can be seen that all effect sizes are at a positive and significant level. While the lowest effect size is 0.354, the greatest effect size was calculated as 0.935.

Analysis of Effect Sizes based on the Relationship between School Effectiveness and Leadership and School Climate according to Moderator Variables

For the effect sizes calculated based on the relationship between school effectiveness and leadership, moderator analysis was carried out according to the school level and the location the study was carried out in. The analyses results are shown in the table below.

Table 5: Results of the Effect Size-Moderator Analysis on the Relationship between School Effectiveness and Leadership according to the Random Effects Model

Variable	k	Z_r	Lower Limit	Upper Limit	*Q*	Q_b	P
Leadership	11	0.595	0.428	0.763	379.666		0.000*
Moderator [Publication type]						16.189	0.000*
Article	6	0.764	0.585	0.942			
Master thesis	1	0.351	0.258	0.443			
Doctorate dissertation	4	0.404	0.148	0.660			
Moderator [Publication place]						0.308	0.579
Turkey	4	6.656	0.410	0.901			
Foreign countries	7	0.560	0.325	0.794			
Moderator [school type]						51.190	0.000*
Elementary school	3	0.660	0.534	0.785			
Secondary school	3	0.585	0.321	0.848			
Elementary-Secondary-High school	4	0.429	0.099	0.759			
Unspecified	1	1.099	1.021	1.177			

When the table is analyzed, it can be seen that the effect sizes calculated between school effectiveness and leadership display differences at a significant level in terms of publication type and the school type involved in the study (p<.05). In terms of publication type, it can be seen that the study written as a post-graduate dissertation has the lowest effect size, whereas studies written as articles have the highest effect size. In terms of the type of school involved in the studies, it is noteworthy that the effect size calculated for the studies involving primary, middle and high-schools together is at the lowest level and the effect size calculated for a study in which the school type is not indicated is at the highest level. If the location where the study was carried out in, a difference at a significant level was not observed (p>.05).
For the effect sizes calculated based on the relationship between school effectiveness and school climate, moderator analysis was carried out in line with publication type and location of this study. The results of the study are given in the table below.

Table 6: Results of the Effect Size-Moderator Analysis on the Relationship between School Effectiveness and School Climate according to the Random Effects Model

Variable	k	Z_r	Lower limit	Upper limit	*Q*	Q_b	P
School climate	6	0.559	0.429	0.690	26.225		0.000*
Moderator [Publication Type]						1.352	0.245
Article	3	0.636	0.407	0.865			
Doctorate Dissertation	3	0.472	0.317	0.627			
Moderator [Publication Place]						2.136	0.144
Turkey	2	0.737	0.373	1.101			
Foreign Countries	4	0.456	0.361	0.551			

According to the results of the moderator analysis, a significant difference was not found in terms of publication type and publication place (p>.05).

Publication partiality Analyses for Effect Size based on the Relationship between School Effectiveness and Leadership and School Climate.

For the purpose of evaluating publication partiality for the calculation of effect size based on the relationship between school effectiveness and leadership and school climate, Rosenthal's and Orwin's Fail Safe N, Begg and Mazumdar rank correlation, Egger regression intercept and Duval and Tweedie's trim and fill method analyses and explanations are given below.

Table 7: Rosenthal's Fail Safe N for publication partiality of the studies whose effect sizes are calculated based on the relationship between school effectiveness and leadership and school climate

Independent variable	k	Z	p	A	Z_α	Number of studies required for missing studies to reach alpha value
Leadership	11	43.70	0.000	0.05	1.96	5458
School climate	6	19.89	0.000	0.05	1.96	612

Rosenthal's Fail Safe N analysis data show that for the effect size calculated for the study to go back to the alpha level, 5458 studies which have zero effect size are needed. According to this analysis, in order to be able to make an evaluation expressing that there is no publication partiality the number of missing studies should be 10 times more than 5 times the number of total number of studies (Ren, Lu and Fu, 2016). According to this, since the number of missing studies is much higher than 65 (5x11+5=65) in the leadership independent variable and much higher than 40 (5x6+10) in the school climate independent variable, it can be stated that there is no publication partiality according to the Rosenthal's Fail Safe N analysis.

Table 8: Orwin's Fail Safe N for Publication Partiality Analysis of the Studies for which Effect Sizes have been calculated based on the relationship between school effectiveness and leadership and school climate

Criteria	Independent Variable	
	Leadership	School Climate
The Fisher's Z Value for the observed studies	0.631	0.495
Fisher's Z for unimportant Criteria	0.05	0.05
Fisher's Z Average in Missing Studies	0.000	0.000
Number of studies needed to bring Fisher's Z Value below 0.05	128	54

Fisher's Z value for studies observed in line with the results of Orwin's Fail Safe N analysis was determined as 0.631 for the leadership independent variable and as 0.495 for the school climate independent variable. The results show that, fort he calculated effect size value to reach the 0.00 level, 128 studies leadership and 54 studies with an effect size of 0.05 for are needed. In this respect, according to Orwin's Fail Safe N analysis results, it has been decided that there is no publication partiality since N>5k+10.

Table 9: Begg and Mazumdar Rank Correlation for the Publication Partiality of the Studies whose Effect Sizes have been Calculated based on the relationship between school effectiveness and leadership and school climate

Independent variable	Kendal's S	Tau	Z	P
Leadership	-3.00	-0.036	0.156	0.876
School Climate	7.00	0.400	1.127	0.260

For publication partiality based on Begg ve Mazumdar' rank correlation, the basic reference is the significance level of the calculated Tau value. This value being at a significant level points out to publication partiality. In this respect, due to Tau value not being found statistically significant for studies both based on the relationship of leadership and school climate, it can be stated that there is no publication partiality based on this analysis.

Table 10: Egger Regression Intercept Analysis for the Publication Partiality Analysis of the Studies whose Effect Sizes have been calculated based on the Relationship between School Effectiveness and Leadership and School Climate

Independent Variable	Interception	SE	t	Df	P
Leadership	-4.16	7.34	0.568	9	0.584
School Climate	2.17	1.68	1.290	4	0.267

In the Egger regression intercept analysis, finding a statistically significant level just like in Begg and Mazumdar's rank correlation is interpreted as publication partiality. In this respect, since the analysis results were not found at a statistically significant level in both leadership and school climate independent variables (p>.05), it can be stated that there is no publication partiality according to Egger regression intercept analysis.

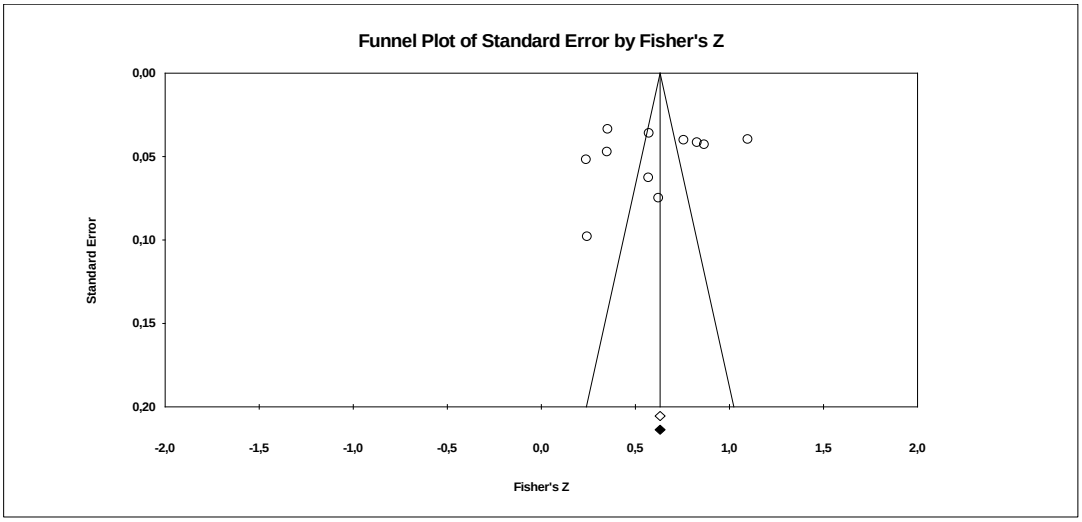
Table 11: Duval and Tweedie's Trim and Fill Analysis for the Publication Partiality Analysis of the Studies whose Effect Sizes have been Calculated based on the Relationship between School Effectiveness and Leadership and School Climate

Independent Variable		Number of Missing Studies' Effect Size		Effect Size	Lower Limit	Upper Limit	Q Value
Leadership	Calculated Value			0.534	0.403	0.643	379.666
	Corrected Value	-	0	0.534	0.403	0.643	379.666

School Climate	Calculated Value			0.559	0.429	0.690	26.225
	Corrected Value	Below Average	1	0.496	0.350	0.642	43.384

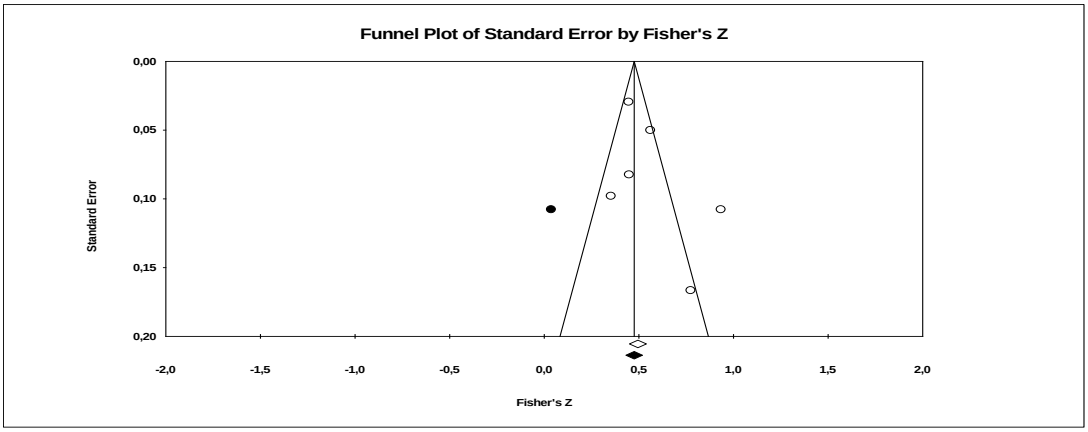
When we take a look at Duv al and Tweedie's trim and fill method, the results show that there are no missing studies according to the random effects model for the symmetry to be completed in the funnel graph according to the leadership independent variable. In terms of the school climate independent variable, a single study is missing lower than the effect size (on the left side of the average line in the funnel graph). If this missing study is included in this study, the effect size drops to 0.496 and the Q value drops to 43.384. In addition, the funnel scatter graph created in line with these results is given below.

Graph 3: Duval and Tweedie's Trim and Fill funnel Scatter Graph for the Publication Partiality of the Studies whose Effect Sizes have been Calculated based on the Relationship between School Effectiveness and Leadership



As it can be seen in the funnel scatter graph, there is no missing study which upsets the symmetry according to Duval and Tweedie's Trim and Fill analysis for the leadership independent variable. In this respect, it can be stated that there is no publication partiality according to the results of this analysis.

Graph 4: Duval and Tweedie's Trim and Fill funnel Scatter Graph for the Publication Partiality of the Studies whose Effect Sizes have been Calculated based on the Relationship between School Effectiveness and School Climate



The studies in the upp er part of the pyramid in the funnel graph show studies which have effect size with large samples and the lower part show studies which have effect size with small samples. The line going from the top of the triangle to the lower center point shows the average line.

The symmetric distribution on the right and left of the average line of the studies is accepted as the sing that there is no publication partiality. In this respect, for the school climate independent variable, if there is one more study shown with a dark dot on the left side of the average line in Duval and Tweedie's Trim and Fill analysis funnel graph, it is assumed that study publication partiality will not exist.

CONCLUSİON, DİSCUSSİON AND SUGGESTİONS

In this meta-analysis study in which it was aimed at analyzing the relationship between school effectiveness and school climate and leadership and determining the effect sizes by bringing quantitative studies together and integrating the findings of studies, the following conclusions were reached:

The effect size calculation based on the relationship between school effectiveness and leadership was done according to the random effect size model.

It was concluded that there is a positive, strong and significant level ($p<.05$) of effect size (0.595) between school effectiveness and leadership. This shows that leadership is an important factor in making schools effective. When the related literature was reviewed, it was seen in Chin's (2007) 'The effect of Transformative Leadership on

school gains in the USA and Taiwan' and Leithwood and Sun's (2012) 'The nature and effects of transformative school leadership' meta-analysis studies that, there is a positive relationship between transformative leadership and school effectiveness.

Although findings of the studies mentioned above are similar to the findings of this study, they were not found suitable to make a comparison with the general results of the study since they involved only transformative leadership. In order to be able to do better comparisons, it is suggested to carry out meta-analysis studies which deal with other types of leadership as well.

It was determined that the effect size (0,559) calculated based on the relationship between school effectiveness and school climate is at a positive, strong and significant level ($p<.05$). This finding shows that a positive school climate is an important factor in establishing effective schools. In a meta-analysis study which embodies studies carried out in 1984-2005, the effect levels of various factors were determined (cooperation among the personnel, an orderly school climate, observing (measurement), curriculum quality, homework, duration of education, participation of parents, success orientation, educational leadership and differentiation) and while school climate's effect size took the first ranks, it was seen that the effect of educational leadership was at a low level (Scheerens,2013). Although the findings of this meta-analysis on the school climate variable are similar to the findings of this study, it can be stated that field studies which deal with school climate as well need to be carried out for the results to be compared.

Moderator analyses were done in terms of publication type, school level and the location of the study for the effect sizes calculated based on the relationship between school effectiveness and leadership and it was seen that the effect sizes calculated displayed differences at a significant level ($p<.05$) depending on the publication type and the school type where the study was carried. It was determined that the study written as a post-graduate dissertation has the lowest effect size and the studies written as articles had the highest effect sizes in terms of publication type. It can be stated that the reason for this result can be the number of articles dealt with in the study($N=6$) is higher compared to the number of post-graduate theses ($n=1$). In addition, it can be considered that this result is caused by the high probability of the publication of articles in journals (Borenstein et. Al, 2013; narrated by Yılmaz et. al, 2015). The addition of theses to the meta-analysis and decreasing publication partiality can provide more productive information about the relationship between school effectiveness and the concept of leadership.

In terms of the school type where the study was carried out, it was determined that the effect size calculated in studies which involved primary, middle and high-schools was the lowest and the effect size calculated in a study in which the school type was not indicated was the highest. Effect size being low in studies in which primary, middle and high-schools are dealt with together might be caused by leadership roles being different since the needs of primary, middle and high-schools are different and thus, dealing with these school types together in studies is the factor which affects their results.

In terms of the location of the study, a difference at a significance level was not found ($p>.05$). This result can be associated with the idea that leadership is an important factor in all schools regardless of physical factors.

For the effect sizes calculated based on the relationship between school effectiveness and school climate, moderator analyses were done in terms of publication type and the location of the study. According to the results of the analyses, a significant difference was not found in terms of publication type and publication place variables ($p>.05$). These findings can be explained through the number of studies being equal to the publication types of the studie s involved in the study and the fact that a positive school climate is an important factor in schools' being effective regardless of regional differences.

When the literature was reviewed, it was not possible for the findings of the study to be compared with the results of other studies since there are no meta-analysis studies which deal with the relationship between school effectiveness and school climate and leadership and the number of similar studies being low. It can be suggested for more independent studies to be carried out on this subject based on the need to increase the effectiveness level of schools in line with developments and to subject these independent studies to the meta-analysis method after a certain time period.

REFERENCES

Abdurrezzak, S. & Uğurlu, C.T (2016). Okul liderliği davranış ve uygulamalarının okul etkililiğini sağlamadaki rolüne ilişkin öğretmen algılarının incelenmesi. *CÜ Sosyal Bilimler Dergisi, 40 (1), ss.215-242.*

Al-Harthi, A.S.A., & Al-Mahdy, Y.F.H (2016). Distributed leadership and school effectiveness in Egypt and Oman: an exploratory study. *İnternational Journal of Educational Management.* https://doi.org/10.1108/IJEM-05-2016-0132

Bakioğlu, A. ve Özcan, Ş. (2016). *Meta Analiz* (1. Baskı). Ankara: Nobel.

Balcı, A (2011). *Etkili okul ve okul geliştirme kuram uygulama ve araştırma.* (7.Baskı). Ankara: Pegem Akademi.

Bolanle, A.O (2013). Principals' leadership skills and school effectiveness: The Case of South Western Nigeria. *World Journal of Education*, 3(5), 26-33. doi:10.5430/wje.v3n5p26.

Bass, B.M., & Riggio, R.E (2006). *Transformational Leadership*. (2.Edition). London: Lawrence Erlbaum Associates.

Bennett, N., Wise, C., Woods, P.A & Harvey, J.A (2003). Distributed Leadership: A Review of Literature. National College for School Leadership. Erişim: http://oro.open.ac.uk/8534/ (26.02.2019).

Blase J., & Blase J (1999). Principals' İnstructional leadership and teacher development: teachers' perspectives. *Educational Administration Quarterly, 35(3), pp.*349-378.

Borenstein, M., Hedges, L.V., Higgins, J.P.T. ve Rothstein, (2013). *Meta Analize Giriş* (Çeviren: Serkan DİNÇER). Ankara: Anı.

Bryant, C.C (2001). *The relatio nship between culture and climate and school effectiveness*. PhD dissertation, Louisiana State University, USA.

Buzzi, M. J. (1990). *The Relationship of school effectiveness to selected dimensions of principal's instructional leadership in elementary schools in the state of Connecticut*. University of Bridgeport, USA.

Celep, C (2014). *Eğitim Yöneticisinin Liderlik Davranışı*. Ankara: Nobel Akademi yayıncılık.

Cerit, Y & Yıldırım, B (2017). İlkokul müdürlerinin etkili liderlik davranışları ile okul etkililiği arasındaki ilişki. *Bartın Üniversitesi Eğitim Fakültesi Dergisi*, *6(3*), ss.902-914. Doi: 10.14686/buefad.312405.

Chin, J. M (2007). Meta-analysis of Transformational school leadership effects on school outcomes in Taiwan and the USA. *Asia Pacific Education Review* 8(2), 166-177.

Cohen, J., Mccabe, E.M., Michelli, N.M., & Pickeral, T (2009). School climate: Research, policy, practice and teacher education. *Teachers College Record, 111 (1),* 180-213.

Cohen, L., Manion, L., & Morrison, K. (2005). *Research Methods in Education* (Fifth Edition). London: RoutledgeFalmer.

Cohen, L., Manion, L., & Morrison, K. (2007). *Research Methods in Education* (Sixth Edition). London: RoutledgeFalmer.

Çelik, V (2015). *Eğitimsel Liderlik* (8.Baskı). Ankara: Pegem Akademi Yayınevi.

Duranay, P.Y (2005). *Orta öğretim kurumlarının etkili okul özelliklerini karşılama düzeyleri (İzmir örneği).* Pamukkale Üniversitesi. Sosyal Bilimler Enstitüsü (Yayımlanmamış Yüksek Lisans tezi), Denizli.

Edmonds, R (1979). Effective schools fort the urban poor. *Educational Leadership, 37*,15-24.

Eraslan, L (2004). Liderlikte post-modern bir paradigma: Dönüşümcü liderlik. *İnsan Bilimleri Dergisi. 1(1), 1-33.*

Gürsel, M (2012). *Türk eğitim sistemi ve okul yönetimi (Kavramlar, Süreçler ve Uygulamalar)* (9.Baskı). Konya: Eğitim Yayınevi.

Hairston, A.N (2016). *Climate and collective Responsibility as predictors of effectiveness in secondary schools*. PhD dissertation, The University of Alabama, USA.

Helvacı, M.A. & Aydoğan, İ (2011). Etkili okul ve etkili okul müdürüne ilişkin öğretmen görüşleri. *Uşak Üniversitesi Sosyal Bilimler Dergisi*, 4(2), ss. 41-60.

Herbst, J.D (2003). *Organizational servant leadership and its relationship to secondary school effectiveness*. PhD dissertation, Florida Atlantic University, USA.

Hoy, W.K (1990). Organizational climate and culture: A conceptual analysis of the school workplace. *Journal of Educational and Psychological Consultation*, 1(2). 149-168.

Karadağ, E., Baloğlu, N., Korkmaz, T., ve Çalışkan, N (2008). Eğitim kurumlarında örgüt iklimi ve örgüt etkinlik algısı arasındaki ilişkinin değerlendirilmesi. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi, 9(3)*. 63-71.

Krüger, M.L., Witziers, B., & Sleegers, P (2007). The impact of school leadership on school level factors: Validation of a casual model. *School Effectiveness and School İmprovement, 18(1),* 1-20. Doi: 10.1080/09243450600797638

Leithwood, K., & Sun, J. (2012). The Nature and effects of Transformational school leadership. *Educational Administration Quarterly, 48(3),* 387-423. doi:10.1177/0013161x11436268

Lezotte, L.W. (1991*). Correlates of effective schools The first and secondary generations*. Effective School Products. USA, Michigan, 1-16

Manaf, A., & Omar, C.M.Z.B.C (2017). İmprovement school effectiveness through culture andschool climate. *The International Journal of Social Sciences and Humanities Invention 4(2),* ss. 3289-3298. DOI: 10.18535/ijsshi/v4i2.06

McVey, D (2009). *Parsonian influence and the effect of school climate and bureaucracy on the perceived effectiveness in schools*. PhD dissertation St. John's University,USA.

Miskel, C.G., Fevurly, R., & Stewart, J (1979). Organizational structures and processes, perceived school effectiveness, loyalty, and job satisfaction. *Educational Administration Quarterly, 15(3), 97-118.* DOI: 10.1177/0013131X7901500308

Ngang, T.K., Abdulla, Z., & Mey, S.C (2010). Teacher leadership and school effectiveness in the primary schools of Maldives. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 39(39). 255-270. http://dergipark.gov.tr/hunefd/issue/7799/102180

Ngang, T.K (2011). The effect of Tr ansformational leadership on school culture in male' in primary schools Maldives. *Procedia - Social and Behavioral Sciences*, 30. 2575-2580. doi:10.1016/j.sbspro.2011.10.503

Okafor, P.C (2006). *School climate, pupil control ideology, and effectiveness*. PhD dissertation, St. John's University, USA.

Özdemir, S. ve Sezgin, F (2002) Etkili okullar ve öğretim liderliği. *Kırgızistan Manas Sosyal Bilimler Dergisi*, 3, 266-282.

Özkan, Y (2014). *Okul yöneticilerinin liderlik stilleri ile okulların etkililik düzeyleri arasında ilişkinin incelenmesi* (Yayımlanmamış yüksek lisans tezi). Mevlana Üniversitesi, Konya.

Ren, Y., Lü, Y., & Fu, B. (2016). Quantifying the impacts of grassland restoration on biodiversity and ecosystem services in China: A meta-analysis. *Ecological Engineering*, *95.* 542-550.

Sánchez-Meca, J., & Marín-Martínez, F. (2010). Meta-analysis in psychological research. *International Journal of Psychological Research, 3*(1), 151-163.

Scheerens, J,, Wit ziers, B., & Steen, R (2013). A Meta-analysis of school effectiveness studies. *Revista de Education, (361),* 619-645.

Şenel, T. & Buluç, B (2016). İlkokullarda okul iklimi ile okul etkililiği arasındaki ilişki. *Türk Bilim Araştırma Vakfı,* 9 (4). 1-12.

Şentürk, C. & Sağnak, M (2012). İlköğretim okulu müdürlerinin liderlik davranışları ile okul iklimi arasındaki ilişki. *Türk Eğitim Bilimleri Dergisi, 10(1)*. 29-47.

Weber, G (1971). İnner- city children can be taught to read: four successful schools. CBE Occasional Paper 18, Washington D.C Council for Basic Education. https://files.eric.ed.gov/fulltext/ED057125.pdf adresinden erişildi. 23.11.2018

Yılmaz, K., Altınkurt, Y., & Yıldırım, H. (2015). Türkiye'deki öğretmenlerin örgütsel vatandaşlık davranışlarına cinsiyet, kıdem ve branş değişkenlerinin etkisi: Bir Meta analiz çalışması. *Eğitim ve Bilim, 40(178),* 285-304.