EXAMINING SCHOOL ADMINISTRATORS' AUTHENTIC LEADERSHIP BEHAVIORS BY GENDER VARIABLE: A META-ANALYSIS STUDY

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Abstract

This study aimed to examine the effect of gender on the authentic leadership behaviors of school administrators by using the meta-analysis method. In the research, 13 postgraduate theses, which were included in the database of the National Thesis Center system of the Council of Higher Education between 2013 and 2023, on the authentic leadership of school administrators and selected according to certain criteria, were used. The sample of the research consists of 6257 teachers and school administrators, 3652 female and 2605 male, obtained from postgraduate theses. As a result of the meta-analysis for the analysis of the data, the effect size of gender on the perceived authentic leadership behaviors of school administrators was calculated as -0.034. The effect sizes for relational transparency, internalized moral perspective, balanced processing, and self-awareness, which are the factors of authentic leadership, were found to be -0.054, -0.040, -0.023, and -0.051, respectively. According to the findings, the effect of gender on the perceived authentic leadership of school administrators is insignificant.

Keywords: Authentic leadership, meta-analysis, school administrators, education.

Okul Yöneticilerinin Otantik Liderlik Davranışlarının Cinsiyet Değişkenine Göre İncelenmesi: Bir Meta-Analiz Çalışması

Öz

Bu çalışmada cinsiyetin okul yöneticilerinin otantik liderlik davranışlarına etkisini meta-analiz yöntemi ile incelemek amaçlanmıştır. Araştırmada 2013-2023 yılları arasında Yüksek Öğretim Kurulu Başkanlığı Ulusal Tez Arama sistemi veri tabanında yer alan, okul yöneticilerinin otantik liderliğini konu alan ve belirli ölçütlere göre seçilen 13 lisansüstü tez kullanılmıştır. Araştırmanın örneklemini lisansüstü tezlerden elde edilen 3652 kadın ve 2605 erkek olmak üzere toplam 6257 öğretmen ve okul yöneticisi oluşturmaktadır. Verilerin analizi için yapılan metaanaliz sonucunda, cinsiyetin okul yöneticilerinin algılanan otantik liderlik davranışları üzerindeki etki büyüklüğü -0,034 olarak, otantik liderliğin faktörleri olan ilişkide şeffaflık, içselleştirilmiş ahlak anlayışı, bilgiyi dengeli değerlendirme ve öz farkındalık için etki büyüklükleri sırasıyla, -0,054, -0,040, -0,023 ve -0,051 olarak hesaplanmıştır. Elde edilen bulgulara göre, cinsiyetin okul yöneticilerinin algılanan otantik liderliğine etkisi önemsizdir düzeydedir.

Anahtar Kelimeler: Otantik liderlik, meta-analiz, okul yöneticileri, eğitim.

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Introduction

Leadership has always been an interesting subject for people throughout history (Kâhya, 2013). In the 20th century, more than 350 definitions of leadership and leader were put forward (Erçetin, 2020). Authentic leadership is one of the relatively new types of leadership developed by Luthans and Avolio in 2003 as a synthesis of Luthans' concept of positive organizational behavior and Avolio's lifelong leadership development work (Yurtsever, 2022).

Although authentic leadership emerged in the early 2000s, the roots of the concept of authenticity go back much further. Harter (2002) claims that the concept of authenticity dates back to ancient Greek philosophy, with the advice to " know thyself" and " to thine own self be true ". Asarkaya Memiş, Karaçay Aydın, Kabasakal, and Ertenü Saraçer (2009), on the other hand, associate Mevlana Celaleddin Rumi's words "Appear as you are or be as you appear", Shakespeare's "Say as you think and speak it from your soul", and Sokrates' "Be as you wish to seem" with authentic leadership.

Authentic leaders are interested in empowering the people they lead and are driven by qualities such as conscience, passion, and compassion. They are consistent and self-disciplined. But they are aware of their weaknesses and work hard to complete them (George, 2003). Luthans and Avolio (2003) suggested that authentic leadership consists of four elements. Similarly, it has been suggested by Walumbwa, Avolio, Gardner, Wernsing, and Peterson (2008) that the four dimensions of authentic leadership are balanced processing, internalized moral perspective, self-awareness, and relational transparency.

Authentic leaders use balanced processing by soliciting sufficient input and perspective from their followers, both positive and negative, before making important decisions. They encourage others to be frank through their thoughts and opinions. This feature is a reference to relational transparency. The authentic leader establishes a high ethical and moral behavior standard as a role model (internalized moral perspective). Finally, it conveys self-awareness by recognizing both their strengths and limitations and how they affect others (Wong & Laschinger, 2013).

Increasing interest in this type of leadership has paved the way for studies on what constitutes authentic leadership, both theoretically and empirically (Banks, McCauley, Gardner, & Guler, 2016; Gardner & Schermerhorn, 2004; May, Chan, Hodges, & Avolio, 2003; Shamir & Eilam, 2005). Empirical studies on authentic leadership have been increasing in Türkiye (Akyürek, 2020) and worldwide (Banks et al., 2016) in the last decade. On the other hand, studies specific to women's leadership have started to attract more and more attention, especially in the last thirty years (Adler, 1997; De Nmark, 1993; Ely, Ibarra, & Kolb, 2011; Erçetin & Açıkalın, 2018; Fine, 2009).

 Leadership has special importance in terms of educational administration (Akbaşlı, Erçetin, & Yüce, 2019). So much so that leadership is the first factor that contributes more to student learning after the teacher's work. (Leithwood, Louis, Anderson, & Wahlstrom, 2004). It was found that there is a positive correlation between the leader's authenticity level and the leadership's satisfaction level and performance (Walumbwa et al., 2008). Another study showed that authentic leadership reduces teachers' job stress (Ismail, Abdullah, & Abdullah, 2019), and teachers positively affect their psychological capital (Feng, 2016; Keser & Kocabaş, 2014). Moreover, many schools around the world are focusing on a better understanding of the impact that authentic leaders can have on student and teacher performance outcomes. Authentic leadership is perceived as central to schools' learning cultures and leadership practices (Berkovich & Gueta, 2022).

Examining School Administrators' Authentic Leadership Behaviors By Gender Variable: A Meta-Analysis Study
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Although it has been determined that there are some studies examining the relationship between gender and authentic leadership (Christo-Baker & Wilbur, 2017; Dramićanin, Mihajlov, & Pavlović, 2020; Hopkins & O'Neil, 2015; Kapasi, Sang, & Sitko, 2016; Liu, Cutcher, & Grant, 2015), no meta-analysis studies investigating the authentic leadership of school administrators based on gender have been found.

In the literature, it has been seen that there are many postgraduate theses investigating the authentic leadership of school administrators, but no meta-analysis study has been found on this subject (Aydınoğlu, 2020; Boz, 2016; Karaman, 2021; Keser, 2013; Kırhallı Gök, 2015; Koçak, 2019; Küpeli, 2018; Örs, 2015; Özden, 2015; Özerten, 2018; Özmen, 2017; Yaraş, 2017; Yurtsever, 2022) Therefore, it has been seen that there is a need to conduct this meta-analysis study to increase the generalizability of the results obtained. In this context, this research is aimed to obtain clearer results with a larger sample power by combining the postgraduate theses that were made individually, and to reveal different relationships by examining the postgraduate thesis results with new parameters. It is thought that this study will make a great contribution to filling the gap in the literature.

This study aimed to analyze the authentic leadership behaviors of school administrators according to gender. The postgraduate theses conducted between 2013-2023 on authentic leadership of school administrators were analyzed within the scope of meta-analysis. In the postgraduate theses conducted on the authentic leadership behaviors of school administrators the following questions were investigated in order to bring a new approach to future research on the subject and to reveal the results of the postgraduate theses made so far:

1) What is the effect of gender on school administrators' authentic leadership?

2) Does this effect differ between the sub-factors, relational transparency, ınternalized moral perspective, balanced processing, and self-awareness?

3) Is the thesis year, thesis type, types of school, school level, participant title, and research region of the thesis a moderator that makes a significant difference for the calculated effect size?

Method

This section contains information about the method of the research. Research and publication ethics were followed throughout the research.

Model of the Research

The research was designed with a quantitative research approach and was carried out using the meta-analysis method. Meta-analysis is the collection of the findings of similar studies in a certain subject or field with certain criteria and the analyzes made to reach a general result by bringing them together (Cumming, 2012; Dinçer, 2014; Petticrew & Roberts, 2008). The meta-analysis method allows for obtaining more precise results by reaching a larger sample by combining individual studies with smaller samples, which are at the highest level in the evidence hierarchy (Açıkel, 2009; Deliktaş, Kabukcuoğlu, & Kış, 2016). In this context, the meta-analysis method was preferred to reveal a holistic and comprehensive result with the quantitative data obtained about the gender variable in the postgraduate theses about the authentic leadership behaviors of school administrators. Since the research was conducted using publicly accessible data, it does not require ethics committee approval.

Data Collection

In order to determine the studies to be included in the research, the postgraduate theses were scanned from the database of the Council of Higher Education Thesis Center at the first stage. In this

database, the phrases "authentic leadership", and "authentic leadership and school administrators" were used as keywords. As a result, a total of 70 postgraduate theses were reached. In the second stage of the inclusion process of the obtained theses in the meta-analysis, the following criteria were used;

1) The postgraduate theses are open to full access,

2) Identifying the postgraduate theses that are suitable for meta-analysis (containing quantitative data such as the number of samples, standard deviation, mean score, etc.)

3) The postgraduate theses and the authentic leadership behaviors of school leaders were examined with quantitative data according to the gender variable,

4) The authentic leadership behaviors of school administrators have been determined by a scale score in the postgraduate theses,

5) Postgraduate theses conducted between 2013-2023.

As a result of the literature review, 13 studies that met the criteria were subjected to meta-analysis. On the other hand, 57 studies that did not meet the criteria did not have the necessary quantitative data, were not open to access, did not include gender variables, etc. For these reasons, it was understood that it did not provide sufficient data for meta-analysis. Therefore, these studies were not included in the analysis. The list of postgraduate theses included in the meta-analysis is in Appendix 1.

Coding of Data

The researcher developed a data coding form using the literature to collect the study data. Statistical data needed to calculate the effect size of individual studies in the data coding form, and research characteristics (method, sample, measurement tool, thesis type, etc.) were questioned. For the research, the thesis title, year, thesis type, research city, research region, school level, type of school, participant title, and the number of females and males were coded. A positive effect size value indicates that men have a higher authentic leadership score than females, and a negative one indicates that females have a higher authentic leadership score than men.

Dependent and Moderator Variables

School administrators' authentic leadership scores are the dependent variable in this meta-analysis study. The data on the authentic leadership of the school administrators used in the research were determined with the scale. The effect sizes calculated with the help of the data taken from the scales in the theses present standardized values for the data collection tools that differ in each study.

Year, thesis type, type of school, school level, participant title, and research region variables in the studies were determined as moderator variables. School administrators' authentic leadership effect sizes were analyzed according to these determined moderator variables.

Analysis of Data

The data obtained from the theses meeting the criteria were entered into the Comprehensive Meta-Analysis (CMA) 4.0 program for the necessary analysis. In the literature, there are two options for calculating the effect size. These are the fixed effects model and the random effects model. In the fixed effect model, it is assumed that the population size of the study is the same and the standard deviations are zero, whereas in the random effects model, the study population sizes are different and the standard deviation is not equal to zero (Dinçer, 2021). Since each study included in this study did not have the same universe size, random effects model was used to calculate the effect size of total authentic leadership. In the random effects model, the effect size of studies with small samples is

weighted according to the sample size. In this way, studies with small samples can also be included in the meta-analysis and it is possible to determine the contributions of other studies to the common effect (Borenstein, Hedges, Higgins, & Rothstein, 2009).

In the study, Cohen d statistics were calculated to find the effect size, and Q and I^2 statistics were calculated for heterogeneity tests. To find the source of heterogeneity, subgroup analyzanalysescalculated according to the random effects model. In addition, the forest chart showing both the effect size and confidence interval of each analyzed study and the total effect size and confidence interval of the study was used (Lewis & Clarke, 2001).

Effect size values were calculated in the statistics of the study. This calculation was made according to Hedges' g calculation suggested by Hedges and Olkin (1985). Hedges' g was used for the overall effect size and homogeneity test, according to the level classification given below by Thalheimer and Cook (2002) on a large scale while classifying the effect of the studies.

-0.15 ≤ effect size (g or d) < 0.15 ignored,

0.15 ≤ effect size (g or d) < 0.40 low,

0.40 ≤ effect size (g or d) < 0.75 medium,

0.75 ≤ effect size (g or d) < 1.10 high,

1.10 ≤ effect size (g or d) < 1.45 very high,

1.45 ≤ effect size (g or d) excellent.

Publication Bias

The funnel plot method and Begg and Mazumdar rank correlation statistic was uswereto determine whether there was publication bias. The funnel plot is the most widely used method to control publication bias (Dinçer, 2021). If there is no publication bias in a meta-analysis study, the graph is expected to resemble an inverted symmetric funnel (Delgado-Rodríguez, 2001). Kendall's tau b coefficient is calculated in the Begg and Mazumdar rank correlation statistics. In case of publication bias in statistics, it is expected that this coefficient should be close to 1 and that the two-tailed (two-way) p-value would not make a significant difference, in other words, the p-value would be greater than 0.05 (Dinçer, 2014).

Findings

13 graduate theses selected according to the criteria in the research were subjected to meta-analysis tests. The sample of the study consists of 6257 teachers and school administrators, 3652 (58.37%) female and 2605 (41.63%) male. Table 1 contains the percentage and frequency information of the studies included in the meta-analysis.

Table 1. *Percent-frequency distribution of theses included in the meta-analysis*

Variable (Moderator)		f	Total	%	Total
	2013	1		7,69	
	2015	3		23,08	
	2016	1		7,69	
	2017	2		15,38	
Year	2018	2	13	15,38	100
	2019	1		7,69	
	2020	1		7,69	
	2021	1		7,69	
	2022	1		7,69	

Thesis Type	Master	7	13	53,85	100
	Doctorate	6		46,15	
Types of School	State	8	13	61,54	100
	Private	1		7,69	
	State and private	4		30,77	
School Level	Primary	2		15,38	
	Primary and secondary	3	13	23,08	100
	High school	1		7,69	
	Mixed	7		53,85	
Participant Title	Teacher	8		61,54	
	Administrator	2	13	15,38	100
	Mixed	3		23,08	
Research Region	Mediterranean	1		7,69	
	Eastern Anatolia	1		7,69	
	Southeastern Anatolia	1	13	7,69	100
	Central Anatolia	4		30,77	
	Marmara	6		46,15	

According to Table 1, it was determined that theses were written mostly in 2015 (23.08%) and at least in 2013, 2015, 2016, 2019, 2020, 2021, and 2022 (9.09%). While 7 (53.85%) of the 13 theses included in the research are master's theses, 6 (46.15%) are doctoral theses. It is seen that the authentic leadership behaviors of school administrators are investigated in public schools with the most 8 (61.54%) studies according to the type of school. This result may be because public schools are more numerous than private schools. In terms of school level, it is understood that the mixed school level, which includes all school levels, is the most with 7 (53.85%) studies. It was determined that most teachers (61.54%) were chosen as the sample group in the theses as the participant, and the theses were carried out mostly in the Marmara region (46.15%). It can be argued that these results emerged because the number of teachers is higher than the number of administrators and the Marmara region is the most densely populated region of Türkiye.

The results of the effect size and heterogeneity test, in which authentic leadership and its sub-factors are examined according to gender, are shown in Table 2.

Table 2. *Effect size and heterogeneity test*

Authentic Leadership	Model	n	Effect Size	Z	Standard Error	95% Confidence Interval Lower Limit	95% Confidence Interval Upper Limit	sd	Q	p	I²
Relational Transparency	Fixed Effects Model	8	-0,034	-1,025	0,033	-0,098	0,031	7	15,494	.030*	54,820
	Random Effects Model	8	-0,054	-1,051	0,051	-0,154	0,046				
Internalized Moral Perspective	Fixed Effects Model	7	-0,040	-1,018	0,039	-0,117	0,037	6	8,211	.223*	26,928
	Random Effects Model	7	-0,039	-0,835	0,046	-0,129	0,052				
Balanced Processing	Fixed Effects Model	8	-0,023	-0,692	0,033	-0,087	0,042	7	13,977	.052*	49,917
	Random Effects Model	8	-0,035	-0,724	0,049	-0,130	0,060				
Self-Awareness	Fixed Effects Model	8	-0,032	-0,981	0,033	-0,097	0,032	7	15,865	.026*	55,878
	Random Effects Model	8	-0,051	-0,979	0,052	-0,152	0,051				
Total	Fixed Effects Model	13	-0,018	-0,660	0,027	-0,070	0,035	12	41,713	.000***	71,232
	Random Effects Model	13	-0,034	-0,650	0,052	-0,135	0,068				

*p < .5, **p < .01, ***p < .001*

Meta-Analysis Results Revealing the Effect of Gender on the Relational Transparency Sub-factor of Authentic Leadership

As a result of the homogeneity test, the Q statistical value for the gender variable for the transparency sub-factor of authentic leadership was calculated as 15,494. According to the chi-square table, the critical value is accepted as 14,067 with 7 degrees of freedom at the 95% significance level. The statistical value of Q (15,494) calculated in this study is greater than the critical value of 14,067. In addition, the I² value is interpreted as the percentage of the actual heterogeneity of the variability in the study and the total variability in the effect size sequence and can measure heterogeneity more precisely (Huedo-Medina, Sánchez-Meca, Marín-Martínez, & Botella, 2006). According to Higgins, Thompson, Deeks, and Altman's (2003) classification of I² values, 25% (I²=25) low, 50% (I²=50) moderate, and 75% (I²=75) high-level heterogeneity are interpreted. Table 2 shows that the I² value for the gender variable for the sub-factor of authentic leadership and transparency in the relationship is 54.820%. This value indicates that the percentage of true heterogeneity or total variability attributable to variability between studies is 54.82%. In other words, 54.82% of the variance is between studies and 45.18% is within the study based on random error. Besides, the p-value (.030) is less than p=.05. All these values (Q=15,494, p<.05, I²=54,820) show that there is a heterogeneous distribution among the effect sizes and the random effects model should be used in the interpretation of the effect sizes.

Model	Study name	Hedges's g	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	Hedges's g and 95% CI
	Ors (2015)	-0,307	0,111	0,012	-0,525	-0,089	-2,765	0,006	
	Boz (2016)	0,089	0,060	0,004	-0,029	0,207	1,474	0,140	
	Yurtsever (2022)	-0,163	0,098	0,010	-0,355	0,030	-1,656	0,098	
	Aydinoglu (2020)	0,049	0,122	0,015	-0,189	0,287	0,403	0,687	
	Kupeli (2018)	0,073	0,091	0,008	-0,106	0,252	0,800	0,424	
	Ozerten (2018)	-0,067	0,098	0,010	-0,259	0,125	-0,684	0,494	
	Yaras (2017)	-0,146	0,089	0,008	-0,319	0,028	-1,646	0,100	
	Keser (2013)	-0,009	0,147	0,022	-0,297	0,279	-0,061	0,951	
Fixed		-0,034	0,033	0,001	-0,098	0,031	-1,025	0,305	
Random		-0,054	0,051	0,003	-0,154	0,046	-1,051	0,293	

Figure 1. *Forest plot showing the effect of gender on the relational transparency sub-factor of authentic leadership*

The average effect size of the 8 theses included in the study was calculated for the gender variable in the relational transparency sub-factor of authentic leadership. Accordingly, the average effect size was calculated as ES= -0.054 at the lower limit of -0.154 and the upper limit of 0.046 of the 95% confidence interval.

In this context, in the relational transparency sub-factor of authentic leadership according to gender, it was seen that female participants perceived school administrators as more transparent in the relationship than male participants. However, according to the level classification specified by Thalheimer and Cook (2002), it was determined that the effect size value had an insignificant effect.

In order to determine whether the effect values calculated according to the gender variable, thesis year, thesis type, type of school, school level, the participants' title, and the region where the thesis was conducted are variables (moderators), subgroup analysis was carried out according to the random effects model.

Research year variables 2013 (n=1), 2015 (n=1), 2016 (n=1), 2017 (n=1), 2018 (n=2), 2020 (n=1), and 2022 (n=1)) were divided into 7 groups. The effect sizes of the research year groups were calculated as -0.009, -0.307, 0.089, -0.146, 0.008, 0.049, and -0.163, respectively. According to the results of the analysis to determine whether there is a significant difference between the effect sizes, it was observed that there was a statistically significant difference between the years of the study

(Qb=14.359, p=.026). The variance between studies for the publication year variable was statistically significant (p<.05). In other words, the fact that the studies were conducted in different years changed the effect size of the transparency sub-factor of authentic leadership according to the gender variable. Accordingly, it was determined that the difference was due to the study of Örs conducted in 2015 and the difference was in favor of females.

Thesis type variables were divided into 2 groups master (n=3) and doctorate (n=5). Effect sizes were calculated as -0.179 and 0.007, respectively. According to the results of the subgroup analysis to determine whether there is a significant difference between the effect sizes, it was observed that there was a statistically significant difference between the types of thesis (Qb=4.136, p=.042). For the thesis type variable, the variance between studies was statistically significant (p<.05). In this context, it was determined that the difference was in favor of females.

Types of school variables were divided into 3 groups state (n=6), private (n=1), and mixed (n=1). The effect sizes were calculated as -0.069, 0.049, and -0.067, respectively, according to the random effect model. In the heterogeneity test between groups using the random effects model, the Q statistical value of the study was calculated as 0.769 (p=.681) and the degree of freedom was 2. The critical value of the chi-square table at the 95% significance level is 5,991. Therefore, it can be said that the variance between studies for the school-type variable is not statistically significant (p>.05).

School-level variables were divided into 4 groups primary school (n=1), primary school (n=2), high school (n=1), and mixed (n=4). The effect sizes were calculated as -0.146, 0.075,   -0.067, and -0.086, respectively, according to the random effects model. Based on the results of the subgroup analysis, there was a statistically significant difference between school levels (Qb=5.663, p=.129). In other words, the variance between studies for the school level variable is not statistically significant (p>.05).

The titles of the participants in the research were divided into 3 groups teacher (n=6), administrator (n=1), and both (n=1). The effect sizes were calculated as 0.678, 0.951, and 0.006, respectively, according to the random effects model. In the results of the subgroup analysis, there was no statistically significant difference between the participant titles (Qb=5.731, p=.057). In other words, the variance between studies for the job title variable was not statistically significant (p>.05).

The variables of the research region were divided into 4 groups Marmara (n=4), Southeastern Anatolia (n=1), Central Anatolia (n=2), and Eastern Anatolia (n=1). The effect sizes were calculated as 0.373, 0.140, 0.512, and 0.100, respectively, according to the random effects model. Based on the results of the subgroup analysis, there was no statistically significant difference between school levels (Qb=5.918, p=.116). As a result, the variance between studies for the research region variable is not statistically significant (p>.05).

Meta-Analysis Results Revealing the Effect of Gender on the Internalized Moral Perspective Sub-factor of Authentic Leadership

As a result of the homogeneity test, the statistical value of Q for the internalized moral understanding sub-factor of authentic leadership for the gender variable was calculated as 8,211. In the chi-square table, the critical value is accepted as 12,592 with 6 degrees of freedom at the 95% significance level. The statistical value of Q (8,211) calculated in this study is smaller than the critical value of 12,592. Table 2 shows that the I² value of the gender variable for the internalized moral understanding sub-factor of authentic leadership is 26.928%. In addip-valuee p-value (.223) is greater than p=.05. All these values (Q=8.211 p>.05, I²=26.928) show that there is a homogeneous

distribution among the effect sizes and the fixed effects model should be used in the interpretation of the effect sizes.

Model	Study name								Hedges's g and 95% CI				
		Hedges's g	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1,00	-0,50	0,00	0,50	1,00
	Ors (2015)	-0,166	0,111	0,012	-0,383	0,051	-1,496	0,135					
	Yurtsever (2022)	-0,125	0,098	0,010	-0,317	0,068	-1,271	0,204					
	Aydinoglu (2020)	0,167	0,122	0,015	-0,072	0,405	1,371	0,171					
	Kupeli (2018)	0,035	0,091	0,008	-0,144	0,214	0,384	0,701					
	Ozerten (2018)	0,068	0,098	0,010	-0,124	0,260	0,694	0,488					
	Yaras (2017)	-0,140	0,089	0,008	-0,313	0,034	-1,578	0,115					
	Keser (2013)	-0,093	0,147	0,022	-0,381	0,196	-0,630	0,529					
Fixed		-0,040	0,039	0,002	-0,117	0,037	-1,018	0,309					
Random		-0,039	0,046	0,002	-0,129	0,052	-0,835	0,404					

Figure 2. *Forest plot showing the effect of gender on the internalized moral perspective sub-factor of authentic leadership*

The average effect size of 7 theses included in the research was calculated according to the gender variable, in the internalized moral perspective sub-factor of authentic leadership. The average effect size was found to be ES= -0.040 at the lower limit of -0.117 and the upper limit of 0.037 at the 95% confidence interval. In this context, in the sub-factor of the internalized moral perspective of authentic leadership according to gender, it was seen that female participants perceived school administrators as having more internalized moral perspectives than male participants. However, according to the level classification specified by Thalheimer and Cook (2002), it was determined that the effect size value had an insignificant effect.
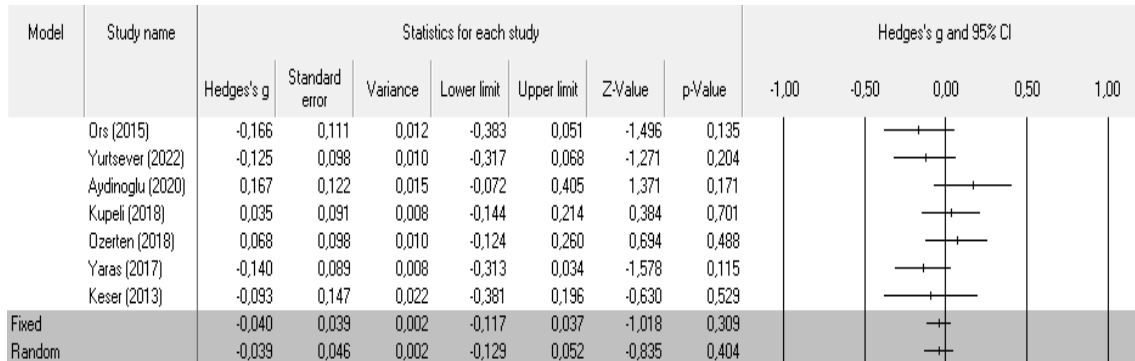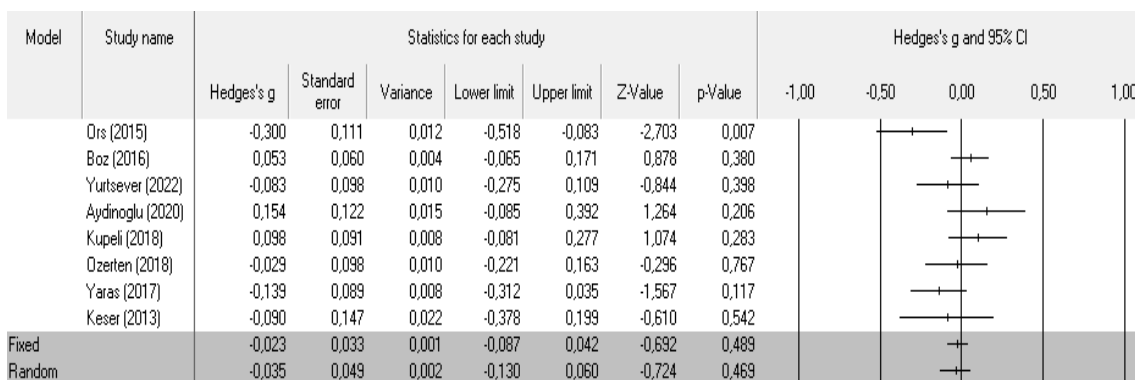
Meta-Analysis Results Revealing the Effect of Gender on the Balanced Processing Sub-factor of Authentic Leadership

As a result of the homogeneity test, the Q statistical value for the gender variable for the balanced processing sub-factor of authentic leadership was calculated as 13,977. In the chi-square table, the critical value is accepted as 14,067 with 7 degrees of freedom at the 95% significance level. The statistical value of Q (13,977) calculated in this study is smaller than the critical value of 14,067. The I² value for the sub-factor of the gender variable for the balanced evaluation of knowledge of authentic leadership was calculated as 49.917%. In addition, the p-value (.052) is greater than p=.05. All these values (Q=13.977, p>.05, I²=49.917) show that there is a homogeneous distribution among the effect sizes and the fixed effects model should be used in the interpretation of the effect sizes.

Model	Study name								Hedges's g and 95% CI				
		Hedges's g	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1,00	-0,50	0,00	0,50	1,00
	Ors (2015)	-0,300	0,111	0,012	-0,518	-0,083	-2,703	0,007					
	Boz (2016)	0,053	0,060	0,004	-0,065	0,171	0,878	0,380					
	Yurtsever (2022)	-0,083	0,098	0,010	-0,275	0,109	-0,844	0,398					
	Aydinoglu (2020)	0,154	0,122	0,015	-0,085	0,392	1,264	0,206					
	Kupeli (2018)	0,098	0,091	0,008	-0,081	0,277	1,074	0,283					
	Ozerten (2018)	-0,029	0,098	0,010	-0,221	0,163	-0,296	0,767					
	Yaras (2017)	-0,139	0,089	0,008	-0,312	0,035	-1,567	0,117					
	Keser (2013)	-0,090	0,147	0,022	-0,378	0,199	-0,610	0,542					
Fixed		-0,023	0,033	0,001	-0,087	0,042	-0,692	0,489					
Random		-0,035	0,049	0,002	-0,130	0,060	-0,724	0,469					

Figure 3. *Forest plot showing the effect of gender on the balanced processing sub-factor of authentic leadership*

The average effect size of 8 theses included in the research was calculated according to the gender variable, in the balanced processing sub-factor of authentic leadership. At the lower limit of -0.087 and upper limit of 0.042 at the 95% confidence interval, the average effect size was found as ES= -0.023. In this context, in the balanced processing sub-factor of authentic leadership according to

gender, it was seen that female participants perceived school administrators with more balanced processing than male participants. Nevertheless, according to the level classification specified by Thalheimer and Cook (2002), it was determined that the effect size value had an insignificant effect.

Meta-Analysis Results Revealing the Effect of Gender on the Self-Awareness Sub-factor of Authentic Leadership

As a result of the homogeneity test, the Q statistical value for the self-awareness sub-factor of authentic leadership for the gender variable was calculated as 15,865. In the chi-square table, the critical value is accepted as 14,067 with 7 degrees of freedom at the 95% significance level. The statistical value of Q (15,865) calculated in this study is greater than the critical value of 14,067. It was determined that the I^2 value for the self-awareness sub-factor of the gender variable was 55.878%. In addition, the p-value (.026) is less than p=.05. All these values (Q=15.865, p<.05, I^2=55.878) show that there is a heterogeneous distribution among the effect sizes and the random effects model should be used in the interpretation of the effect sizes.

Model	Study name	Statistics for each study						Statistics for each study	Hedges's g and 95% CI				
		Hedges's g	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1,00	-0,50	0,00	0,50	1,00
	Ors (2015)	-0,267	0,111	0,012	-0,485	-0,050	-2,409	0,016					
	Boz (2016)	0,083	0,060	0,004	-0,035	0,201	1,375	0,169					
	Yurtsever (2022)	-0,099	0,098	0,010	-0,291	0,094	-1,007	0,314					
	Aydinoglu (2020)	0,140	0,122	0,015	-0,099	0,378	1,149	0,250					
	Kupeli (2018)	0,062	0,091	0,008	-0,117	0,241	0,679	0,497					
	Ozerten (2018)	-0,058	0,098	0,010	-0,250	0,134	-0,592	0,554					
	Yaras (2017)	-0,205	0,089	0,008	-0,379	-0,031	-2,308	0,021					
	Keser (2013)	-0,120	0,147	0,022	-0,408	0,169	-0,813	0,416					
Fixed		-0,032	0,033	0,001	-0,097	0,032	-0,981	0,327					
Random		-0,051	0,052	0,003	-0,152	0,051	-0,979	0,328					

Figure 4. *Forest plot showing the effect of gender on the self-awareness sub-factor of authentic leadership*

The average effect size of 8 theses included in the research was calculated according to the gender variable, in the self-awareness sub-factor of authentic leadership. As average effect size was found to be ES= -0.051 at the lower limit of -0.152 and the upper limit of 0.051 of the 95% confidence interval. In this context, in the self-awareness sub-factor of authentic leadership according to gender, it was seen that female participants perceived school administrators as having more self-awareness than male participants. Despite that, according to the level classification specified by Thalheimer and Cook (2002), it was determined that the effect size value had an insignificant effect.

In order to determine whether the thesis type, school level, type of school, title of the participants, and the region of the research were variables (moderators) to the effect values calculated according to the gender variable, subgroup analyses were made according to the random effects model. But the research year variable was not included in the analysis due to the scarcity of data.

Thesis type variables were divided into 2 groups master (n=3) and doctorate (n=5). Effect sizes were calculated as -0.162 and 0.002, respectively. According to the results of the subgroup analysis to determine whether there is a significant difference between the effect sizes, it was observed that there was no statistically significant difference between the types of thesis (Qb=3,395, p=.065). Therefore, the variance between studies for the thesis type variable is not statistically significant (p>.05).

The type of school variables was divided into 3 groups state (n=6), private (n=1), and mixed (n=1). The effect sizes were calculated as -0.077, 0.140, and -0.058, respectively, according to the random effects model. According to the heterogeneity test between groups using the random effects

model, the statistical value of the Q of the study was calculated as 2,556 (p=.279) and the degree of freedom was 2. The critical value of the chi-square table at the 95% significance level is 5,991. The statistical value of Q (2,556) is lower than the critical value (5,991). So, it can be claimed that the variance between studies for the type of school variable is not statistically significant (p>.05).

School-level variables were divided into 4 groups primary school (n=1), primary and secondary school (n=2), high school (n=1), and mixed (n=4). The effect sizes were calculated as -0.205, 0.026, -0.058, and -0.042, respectively, according to the random effects model. Based on the results of the subgroup analysis, there was no statistically significant difference between school levels (Qb=3.544, p=.315). In other words, the variance between studies for the school-level variable is not statistically significant (p>.05).

The titles of the participants in the research were divided into 3 groups teacher (n=6), administrator (n=1), and both (n=1). The effect sizes were calculated as -0.013, -0.120, and -0.267, respectively, according to the random effects model. Based on the results of the subgroup analysis, there was no statistically significant difference between the job titles (Qb=4.428, p=.109). Thus, the variance between studies for the school-level variable is not statistically significant (p>.05).

The variables of the research region were divided into 4 groups Marmara (n=4), Southeastern Anatolia (n=1), Central Anatolia (n=2), and Eastern Anatolia (n=1). The effect sizes were calculated as -0.084, 0.083, 0.010, and -0.205, respectively, according to the random effects model. Based on the results of the subgroup analysis to determine whether there is a significant difference between the effect sizes, it was observed that there was a statistically significant difference between the types of thesis (Qb=8.037, p=.045). As a consequence, the variance between studies for the research region variable was statistically significant (p<.05). In this regard, it was determined that the difference stemmed from the studies carried out in the Marmara region in favor of females.

Meta-Analysis Results Revealing the Effect of Gender on Authentic Leadership

As a result of the homogeneity test, the statistical value of Q for authentic leadership according to the gender variable was calculated as 41,713. In the chi-square table, the critical value is accepted as 21,026 with 12 degrees of freedom at the 95% significance level. The statistical value of Q (41,713) calculated in this study is smaller than the critical value of 21,026. The I^2 value of the gender variable for authentic leadership was calculated as 71,232%. Besides, the p-value (.000) is less than p=.05. All these values (Q=41,713, p<.000, I^2=71,232) show that there is a heterogeneous distribution among the effect sizes and the random effects model should be used in the interpretation of the effect sizes.

Model	Study name	Statistics for each study							Hedges's g and 95% CI				
		Hedges's g	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1,00	-0,50	0,00	0,50	1,00
	Gok (2015)	0,314	0,174	0,030	-0,028	0,655	1,799	0,072					
	Ors (2015)	-0,267	0,111	0,012	-0,485	-0,050	-2,409	0,016					
	Boz (2016)	0,084	0,060	0,004	-0,034	0,202	1,392	0,164					
	Yurtsever (2022)	-0,135	0,098	0,010	-0,327	0,058	-1,372	0,170					
	Karaman (2021)	-0,196	0,119	0,014	-0,431	0,038	-1,645	0,100					
	Aydinoglu (2020)	0,143	0,122	0,015	-0,096	0,381	1,174	0,240					
	Kocak (2019)	0,292	0,081	0,007	0,133	0,451	3,601	0,000					
	Kupeli (2018)	0,056	0,091	0,008	-0,123	0,235	0,614	0,539					
	Ozerten (2018)	-0,035	0,098	0,010	-0,227	0,157	-0,357	0,721					
	Yaras (2017)	-0,170	0,089	0,008	-0,343	0,004	-1,915	0,055					
	Ozmen (2017)	-0,155	0,096	0,009	-0,343	0,033	-1,613	0,107					
	Ozden (2015)	-0,220	0,098	0,010	-0,412	-0,028	-2,241	0,025					
	Keser (2013)	-0,098	0,147	0,022	-0,386	0,191	-0,664	0,507					
Fixed		-0,018	0,027	0,001	-0,070	0,035	-0,660	0,509					
Random		-0,034	0,052	0,003	-0,135	0,068	-0,650	0,516					

Figure 5. *Forest plot showing the effect of gender on authentic leadership*

The average effect size was calculated according to the random effects model of 13 studies investigating the effect of gender on authentic leadership. As a result, it was observed that the average effect size ES= -0.034 at the lower limit of -0.135 and the upper limit of 0.068 of the 95% confidence interval. In this context, it was observed that female participants perceived school administrators as more authentic leaders than male participants. Nevertheless, in light of the level classification specified by Thalheimer and Cook (2002), it was determined that the effect size value had an insignificant effect.

Subgroup analyses were carried out based on the random effects model to determine whether the year of the thesis, the type of thesis, the type of school, the school level, the title of the participants, and the region of the research were variables (moderators) to the effect values calculated according to the gender variable.

Research year variables 2013 (n=1), 2015 (n=3), 2016 (n=1), 2017 (n=2), 2018 (n=2), 2019 (n=1), 2020 (n=1)), 2020 (n=1) and 2022 (n=1) are divided into 9 groups. The effect sizes of the research year groups were calculated as -0.098, -0.090, 0.084, -0.163, 0.014, 0.292, 0.143, -0.196, and -0.135, respectively. Based on the results of the analysis performed to determine whether there is a significant difference between the effect sizes, it was observed that there was a statistically significant difference between the years of the research (Qb=27.952, p=.000). The variance between studies for the publication year variable was statistically significant (p<.001).

Thesis type variables were divided into 2 groups master (n=7) and doctorate (n=6). Effect sizes were calculated as -0.143 and 0.063, respectively. Based on the results of the subgroup analysis performed to determine whether there is a significant difference between the effect sizes, it was observed that there was a statistically significant difference between the types of thesis (Qb=6.071, p=.014). For the thesis type variable, the variance between studies was statistically significant (p<.05). In this context, it was determined that the difference was in favor of women in graduate studies.

The type of school variables was divided into 3 groups state (n=8), private (n=1), and mixed (n=4). The effect sizes were calculated as -0.048, 0.143, and -0.053, respectively, based on the random effects model. According to the heterogeneity test between groups using the random effects model, the Q statistical value of the study was calculated as 2,088 (p=.352) and the degree of freedom was calculated as 2. The critical value of the chi-square table at the 95% significance level is 5,991. Therefore, it can be said that the variance between studies for the type of school variable is not statistically significant (p>.05).

School level variables were divided into 4 groups primary school (n=2), primary and secondary school (n=3), high school (n=1), and mixed (n=7). The effect sizes were calculated as -0.192, 0.083, -0.035, and -0.033, respectively, according to the random effects model. According to the results of the subgroup analysis, there was a statistically significant difference between school levels (Qb=6,913, p=.075). Hence, the variance between studies for the school-level variable is statistically significant (p<.01). It was determined that the difference was in favor of females in the studies carried out at the primary school level. This result may mean that female teachers working in primary schools consider school administrators working in their schools more authentic leaders than their male colleagues.

The titles of the participants in the research were divided into 3 groups teacher (n=8), administrator (n=2), and both (n=3). The effect sizes were calculated as 0.013, 0.097, and -0.228, respectively, based on the random effects model. According to the results of the subgroup analysis, there was a statistically significant difference between the participant titles (Qb=8,784, p=.012). So, the variance between theses for the participant title variable is statistically significant (p<.05).

The research region variables were divided into 5 groups Marmara (n=6), Southeastern
Anatolia (n=1), Central Anatolia (n=2), Eastern Anatolia (n=1), and Mediterranean (n=1). The effect
sizes were calculated as -0.052, 0.084, 0.031, -0.170, and -0.220, respectively, based on the random
effects model. According to the results of the subgroup analysis, there was a statistically significant
difference between the research regions (Qb=10.086, p=.039). Thus, the variance between theses for
the job title variable is statistically significant (p<.05).

The forest plot of the statistical results of the Random Effects Model (REM) applied to
determine whether the authentic leadership of the school administrators in the theses makes a
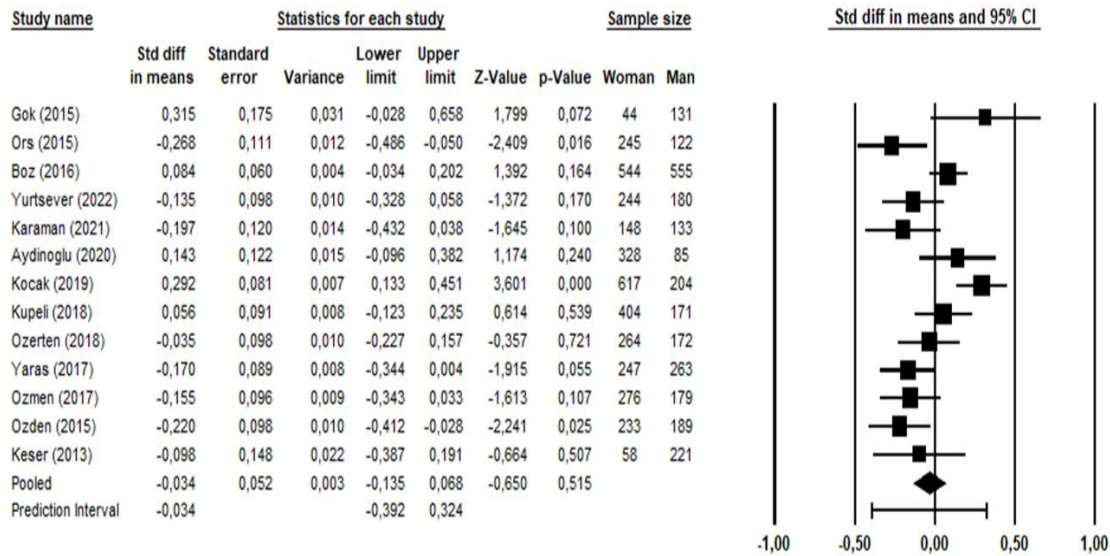difference according to the gender variable is shown in Figure 6.

Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	Woman	Man
Gok (2015)	0,315	0,175	0,031	-0,028	0,658	1,799	0,072	44	131
Ors (2015)	-0,268	0,111	0,012	-0,486	-0,050	-2,409	0,016	245	122
Boz (2016)	0,084	0,060	0,004	-0,034	0,202	1,392	0,164	544	555
Yurtsever (2022)	-0,135	0,098	0,010	-0,328	0,058	-1,372	0,170	244	180
Karaman (2021)	-0,197	0,120	0,014	-0,432	0,038	-1,645	0,100	148	133
Aydinoglu (2020)	0,143	0,122	0,015	-0,096	0,382	1,174	0,240	328	85
Kocak (2019)	0,292	0,081	0,007	0,133	0,451	3,601	0,000	617	204
Kupeli (2018)	0,056	0,091	0,008	-0,123	0,235	0,614	0,539	404	171
Ozerten (2018)	-0,035	0,098	0,010	-0,227	0,157	-0,357	0,721	264	172
Yaras (2017)	-0,170	0,089	0,008	-0,344	0,004	-1,915	0,055	247	263
Ozmen (2017)	-0,155	0,096	0,009	-0,343	0,033	-1,613	0,107	276	179
Ozden (2015)	-0,220	0,098	0,010	-0,412	-0,028	-2,241	0,025	233	189
Keser (2013)	-0,098	0,148	0,022	-0,387	0,191	-0,664	0,507	58	221
Pooled	-0,034	0,052	0,003	-0,135	0,068	-0,650	0,515		
Prediction Interval	-0,034			-0,392	0,324				

Figure 6. *Forest plot showing the effect of gender on authentic leadership*

Figure 6 shows that the Cohen d= -0.034 according to the random effects model as a result of
the analysis. Although the effect size shows that the authentic leadership of school administrators is in
favor of females, it was determined that this value has an insignificant effect according to the level
classification determined by Thalheimer and Cook (2002). The lines passing through the middle of the
squares in the forest plot do not cut the ineffectiveness line, which means that the effect detected is
statistically significant (Benligül, Bektaş, & Arslan, 2022).

It was figured out that four postgraduate theses (Koçak, 2019; Örs, 2015; Özden, 2015; Yaraş,
2017) included in the meta-analysis did not cut the line of ineffectiveness, while the other nine theses
(Aydınoğlu, 2020; Boz, 2016; Karaman, 2021; Keser, 2013; Kırhallı Gök, 2015; Küpeli, 2018;
Özerten, 2018; Özmen, 2017; Yurtsever, 2022) were found to cross the ineffectiveness line and were
not statistically significant. In light of these findings, the first question of the research has been
answered, and it is understood that gender does not have a significant effect on the authentic
leadership of school administrators.

The effect size funnel plot of the studies obtained as a result of the research is shown in
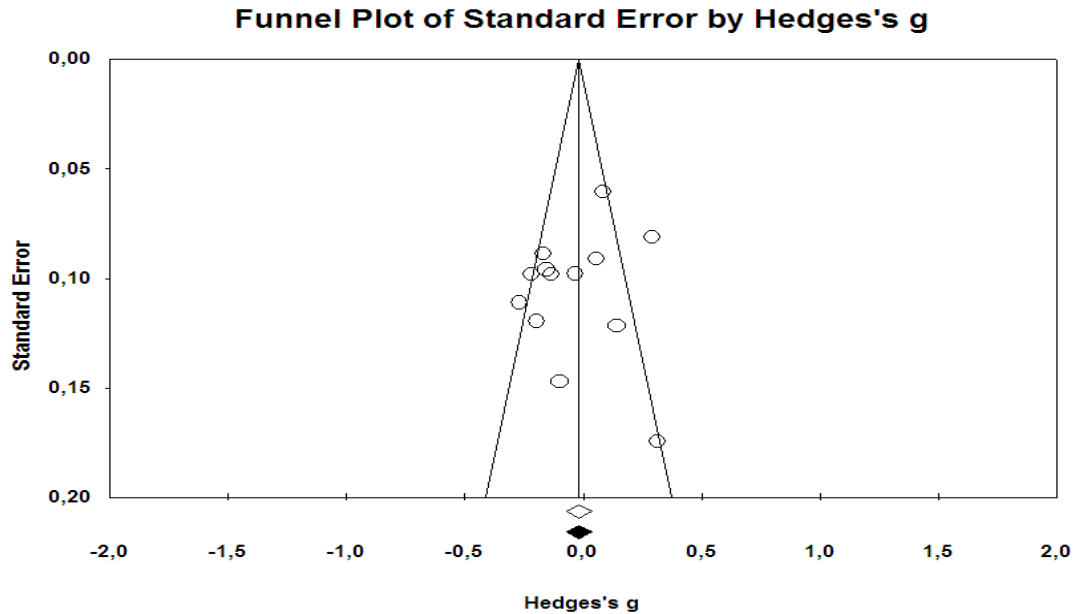Figure 7.

Funnel Plot of Standard Error by Hedges's g

Figure 7. *Authentic leadership publication bias Funnel plot obtained by CMA 4.0 program of theses included in meta-analysis*

If the effect sizes of each study included in the meta-analysis in the funnel plot are distributed equally and symmetrically to each side of the overall meta-analytical result and within the funnel plot limits, there is no publication bias; If the effect sizes of the studies in question are distributed asymmetrically and outside the funnel plot, then on the contrary, it is understood that there is publication bias (Bown & Sutton, 2010; Sari & Sasmaz Oren, 2020). The fact that most of the studies are collected towards a certain region of the middle vertical line or toward the bottom of the funnel indicates publication bias (Borenstein et al., 2009). In this context, it can be said that 13 postgraduate theses included in the study according to Figure 7 shows a symmetrical distribution and there is no publication bias.

Table 3 shows the test results of the Begg and Mazumdar rank correlation coefficients used to determine whether there is publication bias in this study, in which the authentic leadership of school administrators is examined according to the gender variable.

Table 3. *Authentic leadership-gender Begg and Mazumdar rank correlation*

Begg and Mazumdar Rank Correlation	Value
Kendall's S statistic (P-Q)	-6,00000
Kendall's tau without continuity correction	
Tau	-0,07692
z-value for tau	0,36605
P-value (1-tailed)	0,35716
P-value (2-tailed)	0,71433
Kendall's tau with continuity correction	
Tau	-0,06410
z-value for tau	0,46710
P-value (1-tailed)	0,38017
P-value (2-tailed)	0,76033

Table 3 shows that the two-tailed p-value is 0.58579 without continuity correction and the two-tailed p-value is 0.64043 with continuity correction. According to the Begg and Mazumdar Rank Correlation calculation, if the two-tailed p-value result is greater than 0.05, it means that there is no publication bias (Dinçer, 2014). In this case, it is understood that the two-tailed p-value without continuity correction and the two-tailed p-value with continuity correction is greater than 0.05, and therefore, publication bias cannot be mentioned in this study.

So as to determine whether the year, type of thesis, type of school, participant title, school level, and research region that constitutes the sample group of the theses included in the meta-analysis is a variable (moderator) in the effect of the gender variable on the authentic leadership of school administrators, subgroup analyzes were made according to the random effects model. The obtained results are shown in Table 4.

Table 4. *Subgroup analysis according to the random effects model for authentic leadership of school administrators*

Variable (Moderator)		n	Effect Size	Standard Error	95% Confidence Interval		df	.05 Confidence Level X^2	Qb	p
					Lower Limit	Upper Limit				
Year	2013	1	-0,098	0,147	-0,386	0,191				
	2015	3	-0,090	0,149	-0,382	0,202				
	2016	1	0,084	0,060	-0,034	0,202				
	2017	2	-0,163	0,065	-0,290	-0,035				
	2018	2	0,014	0,067	-0,117	0,144	8	15,507	27,952	.000*
	2019	1	0,292	0,081	0,133	0,451				
	2020	1	0,143	0,122	-0,096	0,381				
	2021	1	-0,196	0,119	-0,431	0,038				
	2022	1	-0,135	0,098	-0,327	0,058				
	Total	13	0,005	0,029	-0,052	0,061				
Thesis Type	Master	7	-0,143	0,053	-0,248	-0,039				
	Doctorate	6	0,063	0,064	-0,064	0,189	1	3,841	5,991	.014*
	Total	13	-0,060	0,041	-0,140	0,021				
Type of School	State	8	-0,048	0,070	-0,184	0,089				
	Private	1	0,143	0,122	-0,096	0,381				
	State and Private	4	-0,053	0,088	-0,226	0,120	2	5,991	2,088	.352
	Total	13	-0,017	0,050	-0,115	0,080				
School Level	Primary	2	-0,192	0,066	-0,321	-0,063				
	Primary and secondary	3	0,083	0,087	-0,087	0,254				
	High school	1	-0,035	0,098	-0,227	0,157	3	7,815	6,913	.075
	Mixed	7	-0,033	0,082	-0,193	0,128				
	Total	13	-0,068	0,040	-0,147	0,011				
Participant Title	Teacher	8	0,013	0,059	-0,102	0,127				
	Administrator	2	0,097	0,205	-0,305	0,500				
	Administrator and Teacher	3	-0,228	0,063	0,351	-0,106	2	5,991	8,784	.012*
	Total	13	-0,092	0,042	-0,174	-0,010				
Research Region	Mediterranean	1	-0,220	0,098	-0,412	-0,028				
	Eastern Anatolia	1	-0,170	0,089	-0,343	0,004				
	Southeastern Anatolia	1	0,084	0,060	-0,034	0,202	4	9,488	10,086	.039*
	Central Anatolia	4	0,031	0,124	-0,211	0,274				
	Marmara	6	-0,052	0,068	-0,186	0,082				
	Total	13	-0,039	0,036	-0,109	0,031				

* *p* < .05

As seen in Table 4 according to the heterogeneity test between groups using the random effects model, the Q statistical value of the study for the year variable was calculated as 27,952 (p=.000) and the degree of freedom was 8. The critical value of the chi-square table at the 95%

significance level is 15,507. Therefore, it was determined that the calculated statistical value of Q was above the critical value determined in the X^2 distribution with 8 degrees of freedom. In this case, it was concluded that the year variable created a statistically significant difference in the effect size (p<.05).

For the thesis type variable, the Q statistical value of the study was calculated as 5,911 (p=.014) and the degree of freedom was 1, according to the heterogeneity test between groups using the random effects model. The critical value of the chi-square table at the 95% significance level is 3.841. Therefore, it was determined that the calculated statistical value of Q was above the critical value determined in the X^2 distribution with 1 degree of freedom. Hence, it was concluded that the thesis type variable created a statistically significant difference in the effect size (p<.05).

According to the heterogeneity test between groups using the random effects model, the Q statistical value of the study for the type of school variable was calculated as 2,088 (p=.352) and the degree of freedom was calculated as 2. The critical value of the X^2 table at the 95% significance level is 5,991. Therefore, it was determined that the calculated statistical value of Q was lower than the critical value determined in the chi-square distribution with 2 degrees of freedom. As a result, it was concluded that the type of school variable did not cause a statistically significant difference in the effect size (p>.05).

For the school-level variable, the Q statistical value of the study was calculated as 6,913 (p=.075) and the degree of freedom was 3, according to the heterogeneity test between groups using the random effects model. The critical value of the X^2 table at the 95% significance level is 7.815. For this reason, it was determined that the calculated statistical value of Q was lower than the critical value determined in the chi-square distribution with 3 degrees of freedom. Therefore, it was understood that the school-level variable did not cause a statistically significant difference in the effect size (p>.05).

According to the heterogeneity test between groups using the random effects model, the Q statistical value of the study for the participant title variable was calculated as 8,784 (p=.012) and the degree of freedom was calculated as 2. The critical value of the X^2 table at the 95% significance level is 5,991. Therefore, it was determined that the calculated statistical value of Q was above the critical value determined in the chi-square distribution with 2 degrees of freedom. So it was concluded that the participant title variable created a statistically significant difference in the effect size (p<.05).

For the research region variable, the Q statistical value of the study was calculated as 10,086 (p=.039) and the degree of freedom was 4, according to the heterogeneity test between groups using the random effects model. The critical value of the chi-square table at the 95% significance level is 9.488. As a result, it was determined that the calculated statistical value of Q was above the critical value determined in the X^2 distribution with 4 degree of freedom. Therefore, it was understood that the thesis type variable made a statistically significant difference in the effect size (p<.05).

As a result, the type and level of the school did not make a significant difference in the effect size obtained as a result of the research (p>.05). On the other hand, the year, type, the participant title, and the research region made a significant difference in the effect size (p<.05). Thus, the third question of the research was answered.

Conclusion, Discussion, and Recommendations

In this meta-analysis study, which aims to reveal the effect of the gender variable on the authentic leadership of school administrators, 13 postgraduate theses, which were included in the database of the National Thesis Center system of the Council of Higher Education between 2013 and 2023, on the authentic leadership of school administrators and selected according to certain criteria,

were used. The sample of the research consists of 6257 teachers and school administrators, 3652 (58.37%) female and 2605 (41.63%) male, obtained from postgraduate theses.

The first question of the research was 'What is the effect of gender on school administrators' authentic leadership?'. Based on this the results of the research show that the average effect size value for the gender variable in all sub-factors of authentic leadership is insignificant according to the Thalheimer and Cook (2002) classification.

The second question of the research was 'Does this effect differ between the sub-factors, relational transparency, ınternalized moral perspective, balanced processing, and self-awareness?' The results obtained in the authentic leadership sub-factors for the gender variable are as follows. In the study, according to the meta-analysis performed according to the fixed and random effects model in authentic leadership sub-factors in terms of gender variable, the average effect size was found as -0.054 for the relational transparency sub-factor, -0.040 for the internalized moral perspective sub-factor, -0.023 for the balanced processing sub-factor, and -0.051 for self-awareness sub-factor. The average effect size for authentic leadership was found -0.034. Although the average effect size value for all sub-factors and total authentic leadership is in favor of females, it is seen that this value is insignificant according to the Thalheimer and Cook (2002) classification. These findings can be interpreted as gender does not affect the authentic leadership of school administrators. The findings of the study overlap with the authentic leadership literature, which assumes that authentic leadership is not gender-dependent (Avolio, Gardner, Walumbwa, Luthans, & May, 2004; Caza, Bagozzi, Woolley, Levy, & Barker Caza, 2010; Endrissat, Müller, & Kaudela-Baum, 2007; Yammarino, Dionne, Schriesheim, & Dansereau, 2008).

The third question of the research was 'Is the thesis year, thesis type, types of school, school level, participant title, and research region of the thesis a moderator that makes a significant difference for the calculated effect size?' As a result of the analysis performed to determine the general impact level, it was determined that there was a high level of heterogeneity among the postgraduate theses. In order to understand the reason for the heterogeneity, subgroup analyses were carried out for the year, thesis type, school level, school type, participant title, and research region moderators. According to the results, it was determined that the school type and school-level variables did not affect the authentic leadership of the school administrators in terms of the gender variable. Similarly, in Bento and Ribeiro's (2013) study, it was revealed that the type of school, namely state or private school, did not make a significant difference in the authentic leadership of school administrators. In addition Bird, Wang, Watson, & Murray's (2012) study supports the finding that school level does not make a significant difference in authentic leadership.

On the other hand, it was determined that there was a significant difference in the year, type, participant title, and research region. The studies were conducted in different years changes the effect size of authentic leadership according to gender it was determined that the difference was due to Koçak's study conducted in 2019 and that the difference was in favor of males. For the thesis type variable, the variance between studies was statistically significant. In this context, it was determined that the difference was in favor of women in master's studies. Master's theses were generally conducted in big cities such as Istanbul and Ankara. It has been determined that the difference arises in favor of females in studies conducted at the level of both teachers and administrators. This result may mean that both female teachers and female administrators find school administrators working in their schools more authentic leaders than their male colleagues. It was determined that the difference was in favor of females in the study conducted in the Mediterranean region. This result may mean that both female teachers and female administrators consider school administrators working in their schools more authentic leaders than their male colleagues.

The funnel plot method and Begg and Mazumdar rank correlation statistics were used to investigate publication bias. No publication bias was found in any of these analyses. One of the limitations of the study is that only postgraduate theses on the subject are evaluated. Another limitation is that meta-analysis only consists of theses carried out in Türkiye between the years 2013-2023. Within the scope of the findings of the study and the results achieved, the following recommendations are presented.

- Meta-analysis studies can be carried out by keeping the range of publication years wider and including studies conducted abroad in the meta-analysis.

- In the study, gender independent variable and its effect on school administrators' authentic leadership were examined. Researchers can conduct meta-analysis research on this subject with different independent variables.

- In the study, it was concluded that the effect of gender on the authentic leadership of school administrators is insignificant. Researchers can conduct studies that include in-depth analysis of the causes of this situation.

- Within the scope of the research, the effect of gender on the authentic leadership of school administrators was analyzed in terms of the moderator variables "sample group of the study", "sample size of the study" and "the duration of implementation of the experimental procedure". For this reason, new studies can be carried out by examining this subject according to different variables (moderators) by researchers.

Statement of Research and Publication Ethics

The research was carried out in accordance with the principles of publication ethics. Since this research is a meta-analysis study, there is no need for an ethics committee approval document.

Authors' Contribution Rate

The author has prepared the article alone.

Statement of Interest

The author has no conflict of interest with any person or organization.

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Appendix 1. *List of graduate theses included in meta-analysis*

	Thesis Title	Year	Thesis Type	Research City	Research Region	School Level	Type of School	Participant Title	Female (n)	Male (n)
1	Gok (2015)	2015	Master	Istanbul (European Side)	Marmara	Primary and secondary school	State and private	Administrator	44	131
2	Ors (2015)	2015	Master	Istanbul (European Side)	Marmara	Mixed	State	Administrator and teacher	245	122
3	Boz (2016)	2016	Doctorate	Siirt	Southeastern Anatolia Region	Primary and secondary school	State	Teacher	544	555
4	Yurtsever (2022)	2022	Master	Ankara	Central Anatolia	Mixed	State	Teacher	244	180
5	Karaman (2021)	2021	Master	Karaman	Central Anatolia	Mixed	State and private	Administrator and teacher	148	133
6	Aydinoglu (2020)	2020	Doctorate	Ankara	Central Anatolia	Mixed	Private	Teacher	328	85
7	Kocak (2019)	2019	Doctorate	Sivas	Central Anatolia	Mixed	State	Teacher	617	204
8	Kupeli (2018)	2018	Doctorate	Canakkale	Marmara	Mixed	State	Teacher	404	171
9	Ozerten (2018)	2018	Doctorate	Istanbul (European Side)	Marmara	High school	State and private	Teacher	264	172
10	Yaras (2017)	2017	Doctorate	Elazig	Eastern Anatolia Region	Primary school	State	Teacher	247	263
11	Ozmen (2017)	2017	Master	Istanbul (Anatolian Side)	Marmara	Mixed	State and private	Teacher	276	179
12	Ozden (2015)	2015	Master	Adana	Mediterranean	Primary school	State	Administrator and teacher	233	189
13	Keser (2013)	2013	Master	Istanbul (European Side)	Marmara	Primary and secondary school	State	Administrator	58	221