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Examining the Relationship Between Organizational Climate and Leadership in Educational Institutions: A Meta-Analysis Study*

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Eğitim Kurumlarında Örgütsel İklim ile Liderlik Arasındaki İlişkinin İncelenmesi: Bir Meta-Analiz Çalışması**

Abstract

The objective of this research is to measure the effect size of the relationship between organizational climate and leadership style by employing a meta-analysis method, with a focus on teachers' perceptions. This study encompasses master's and doctoral theses that employed quantitative research methodologies, as well as articles published in peer-reviewed journals regarding organizational climate and leadership in educational institutions in Turkey from January 1988 to August 2022. Based on the study's inclusion and exclusion criteria, 36 research works examining the relationship between organizational climate and leadership were incorporated into the meta-analysis. The Comprehensive Meta Analysis V3 (CMA) Program facilitated the data analysis. Results were interpreted using the random effects model. To ascertain potential publication bias, Orwin's Fail Safe N analyses were undertaken alongside Funnel plots. Moderator variables included gender, publication type, educational level, research region, and leadership style. Based on the study's findings, no publication bias was identified. The effect size for the relationship between organizational climate and leadership style was measured to be moderate and positive. Following the moderator analysis, it was found that the type of publication, education level, researcher's gender, and leadership classification did not impact the relationship between organizational climate and leadership. It was determined that the studies differed significantly according to the moderator of the region. According to the results of the research, it is recommended that both school administrators and teachers receive training on leadership.

Keywords: Organizational Climate, Leadership, Meta-Analysis.

Öz

Bu araştırmanın amacı, öğretmenlerin algılarını temel alan araştırmalar kapsamında, örgütsel iklim ile liderlik tarzı arasındaki ilişkinin etki büyüklüğünü meta-analiz yöntemiyle belirlemektir. Araştırmanın kapsamını, Türkiye'de Ocak 1988 ile Ağustos 2022 tarihleri arasında eğitim kurumlarında örgütsel iklim ile liderlik konusunda nicel yöntemlerle yapılmış yüksek lisans ve doktora tezleri ile hakemli dergilerde yayınlanmış araştırma makaleleri oluşturmaktadır. Araştırmanın dahil edilme ve hariç tutma kriterlerine uygun olarak örgütsel iklim ile liderlik arasındaki ilişkiye yönelik 36 araştırma meta-analiz çalışmasına dahil edilmiştir. Verilerinin analizinde Comprehensive Meta-Analysis V3 (CMA) programı kullanılmıştır. Araştırmadaki tüm analizlerde rastgele etkiler modeli kullanılmıştır. Araştırmada yayın yanlılığını bulmak için Huni saçılım grafiği ile Orwin's Fail Safe N analizleri yapılmıştır. Araştırmada moderatör olarak araştırmacının cinsiyeti, yayın türü, eğitim kademesi, araştırmanın yapıldığı bölge ve liderlik sınıflandırması gibi değişkenler esas alınmıştır. Araştırmanın bulgularına göre araştırmada yayın yanlılığının bulunmadığı tespit edilmiştir. Örgütsel iklim ile liderlik tarzı arasındaki ilişkinin etki büyüklüğü orta düzeyde ve pozitif yönlü olarak hesaplanmıştır. Moderatör analizi sonucunda yayın türü, eğitim düzeyi, araştırmacının cinsiyeti ve liderlik sınıflandırmasının örgütsel iklim ile liderlik arasındaki ilişkiyi etkilemediği bulunmuştur. Çalışmaların yapıldığı bölge moderatörüne göre ise anlamlı düzeyde farklılaştığı saptanmıştır. Araştırma sonucuna göre hem okul yöneticilerinin hem de öğretmenlerin liderlik konusunda eğitim almaları önerilmektedir.

Anahtar Kelimeler: Örgütsel İklim, Liderlik, Meta-Analiz.

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Introduction

The starting point for research on organizational climate dates back to the 1930s. Stemming from the human relations movement initiated by the Hawthorne studies, researchers shifted their focus from the physical environment to the psychological one. Consequently, the concept of organizational climate emerged (Zhang & Liu, 2010). Although the literature is replete with studies on organizational climate, and the topic is extensively discussed, it's posited that the concept remains poorly understood (Bucak, 2002; Ertekin, 1978). Gilmer (1966) views organizational climate as the aggregation of characteristics that distinguish one organization from another and influence the behavior of its members. Conversely, Litwin and Stringer (1968) define the concept as "a set of measurable properties arising from the collective perceptions of individuals in a specific organization that influence human behavior in the workplace" (as cited in Hoy, Tarter, & Kottkamp, 1991). Poole (1985) outlines the fundamental attributes of organizational climate as follows:

- Organizational climate is related to the whole organization and determines the characteristics of the whole organization or other sub-units of the organization.
- Organizational climate mirrors not just a segment of an organization but its entirety, influencing emotional reactions towards the organization.
- Organizational climate originates from practices customary to the organization and its members.
- Organizational climate impacts the behavior and attitudes of the members within the organization (Hoy & Miskel, 2015).

Based on their investigations, researchers Andrew Halpin and Don Croft categorized organizational climate into six types. These climate types are: open climate, controlled climate, autonomous climate, paternal climate, familiar climate, and closed climate. In the same study, Halpin and Croft delineated organizational climate across eight dimensions, ranging from the closed end to the open end. Four of these dimensions pertain to the behaviors of the teachers' group, while the remaining four address the behaviors of the principals. The teachers' group behaviors are defined in terms of disengagement, hindrance, morale, and intimacy. Conversely, the behaviors of the principal group are characterized by production emphasis, aloofness, thrust, and consideration (Halpin & Croft, 1963).

Just as every organization possesses a distinct climate, each school has its unique school climate. The characteristics related to a school's internal environment, which differentiate one school from another and influence the behavior of every member within that school, together form the school climate. From this perspective, school climate can also be described as the personality of the school (Hoy & Miskel, 2015). Hoy et al. (1991) delineated the school climate into six dimensions in one of their studies. Three of these dimensions pertain to principal behaviors while the remaining three concern teacher behaviors. Principal behaviors in the study are categorized as supportive, directive, and restrictive. In contrast, teacher behaviors are characterized as collegial, intimate, and disengaged. The study identified four distinct school climate types: open climate, disengaged climate, engaged climate, and closed climate.

Upon examining school climate studies, it becomes evident that staff in schools with an open climate exhibit higher levels of organizational trust, job satisfaction, and organizational commitment (Hoy & Miskel, 2015). Additionally, it's noted that administrators can more effortlessly enact essential leadership behaviors in schools characterized by an open climate (Lunenburg & Ornstein, 2013). Conversely, research in this domain indicates that school climate significantly impacts teachers' perceptions of burnout (Ji & Yue, 2020; Lavian, 2012). There's a positive correlation between school climate and teachers' performance, implying that a favorable school climate amplifies teachers' performance levels (Budiyono, Lian, & Fitria, 2020; Werang & Lena, 2014) and their work motivation (Ladyong, 2014; Singh, 2017). Research outcomes highlight that the school climate can either positively or negatively affect the behavior of its teaching staff. In this vein, pinpointing variables associated with school climate becomes imperative. Leadership stands out as one such pivotal variable.

Leadership is pivotal to the success of organizations (Landis, Hill, & Harvey, 2014). Over the years, leadership has been defined in myriad ways through various research and theories. Although numerous definitions of leadership exist, no single definition encapsulates all its facets (Oğuz, 2013). For instance, leadership is defined as "understanding oneself and the world" (Bennis, 1999), and as "influencing and facilitating individual and collective efforts to achieve common goals" (Yukl, 2012). Another perspective views leadership as "a process of social influence that underscores the intentional influence of an individual over others to guide group or organizational relations and activities" (Hoy & Miskel, 2015). Additionally, leadership is characterized as "initiating a new structure and procedure to achieve an organization's objectives or to modify these objectives" (Erdoğan, 2004). As inferred from these definitions, leadership is articulated in diverse ways, and it's evident that these interpretations

converge on the premise that leadership entails an influential process to streamline the execution of a collective task (Yukl, 2013). Four elements are prominent in leadership definitions: firstly, the purpose; followed by the leader; thirdly, the audience; and lastly, the environment (Başaran, 2004). The leader, a fundamental component of leadership, can be described as "someone who assesses and orchestrates group dynamics, harnessing the group's power through these interactions" (Bursalıoğlu, 2005). Furthermore, a leader is characterized as a group member endowed with the prowess to organize, plan, persuade, and take action (Eren, 2008). Leaders have the capacity to amplify the performance of a team or organization by setting performance benchmarks and influencing processes (Yukl, 2012). In this context, schools stand out as notable entities influenced by leaders. School principals play a crucial role in fostering a positive organizational climate and attaining set objectives. The cultivation of a positive climate and the realization of these goals hinge on the leadership attributes of school principals.

Litwin and Stringer (1968) significantly contributed to understanding the relationship between organizational climate and leadership styles through their research. From this study, they defined climate types as authoritarian, democracy-based, and success-oriented. Notably, diverse leadership styles influenced the development of various organizational climates (Ertekin, 1978). A review of related literature reveals that leadership styles profoundly impact both the employees' relationship with and perceptions of the organization, as well as the organizational climate itself (Işık, 2020). Within this framework, a school principal's leadership philosophy plays a pivotal role in shaping the school's climate (Hoy & Miskel, 2015; Hughes & Pickeral, 2013). In essence, the leadership actions of the school principal are instrumental in determining the school's climate. Through their leadership behaviors, principals set the tone for their respective schools, which in turn influences teachers, students, parents, and other school staff. The principal's behavior, management principles, communication style, beliefs, and attitudes are all factors that shape the school climate (Şentürk, 2010). In conclusion, the school principal, serving as the educational leader, exerts a direct influence on the school's climate.

The relationship between organizational climate and leadership is well-documented in literature (Allen, Grigsby, & Peters, 2015; Ayık & Şayır, 2014; Damanik & Aldridge, 2017; Dursun, Yıldız & Yüksel, 2022; Emeksiz, 2003; Lane, 2016; Pulleyn, 2012; Sellars, 1984; Shaw, 2009; Tahaoğlu, 2007). These investigations have identified significant associations between leadership behaviors and organizational climate. The leadership styles of administrators are believed to profoundly influence organizational climate. A review of national literature concerning the relationship between organizational climate and leadership style reveals a substantial number of postgraduate theses and articles on the topic, suggesting the feasibility of a meta-analysis. Notably, while there are meta-analyses on organizational climate and leadership at the international level, there is a limited number of such studies conducted nationally. Hence, this study is anticipated to offer a valuable contribution to the national literature. In light of this, the primary objective of this research is to measure the effect size of the relationship between organizational climate and leadership style, particularly focusing on research based on teachers' perceptions, using a meta-analysis approach. To achieve this objective, the research sought answers to the following questions:

1- What is the effect size of the relationship between organizational climate and leadership style?
2- How do the moderator variables including researcher's gender, publication type, education level of the study, research region, and leadership classification impact the effect sizes?

Method

In this section, comprehensive details are provided on the research design, data collection process, establishing reliability and validity, data analysis, and research ethics for the meta-analysis study examining the relationship between organizational climate and leadership style.

Research Design

This study employs the meta-analysis method, a quantitative research method, to identify the relationship between organizational climate and leadership style in educational institutions. The meta-analysis method involves grouping similar studies on a topic based on specific criteria and then merging and reinterpreting the quantitative findings of these studies (Dinçer, 2014). Furthermore, meta-analysis can be characterized as the statistical evaluation of results derived from individual studies, aimed at integrating research findings (Glass, 1976). The primary objective of meta-analysis is to amalgamate the results of prior studies to draw overarching conclusions about a research domain (Ellis, 2010; Şen & Yıldırım, 2020). In the analysis of the data, the relational meta-

analysis method has been employed. In this context, the effect size value in the study is based on the Pearson correlation coefficient (r) found in the research.

Data Collection

In line with the study's objective, the dataset comprises master's and doctoral theses, produced using quantitative methods, on organizational climate and leadership in educational institutions in Turkey between January 1988 and August 2022. Additionally, research articles published in peer-reviewed journals were considered. Theses on organizational climate and leadership were sourced from the Council of Higher Education (CHE) Thesis Center and the ProQuest database. For research articles, EBSCOhost, ERIC, Web of Science, ULAKBIM, Google Scholar, and DergiPark databases were consulted. Searches in these databases employed the keywords "school climate," "organizational climate," "leadership," and their Turkish equivalents. The search yielded a total of 798 studies: 448 theses and 350 articles. Based on the study's inclusion and exclusion criteria, 36 studies focusing on the relationship between organizational climate and leadership were incorporated into the meta-analysis. The inclusion criteria used to select the studies for this research are as follows:

1. The studies on organizational climate and leadership in educational institutions span from January 1988 to August 2022.
2. Only studies conducted within Turkey's borders are considered.
3. Both published and unpublished master's and doctoral theses, as well as research articles published in peer-reviewed journals, are included.
4. Studies whose sample group comprises teachers are considered.
5. Studies that provide adequate quantitative data with sample size (n) and correlation values (r) are included.

On the other hand, for the meta-analysis, besides the included studies, the exclusion criteria are detailed below:

1. Studies with alternative sample groups (such as parents, students, supervisors, other staff in educational institutions, and individuals in other sectors) are not included.
2. Studies presenting qualitative findings are excluded.
3. Articles and papers derived from theses are not considered.
4. Studies lacking adequate quantitative data, including sample size (n) and correlation values (r) suitable for meta-analysis, are excluded.

Reporting

The study conducted reviewing procedures taking into account the inclusion and exclusion criteria, and as a result of these procedures, 36 effect sizes were identified and included in the meta-analysis. The Turkish version of the PRISMA flow diagram used for systematic review and meta-analysis is depicted in Figure 1 (Aşık & Özen, 2019).

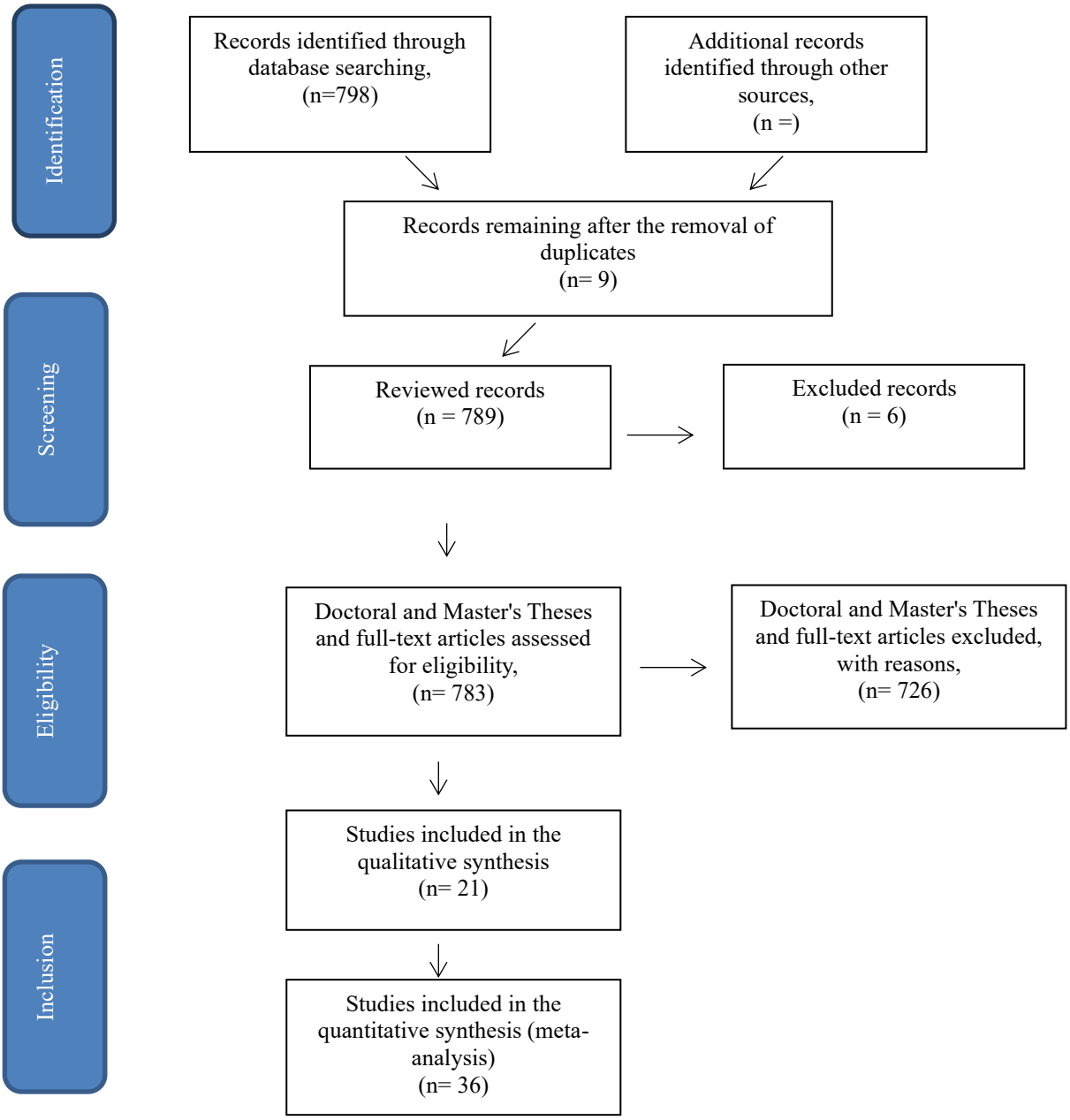

Figure 1. *PRISMA Flow Diagram for Meta-Analysis*

Reliability and Validity of the Research

In meta-analysis studies, ensuring reliability among coders during the coding process is crucial for the study's reliability. Accordingly, a coding protocol and form were developed in this research to detail the identity and content of the study and to display the data of the studies. The data from the selected studies for the meta-analysis were individually entered into the coding form by at least two coders. Once the coding was completed, a paired t-test analysis was conducted to ascertain any differences between the values provided by the coders. From this analysis, the p-value was identified as 0.137. This value indicates no significant difference between the values given by the coders ($p>0.05$). Additionally, the intraclass correlation coefficient (ICC) was assessed to gauge the agreement between the coders. The ICC value was found to be 0.93. Given that this value exceeds 0.90, it suggests a high agreement between the coders. Furthermore, the inclusion of all accessible studies—deemed appropriate according to the inclusion criteria—in the meta-analysis, sourced from all available databases, serves as an indicator of the meta-analysis study's validity (DeCoster, 2004; Petticrew & Roberts, 2006). The comprehensive reach of all studies following a thorough literature review supports the study's validity. In this regard, all 36 studies integrated into the meta-analysis were meticulously reviewed, revealing that the validity and reliability

assessments of the data collection tools were executed in each study. Hence, the reliability and validity of this research are well-established.

Data Analysis

In this research, the Comprehensive Meta-Analysis V3 (CMA) and SPSS software were utilized for data analysis. The Pearson correlation coefficient (r) identified in the studies was taken as the effect size value. A random effects model was employed for all analyses. Orwin's Fail Safe N analyses alongside the Funnel plot were conducted to detect publication bias. As moderators in the research, variables such as the researcher's gender, type of publication, education level, research region, and leadership classification were identified, and corresponding moderator analyses were executed. For interpreting the effect size values derived from the meta-analysis, classification values proposed by Cohen, Manion, and Morrison (2007) for correlation studies were employed. These classification values are as follows:

Weak level: between ± 0.00 - ± 0.10
Modest: from ±0.10 to ±0.30
Moderate: from ±0.30 to ±0.50
Strong level: from ±0.50 to ±0.80
Very strong: if it's ≥ ±0.80

Ethics Committee Permission Information

As this is a meta-analysis study, a type of quantitative research method, there was no need for ethics committee approval or permission.

Findings

This section presents findings from the meta-analysis study concerning the relationship between organizational climate and leadership style, which include publication bias, effect size values, the random effects model, forest plot, heterogeneity analysis, and moderator analysis.

Publication Bias

The funnel plot and Orwin's Fail Safe N statistics were utilized to assess publication bias in studies (Borenstein, Hedges, Higgins, & Rothstein, 2009). The funnel plot is the primary method for measuring this bias. In the funnel plot, effect sizes are depicted on the horizontal (X) axis, while sample sizes are displayed on the vertical (Y) axis. Studies with larger sample sizes are positioned towards the top of the funnel plot and clustered around the overall effect size. In contrast, studies with smaller sample sizes are located towards the bottom. For a balanced representation free from publication bias, individual studies should be symmetrically distributed within the funnel's boundaries (Dinçer, 2014). In this research, the Funnel plot representing the effect size of the studies, which meet the inclusion criteria pertaining to the relationship between organizational climate and leadership style, is illustrated in Figure 2.

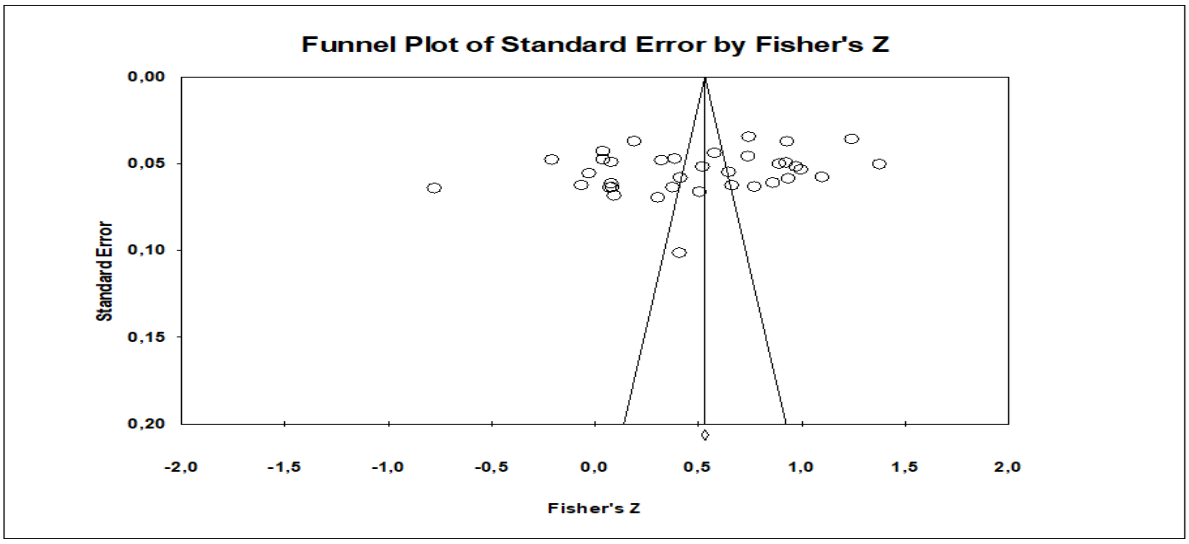

Figure 2. *Funnel plot*

Figure 2 displays the funnel plot representing the relationship between organizational climate and leadership style. Based on the funnel plot, it is evident that the studies incorporated in the research converge around the general effect at the top of the chart and are symmetrically distributed. In light of this, the analysis results indicate that there isn't any publication bias in the research (Borenstein et al., 2009).

An alternative method for measuring publication bias is Orwin's Fail-Safe N statistic. Building on the theory proposed by Rosenthal (1979), Orwin (1983) devised the safe N method that employs effect size to assess the robustness of meta-analysis results (Long, 2001). The Orwin's Fail Safe N statistic helps identify the number of omitted studies in meta-analysis research (Borenstein et al., 2009). In the present study, the Orwin's Fail Safe N statistics were determined to assess potential publication bias, and the findings are presented in Table 1.

Table 1. *Orwin's Fail Safe N analysis findings*

Variable	**Value**
Observed effect size value	0,48573
Level to which the effect size will be reduced	0,01
Average effect size in missing studies	0,00000
Number of missing studies	1874

According to Table 1, when examining the results of the Orwin's Fail Safe N analysis for publication bias, the number of studies required for the effect size of 0.48573 to reach the 0.01 level (trivial) was determined as 1874.Given that only 36 studies were included in the meta-analysis, and the significantly higher count of 1874, it can be inferred that the research doesn't exhibit publication bias.

Uncombined Findings of Meta-Analysis on the Relationship between Organizational Climate and Leadership Style

The sample sizes (n) from studies incorporated in the meta-analysis regarding the relationship between organizational climate and leadership style was detailed. Correlation values, along with their corresponding Fisher's Z effect sizes (Zr), were determined for every study. Furthermore, the confidence intervals and significance levels (p) of the studies involved in the meta-analysis were highlighted. The uncovered findings are illustrated in Table 2.

Table 2. *Meta-analysis uncombined findings*

Name of the Study	n	r	Z_r	95% Confidence Interval		p
				Low. Limit	Up. Limit	
Alpay, 2019	520	0,522	0,579	0,457	0,582	0,000
Bakkal, 2019	352	0,760	0,996	0,712	0,801	0,000
Öztürk, 2014	271	0,697	0,861	0,630	0,754	0,000
Sarıçiçek, 2014	400	0,712	0,891	0,660	0,757	0,000
Tepe & Yılmaz, 2020	245	-0,650	-0,775	-0,717	-0,571	0,000
Ayık & Diş, 2015	258	0,580	0,662	0,493	0,656	0,000
Ayık & Şayır, 2014	249	0,360	0,377	0,247	0,464	0,000
Cantürk, 2017	252	0,648	0,772	0,570	0,714	0,000
Eranıl & Özbilen, 2017	396	0,880	1,376	0,856	0,900	0,000
Kaplan, 2020	302	0,800	1,099	0,755	0,837	0,000
Tahaoğlu, 2007	719	0,730	0,929	0,694	0,762	0,000
Kale & Güneş, 2015	375	0,750	0,973	0,702	0,791	0,000
Yıldız, 2021	334	0,570	0,648	0,493	0,638	0,000
Seday, 2021	410	0,728	0,924	0,679	0,771	0,000
Baş, 2012	545	0,040	0,040	-0,044	0,124	0,351
Öztürk, 2008	434	0,312	0,323	0,224	0,395	0,000
Kılıç, 2014	259	-0,064	-0,064	-0,184	0,058	0,350
Metin, 2020	325	-0,028	-0,028	-0,136	0,081	0,615
Demir, 2019	209	0,296	0,305	0,167	0,415	0,000
Şentürk, 2010	723	0,188	0,190	0,117	0,257	0,000
Varlı, 2015	442	0,040	0,040	-0,053	0,133	0,402
Küçük, 2008	230	0,467	0,506	0,359	0,562	0,000
Gültekin, 2012	250	0,084	0,084	-0,040	0,206	0,186
Boyraz, 2018	298	0,391	0,413	0,290	0,483	0,000
Gezerler, 2021	450	0,368	0,386	0,285	0,445	0,000
Çomak, 2021	216	0,093	0,093	-0,041	0,224	0,173
Taşdemirci, 2009	440	-0,205	-0,208	-0,293	-0,114	0,000
İnanır, 2020	267	0,080	0,080	-0,040	0,198	0,193
Emeksiz, 2003	293	0,733	0,935	0,675	0,782	0,000
Bilgi, 2020	416	0,080	0,080	-0,016	0,175	0,103
Erdoğdu & Umurkan, 2014	375	0,479	0,522	0,397	0,553	0,000
Doğruel Mansuroğlu, 2012	248	0,073	0,073	-0,052	0,196	0,252
Doğan, 2021	776	0,846	1,242	0,825	0,865	0,000
Koyuncuoğlu, 2022	100	0,388	0,409	0,207	0,543	0,000
Dursun et al.,2022	836	0,632	0,745	0,589	0,671	0,000
Kocaoğlu, 2022	478	0,630	0,741	0,573	0,681	0,000
Fixed	13693	0,486	0,530	0,473	0,498	0,000
Random	13693	0,445	0,479	0,317	0,558	0,000

According to Table 2, the relationship between organizational climate and leadership is positive in the majority of the studies. However, in four studies, the direction of this relationship was observed to be negative. Based on the results of the meta-analysis using both the fixed and random effects model, the average effect size of the relationship between organizational climate and leadership style was determined to be r=0.486 for the fixed effects model and r=0.445 for the random effects model. From these findings, one can infer that leadership styles in schools significantly influence the organizational climate, as perceived by teachers. According to the effect size value and the classification by Cohen et al. (2007), both models demonstrate a moderate effect.

Combined Findings of Average Effect Size and Heterogeneity Test Results for the Relationship between Organizational Climate and Leadership Style

In studies grounded on teachers' perceptions, the average effect size values for the relationship between organizational climate and leadership style were measured. The degree of variability among effect sizes in a meta-analysis is termed heterogeneity (Şen and Yıldırım, 2020). In this regard, the data from the studies were subjected

to a heterogeneity test. Table 3 displays the combined findings as determined by both the fixed and random effects models of the meta-analysis, along with the results of the heterogeneity test.

Table 3. *Combined Findings of Average Effect Size for the Relationship Between Organizational Climate and Leadership and Heterogeneity Test Results*

Model	**95% Confidence Intervals of EffectSize**					**Heterogeneity Test**			
	Number of Studies (k)	Effect Size (r)	Standard Error	Low. Limit	Up. Limit	Z-value	Q-value	p	df (Q)	I^2
Fixed Effects	36	0,486	0,009	0,473	0,498	61,827	2795,848	0,000	35	98,748
Random Effects	36	0,445	0,077	0,317	0,558	6,222				

As illustrated in Table 3, the effect size (Pearson r) from the studies, selected based on the inclusion criteria of the meta-analysis, was computed using the random effects model, resulting in an average effect size value of r = 0.445. This mean effect size value, as delineated by Cohen et al. (2007), suggests a moderate effect.

Regarding the heterogeneity test results in the study, the Q-value was determined to be 2795.848, with a corresponding p-value of 0.000. Referencing the chi-square (x^2) table, the critical value for 35 degrees of freedom at the 95% significance level was identified as 49.802. The Q-value obtained from the heterogeneity test (Q=2795.848) in comparison with the value from the chi-square table for 35 degrees of freedom at the 95% significance level ($x^2_{0,95}$=49,802) suggests that the data exhibit heterogeneity. Another approach employed in meta-analysis studies to ascertain heterogeneity involves calculating the I^2 percentage value. I^2 values of 25% represent low heterogeneity, 50% signify medium heterogeneity, and 75% indicate high heterogeneity (Higgins, Thompson, Deeks, & Altman, 2003). For this dataset, the I^2 value was found to be 98.748%, indicating a high level of heterogeneity within the study. The forest plot, illustrating the effect size values of the 36 studies considered in this research based on the random effects model, is presented in Figure 3.

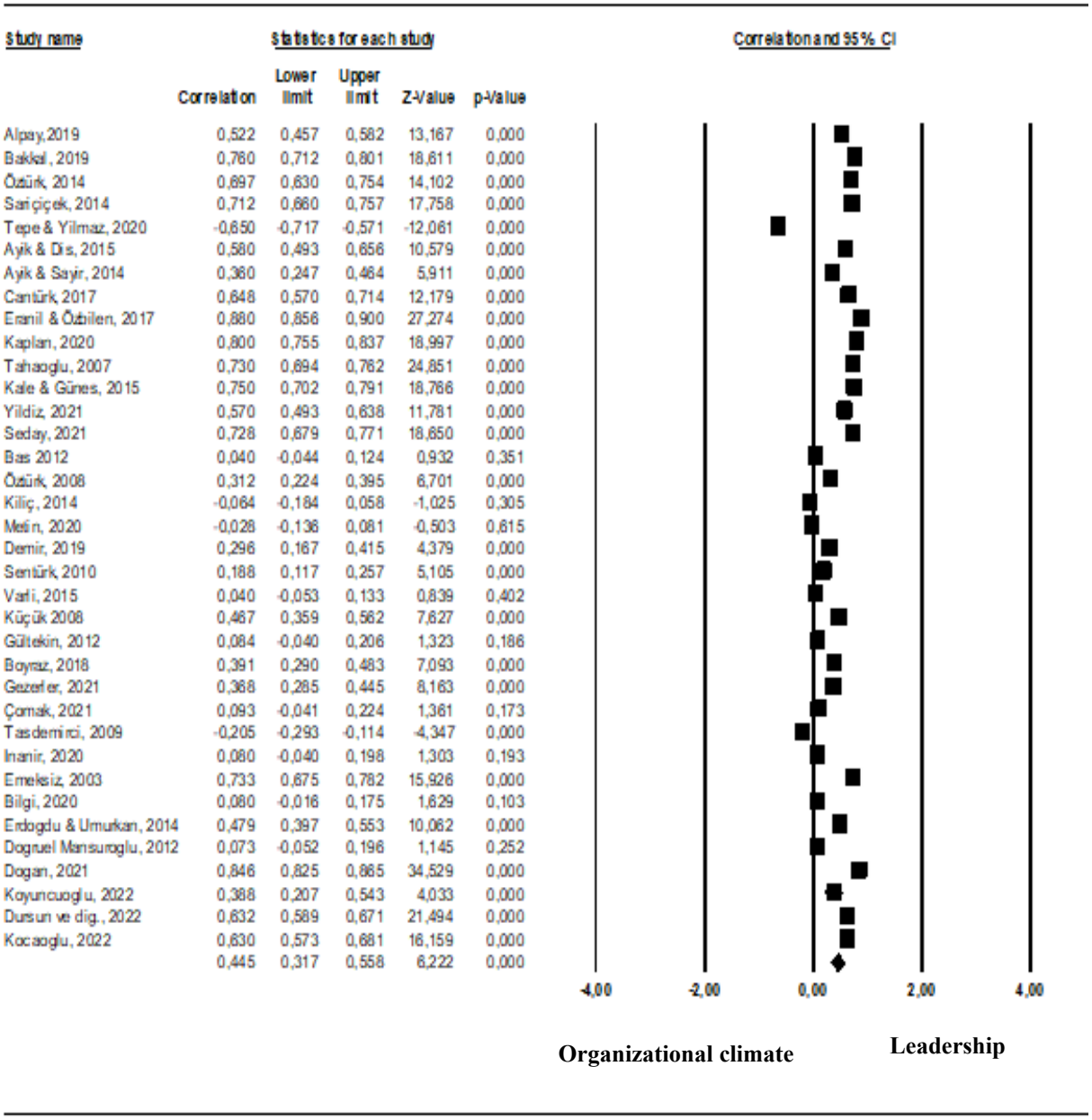

Figure 3. *Forest plot*

Figure 3 depicts the effect sizes, lower and upper limits, and the forest plot of 36 studies examining the relationship between organizational climate and leadership style. Observing the graph, it's evident that the correlation values across the studies range between -0.650 and 0.880. As per the random effects model, the correlation value was identified as r=0.445. The 95% confidence interval for the effect sizes of these studies was determined to lie between 0.317 and 0.558. Based on the teachers' perceptions, four studies exhibited a negative effect size concerning the relationship between organizational climate and leadership style, while the effect size in the remaining 32 studies was positive. It's also evident that these studies predominantly lie to the right of the zero line, indicating a generally positive and moderate effect size between organizational climate and leadership style.

Moderator Analysis Results on the Relationship between Organizational Climate and Leadership Style

Moderator analyses, based on teachers' perceptions, were performed for various variables, including publication type, education level, research region, gender of the researcher, and leadership classification in the context of the relationship between organizational climate and leadership style. The outcomes of these moderator analyses are tabulated in Table 4.

Table 4. *Results of Categorical Moderator Analyzes for the Relationship Between Organizational Climate and Leadership Style*

Variable	**Number of Studies (k)**	**Effect Size(r)**	**95% Confidence Intervals of Effect Size**		**Q**	**Q_b**	**sd**	**p**
			Low. Limit	**Up. Limit**				
Leadership Style	36	0,445	0,317	0,558	2795,848		35	0,000*
Moderator (Publication Type)						0,000	1	0,997
Master Thesis	28	0,446	0,296	0,574				
Article	8	0,445	0,153	0,666				
Moderator (Education Level)						5,237	7	0,631
Pre-school	2	0,564	-0,008	0,858				
Primary school	4	0,503	0,099	0,764				
Primary education	10	0,341	0,068	0,566				
Middle school	2	0,318	-0,300	0,749				
Primary-Middle	2	0,086	-0,505	0,623				
High school	4	0,404	-0,025	0,707				
Middle-High	1	0,800	0,189	0,964				
All levels	11	0,534	0,312	0,701				
Moderator (Region)						16,404	7	0,022*
Mediterranean	1	0,800	0,278	0,957				
Eastern Anatolia	3	0,442	0,006	0,737				

Aegean	3	0,409	-0,034	0,718			
Southeastern Anatolia	5	0,672	0,424	0,826			
Central Anatolia	4	0,298	-0,098	0,613			
Black Sea	4	-0,002	-0,387	0,384			
Marmara	15	0,421	0,235	0,578			
All regions	1	0,880	0,512	0,975			
Moderator (Researcher's Gender)					2,983	2	0,225
Male	24	0,514	0,367	0,636			
Female	10	0,264	-0,014	0,504			
Male-Female	2	0,422	-0,183	0,795			
Moderator (Leadership Classification					5,244	6	0,513
Ethical Leadership	3	0,546	0,092	0,812			
Leadership Behaviors	7	0,563	0,287	0,752			
Leadership Styles	9	0,312	0,022	0,554			
Instructional Leadership	2	0,589	0,037	0,865			
Teacher Leadership	2	0,008	-0,559	0,570			
Technology Leadership	2	0,273	-0,342	0,725			

*p<.05

Looking at Table 4, the average effect sizes, as determined by the random effects model regarding the relationship between organizational climate and leadership style, did not differ by moderators including type of publication

(p=0.997), education level (p=0.631), researcher's gender (p=0.225), and leadership style classification (p=0.513) (p>.05). However, a significant difference was observed in effect sizes based on the region where the study was conducted (p=0.022) (p<.05). The lowest average effect size, based on region, was derived from studies conducted in the Black Sea Region. Conversely, the highest average effect size was noted in studies that encompassed all regions.

Conclusion Discussion and Recommendations

In the meta-analysis, the study sought to answer the question: "Based on teachers' perceptions, what is the effect size of the relationship between organizational climate and leadership style?" Effect size calculations were derived from 36 studies that met the inclusion criteria. The research sample comprised 13,693 teachers. The average effect size of the relationship between organizational climate and leadership style was determined to be moderate and positive in the random effects model. According to the research findings, leadership styles in schools significantly influence organizational or school climate, as perceived by teachers. A review of relevant literature indicates that the results of several studies align with the findings of this study. For example, studies by Alpay (2019), Küçük (2008), Öztürk (2014), and Yıldız (2021) reported moderately significant and positive relationships between leadership and organizational climate. Additionally, research by Cantürk (2017), Emeksiz (2003), Sarıçiçek (2014), and Tahaoğlu (2017) found highly significant and positive relationships between the two variables. Studies by Baş (2012), Çomak (2021), Gültekin (2012), and Varlı (2015) also highlighted significant and positive associations between leadership and organizational climate. However, the study by Tepe and Yılmaz (2020) found a moderately significant yet negative relationship between leadership and organizational climate. Pulleyn (2012) conducted a study examining the correlations between principals' leadership behaviors and school climate, as perceived by teachers. The findings generally indicated that the behaviors of principals exert a noteworthy influence on the school climate. In a related study, Shaw (2009) identified a statistically significant, albeit weak, correlation between teachers' perceptions of school leadership style and their perceptions of school climate. Additionally, Sellars (1984) found a significant relationship between the leadership styles of school principals and the overall climate of the school.

As outlined above, the relevant literature indicates a significant and positive relationship between organizational climate and leadership behaviors in studies conducted based on teacher perceptions within educational institutions. The findings from this study, which employed the meta-analysis method to measure the effect size of the relationship between organizational climate and leadership style based on teacher perceptions, align with those of related studies. A review of relevant literature reveals that findings from meta-analyses on the relationship between organizational climate and leadership generally corroborate the results of this research. For instance, in the meta analysis conducted by Çoğaltay (2014), it was established that school leadership has a robust and positive influence on organizational climate. Similarly, in the study by İşçi, Çakmak, and Karadağ (2015), the relationship between organizational climate and leadership was found to be significant. Likewise, Uysal's 2015 meta-analysis confirmed a strong and positive relationship between school climate and the leadership behaviors of school administrators.

The findings of this research align with those of several international studies. In LaRoche's (2014) study, it was found that leadership practices perceived by primary school teachers influence the school climate. In Roy's (2019) study, consistent and statistically significant relationships were identified between teachers' perceptions of principals' leadership practices and their views on school climate. Similarly, Mendel, Watson, and MacGregor's (2002) study revealed that principals who embraced a collaborative leadership style positively influenced the school climate. Furthermore, it was emphasized that the leadership behaviors of school principals play a pivotal role in shaping the school climate (Dağlı, 2018; Hoy & Miskel, 2015; Hughes & Pickeral, 2013; Şentürk, 2010).

Following the moderator analysis, it was found that the type of publication, education level, researcher's gender, and leadership classification did not impact the relationship between organizational climate and leadership. The findings from the meta-analysis study by İşçi et al. (2015) support the results of this research. In their study, it was determined that the effect sizes for the relationship between leadership and organizational climate, as calculated by the random effects model, did not vary based on the publication type moderator. Similarly, the findings from the meta-analysis conducted by Çoğaltay (2014) align with those of this study. In Çoğaltay's study (2014), the effect size concerning the influence of school leadership on the organizational climate, as per the random effects model, did not vary based on the school level moderator.

One potential reason for the similarities in effect sizes derived from the research results is the similarities in social, cultural, and economic factors in the regions where the schools are situated. Moreover, the resemblance in school management structures and prevailing organizational climates may also contribute. In the present study, it was

observed that the average effect size, as determined by the moderator analyses using the random effects model for the relationship between organizational climate and leadership style, varies significantly based on the regional moderator. As highlighted in the findings, the lowest average effect size, based on the region of study, was derived from research conducted in the Black Sea Region. The highest average effect size came from studies spanning all regions.

In Çoğaltay's study (2014), it was noted that the effect sizes for the impact of school leadership on the organizational climate, as derived from the random effects model, varied significantly based on the sample region moderator. The effect sizes regarding the relationship between school leadership and organizational climate were found to be strong in the Southeast, Mediterranean, and Central Anatolian Regions, and moderate in the Marmara Region. Differences in effect sizes from the research results can be attributed to the distinct social, cultural, and economic factors present in each region. Similarly, variations in school management structures and the unique organizational climates characterizing the schools could be contributing factors.

Given that the research indicates a positive and significant relationship between the leadership behaviors of school administrators and the organizational climate, it would be beneficial to provide in-service training and seminars to both school administrators and teachers. This training could particularly focus on areas such as instructional leadership, ethical leadership, and technology leadership. It is recommended that both school administrators and teachers receive training on leadership. A more comprehensive meta-analysis study can be carried out by combining researches on organizational climate and leadership both at home and abroad.

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(The symbol of * denotes the studies included in the meta-analysis).

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