



How Transformational Leadership and Organizational Learning Impact Organizational Citizenship Behavior: A Meta-Analysis

Usep Kasman^{1*}, Merry Lapasau², Oom Rohmah³, Bambang Sumadyo⁴

¹ Doctoral Student in Education Department, Posgraduate Faculty, Universitas Indraprasta PGRI, Jakarta, Indonesia

² Indonesian Lenguange Education Department, Posgraduate Faculty, Universitas Indraprasta PGRI, Jakarta, Indonesia

³ English Lenguange Education Department, Posgraduate Faculty, Universitas Indraprasta PGRI, Jakarta, Indonesia

⁴ Education Department, Posgraduate Faculty, Universitas Indraprasta PGRI, Jakarta, Indonesia,

Received: June 16, 2025

Revised: August 12, 2025

Accepted: September 25, 2025

Published: September 30, 2025

Corresponding Author:

Usep Kasman

usepkasman@gmail.com

DOI: [10.29303/jppipa.v11i9.12838](https://doi.org/10.29303/jppipa.v11i9.12838)

© 2025 The Authors. This open access article is distributed under a (CC-BY License)



Abstract: Organizational Citizenship Behavior (OCB) plays a crucial role in enhancing school effectiveness, yet research on how transformational leadership and organizational learning influence teachers' OCB has produced mixed results. To address this gap, this study conducted a quantitative meta-analysis to integrate empirical evidence and measure the strength of these relationships. A total of 35 studies published between 2020 and 2025 were systematically collected from Scopus, SINTA, and Google Scholar and analyzed using JASP 0.14.1 with a random-effects model and correlation effect size (r). The analysis revealed that transformational leadership demonstrated a stronger positive association with teachers' OCB ($r = 0.515$, $p < 0.01$) compared to organizational learning ($r = 0.387$, $p < 0.01$). Tests of heterogeneity indicated a moderate level of variation across studies, and no signs of publication bias were detected. These results highlight the critical need to foster transformational leadership and nurture a culture of learning in schools as strategic efforts to promote OCB among teachers.

Keywords: Organizational Citizenship Behavior (OCB); organizational learning; transformational leadership,

Introduction

In recent years, educational institutions, including schools, have faced various pressures in improving the quality of teaching, academic outcomes, and student engagement (Alsalhi et al., 2023; Huang, 2024). At the formal education level from primary to secondary school, teachers are not only required to be competent in teaching, but also proactive in extra-formal behavior to support a collaborative school environment and growth of thinking (Yu et al., 2022). In supporting the environment, schools or organizations want teachers who are willing to perform tasks that are not listed in the job description (Somech & Ron, 2007).

Organizational Citizenship Behavior (OCB) is voluntary behavior to help a school or colleague without formal compensation (Shie & Chang, 2022). Recent studies show that high teacher OCB will correlate with increased professional collaboration, school management efficiency, and trust among members in the organization (Choong & Ng, 2024). In addition, teachers who practice OCB contribute to the formation of a collaborative school culture that prioritizes student independent learning and supports the smooth implementation of education policies (Sun et al., 2024).

Transformational leadership has been shown to have a consistent effect in improving OCB in various studies. For example, a study in Pakistan reported that

How to Cite:

Kasman, U., Lapasau, M., Rohmah, O., & Sumadyo, B. (2025). How Transformational Leadership and Organizational Learning Impact Organizational Citizenship Behavior: A Meta-Analysis. *Jurnal Penelitian Pendidikan IPA*, 11(9), 126-136.
<https://doi.org/10.29303/jppipa.v11i9.12838>

teachers who worked under transformational leaders had a much higher average OCB score (Ali & Waqar, 2013). In addition, another literature review revealed that transformational leadership directly increases teachers' voluntary actions, such as supporting friends in running programs and actively participating in school activities (Sultoni & Gunawan, 2023).

Several psychological mechanisms are involved in the transformational leadership process that affects OCB. For example, teachers' self-efficacy is enhanced through verbal behavior and encouragement by leaders, which in turn increases teachers' tendency to exhibit OCB (Tan & Lee, 2020). In addition, the level of trust in leaders, which is part of interpersonal trust, has been shown to be a powerful mediator of the relationship between transformational leadership and OCB in other organizations (Nohe & Hertel, 2017; Tan & Lee, 2020).

Organizational learning in schools plays an important role as a mediator of transformational leadership and OCB (Nanang et al., 2021; Siswadi et al., 2023). One study in schools shows that transformational leadership encourages organizational learning, which improves member performance and collaborative behavior (Firmansyah et al., 2022). In the school environment, teachers tend to be active and share knowledge, participate in joint training, and work collaboratively to improve teaching practices, all of which are factors to increase OCB among teachers (van Schaik et al., 2019).

Although many studies have explored the factors that influence OCB, there are still limited studies that comprehensively integrate the results through meta-analysis. This trend is especially seen in research in research conducted from 2020 to 2024. A period characterized by substantial changes in educational practices and institutional frameworks with the rapid development of the digital learning environment (Bolondi et al., 2021). Therefore, a systematic meta-analysis review will allow us to quantitatively understand the substantive impact of transformational leadership and organizational learning on OCB across various research settings and methods and to fill these research gaps.

Therefore, this study aims to conduct a meta-analysis investigation with the main objective of conducting a meta-analysis of the influence of

transformational leadership and organizational learning on OCB, in order to obtain a comprehensive and consistent picture of these relationships.

Method

Research Design

This research applies a quantitative meta-analysis to investigate the impact of transformational leadership and organizational learning on teachers' Organizational Citizenship Behavior (OCB). Meta-analysis is a statistical approach used to combine and summarize results from multiple independent studies on the same topic, providing a more accurate and comprehensive estimate of the actual effect (Wampold et al., 2000). Adopting the design of a retrospective observational study (Mohajan, 2020), this work reexamines and synthesizes previously published empirical data rather than collecting new primary data. The literature search was carried out using the Scopus, SINTA, and Google Scholar databases for the years 2020–2025 with carefully selected keywords related to transformational leadership, organizational learning, and OCB. Studies were included if they: (1) empirically analyzed the relationship between at least one predictor variable (transformational leadership and/or organizational learning) and teachers' OCB; (2) provided sufficient statistical details, such as correlation coefficients and sample sizes, to compute effect sizes; (3) employed a quantitative research design; and (4) were published in peer-reviewed journals. Research with overlapping samples, qualitative methods, or incomplete data sets was excluded.

For conceptual clarity, organizational learning was defined as the school's ability to cultivate a shared vision, promote team learning, and facilitate continuous knowledge development, while transformational leadership referred to leadership practices that inspire, motivate, and stimulate teachers intellectually. Effect sizes were extracted and independently verified by two reviewers, and each study's quality was evaluated based on predefined criteria, including the precision of measurements and the adequacy of sampling. Data integration was performed using JASP version 0.14.1 with a random-effects model to accommodate potential variability among the included studies.

Table 1. Inclusion and Exclusion Criteria for Literature Selection in Meta Analysis

Criteria	Inclusion	Exclusion
Accessibility in academic databases	Available at ScienceDirect, ResearchGate, Taylor & Francis, or Google Scholar	Not available or accessible through this database
Country where the publisher is located	Papers from all countries of publication	Published only in one specific country or region
Language	The language must be written in English	Written in a language other than English

Criteria	Inclusion	Exclusion
Journal index status	Indexed on ScienceDirect, ResearchGate, Taylor & Francis, or Google Scholar	Not indexed in a specific academic database
Year of publication	Published in the period 2020 - 2025	Published outside 2020 - 2025
Statistical variables such as reported effect size	Correlation coefficient (r) or test result - t for the variable of interest is reported	No correlation coefficient (r) or t-value was reported
Number of research samples	The minimum sample size should be at least 35	Sample size less than 35 participants

A well-designed and well-conducted meta-analysis can provide useful insights into the effects of interventions on specific populations (Rosenthal & DiMatteo, 2001) Hypothesis in the meta-analysis is crucial in establishing clear inclusion criteria and exclusion criteria to systematically collect relevant studies (Johnson & Hennessy, 2019)

To identify relevant primary studies, a set of search criteria were applied during the literature review process. Articles for review were collected from four major academic databases: (1) ScienceDirect, (2) ResearchGate, (3) Taylor & Francis, and (4) Google Scholar. Keyword combinations used in searches include words related to OCB, transformational leadership, organizational learning, organizational learning, organizational learning culture.

The search was conducted using a combination of applicable keywords, with the publication year 2020 - 2025 as the filter. The search yielded 234 related articles found on Google Scholar and 79 articles on ResearchGate from searches using similar keywords. Eleven related articles were extracted from ScienceDirect and five more from Taylor & Francis. All searches were conducted between July 14 and 25, 2025, at around 19:01 local time.

At the final selection stage, the complete text of the remaining journal was obtained and a detailed examination was carried out. In this evaluation, the examination of whether each study meets the inclusion

requirements based on whether it contains statistical indicators (e.g., correlation coefficient (r) or t-value) that demonstrate the relationship between the research theme, methodological validity and the relationship with transformational leadership, organizational learning, and OCB. After a full screening and evaluation process, 35 papers finally met all the selection criteria and were included in the meta-analysis.

Data Coding

This meta-analysis uses coding as a tool. A total of 35 papers were selected using multivariate management models and structural equation modeling as analysis methods. The correlation coefficient (r) has been used as an indicator of effect size, as it is widely recognized for its flexibility and usefulness (Rosenthal & DiMatteo, 2001) This technique has also been widely accepted in other studies (Field & Gillett, 2010) If the r value is not specified, the other statistical values are converted to r values using JASP version 0.14.1. Coding sets out in detail the features of each study. Specifically, it includes information such as the year of publication, the country where the research was conducted, the sample size (n), the correlation coefficient (r), the t-value, the z-score, and the standard error (SE). Additional information about papers obtained from international journals will also be noted. The distribution of these studies is presented in Table 2.

Table 2. Comparison of research based on n, r, and t values, 2020 – 2025

Study	Country	n	r	t	Z	SE
(Purwanto, 2022)	Indonesia	310		15,965	0,8139	0,0571
(Qalati et al., 2022)	China	405		23,82	1,0054	0,0499
(Nurjanah et al., 2020)	Indonesia	196		51,109	2,0063	0,0720
(Novianti, 2021)	Indonesia	118		6,365	0,5567	0,0933
(Hermanto et al., 2024)	Indonesia	165		3,018	0,2328	0,0786
(Khaola & Rambe, 2021)	South Africa	300	0,26		0,2661	0,0580
(Purwanto et al., 2021)	Indonesia	220		0,41	0,0276	0,0679
(Tian et al., 2020)	China	505		4,737	0,2093	0,0446
(Hermawan et al., 2024)	Indonesia	368		3,71	0,1922	0,0523
(Mastur et al., 2022)	Indonesia	50		2,771	0,3825	0,1459
(Hapsari & Riyanto, 2020)	Indonesia	130		10,669	0,8352	0,0887
(Bismala et al., 2023)	Indonesia	99		4,114	0,4025	0,1021
(Puspita & Dewi, 2020)	Indonesia	61		2,437	0,3072	0,1313
(Sulton & Gunawan, 2023)	Indonesia	418		8,5954	0,4089	0,0491
(Han et al., 2023)	Egypt	173	0,53		0,5901	0,0767
(Wardani et al., 2024)	Indonesia	243	0,4814		0,5248	0,0645
(Khan et al., 2020)	China	329		13,925	0,7073	0,0554

Study	Country	n	r	t	Z	SE
(Sumarmi et al., 2022)	Indonesia	116		2,348	0,2163	0,0941
(Tania et al., 2021)	Indonesia	68		2,094	0,2513	0,1240
(Novitasari, Tinggi, et al., 2020)	Indonesia	300		3,914	0,2241	0,0580
(Abdulrab et al., 2020)	Saudi Arabia	260		3,419	0,2105	0,0624
(Siregar & Hermawan, 2024)	Indonesia	243	0,4814		0,5248	0,0645
(Saluy et al., 2024)	Indonesia	91		5,229	0,5239	0,1066
(Widisatria & Nawangsari, 2021)	Indonesia	40		2,781	0,4267	0,1644
(Ningsih et al., 2023)	Indonesia	30		7,052	1,0708	0,1925
(Aulia & Soelton, 2023)	Indonesia	96		4,852	0,4769	0,1037
(Siswadi et al., 2023)	Indonesia	200		3,84	0,2683	0,0712
(Yin Yin Lau et al., 2020)	Malaysia	516		7,41	0,3207	0,0442
(Nanang et al., 2021)	Indonesia	205		7,12	0,4788	0,0704
(Hanh Tran & Choi, 2019)	Vietnam	268		2,682	0,1633	0,0614
(Venugopal Muthuswamy & Umarani, 2023)	Saudi Arabia	296		4,852	2,784	0,0584
(Gusmão et al., 2018)	Timor Leste	40		7,333	0,9898	0,1644
(Widodo & Gunawan, 2020)	Indonesia	190		3,63	0,2604	0,0731
(Soilihin & Fathihani, 2024)	Indonesia	85		4,852	0,5046	0,1104
(Aboramadan et al., 2022)	Palestina	227		6,894	0,4429	0,0668

Data Analysis

The analysis procedure of this study includes detailed evaluation of sample characteristics, systematic data coding, processing of conversion of t-value into correlation coefficient (r), examination of effect size heterogeneity, calculation of average effect, and creation of funnel and forest plots. Hypothesis testing and publication bias checks were also carried out. A correlation-based meta analysis was carried out using data from 35 articles collected from Google Scholar, SINTA, and Scopus. The classification of effect sizes adopted Cohen(Cohen, 1988) criteria: very weak ($< \pm 0.1$), weak ($< \pm 0.3$), moderate ($< \pm 0.5$), strong ($< \pm 0.8$), and very strong ($\geq \pm 0.8$). Statistical analysis was performed using JASP version 0.14.1, a software platform that allows for flexible data analysis and interpretation.

Result and Discussion

Result

Transformational Leadership on OCB

In 25 studies that met the set selection criteria, correlation coefficients (r) and t-values were identified. To maintain consistency in the analysis, studies that initially only presented t-values were converted to r-values before testing for heterogeneity. The results of the heterogeneity analysis are detailed in Table 3 and the residual heterogeneity estimates are detailed in Table 4.

Table 3. Heterogeneity test

	Q	df	p
Omnibus test of Model	39.016	1	< .001
Coefficients			
Test of Residual Heterogeneity	827.875	24	< .001

Table 4. Residual heterogeneity estimates

	95% Confidence Interval		
	Estimate	Lower	Upper
τ^2	0.161	0.095	0.316
τ	0.402	0.308	0.562
$I^2 (%)$	97.041	95.066	98.467
H^2	33.799	20.266	65.239

As a result of heterogeneity analysis, the value of $Q = 827.875$ was confirmed to be statistically significant at the significance level of $p < 0.001$. This suggests that there is substantial heterogeneity between the ten effect measures examined. In addition, the I^2 statistics are almost 100% and the τ^2 value is more than zero., confirming that there is considerable variation between the selected studies. Given this high heterogeneity, the use of random-effects models was considered appropriate in the study and this model was adopted in subsequent analyses. This model is used not only to calculate the overall or average effect size, but also to assess the potential bias of publications.

Table 5. Summary effect or mean effect size

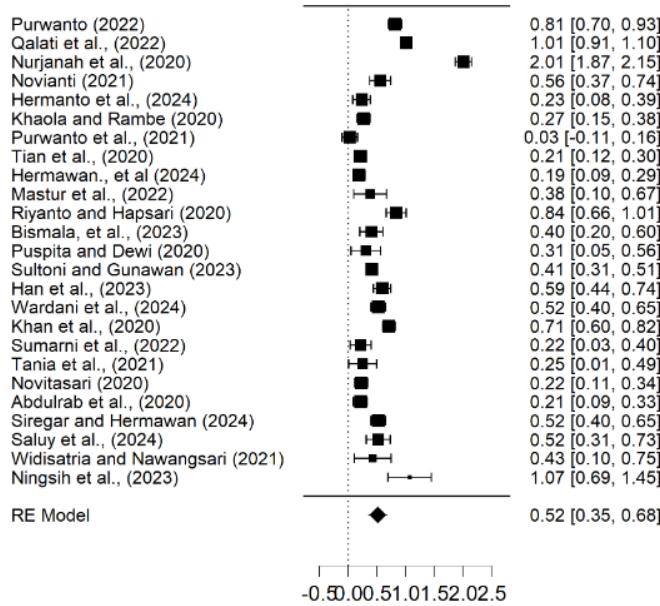
	Estimate	Standard Error	z	p	95% Confidence Interval
intercept	0.515	0.082	6.246	< .001	0.353 0.677

Note. Wald test.

Analysis using a random-effects model showed a strong positive correlation between transformational leadership and OCB ($Z = 6.246$, 95% confidence interval [0.353 ~ 0.677]). With a p-value of less than 0.001, this relationship is statistically significant and supports hypothesis 1 (H1). The correlation coefficient ($r_{RE} = 0.515$) is statistically significant included in the "strong correlation" in Cohen's

classification criteria. The results of this analysis are also represented in a "forest plot", which visually represents an integrated effect measure of the entire study, and each data point with a confidence interval is displayed to facilitate comparisons between studies and provide a clearer interpretation of the results.

Forest plot



Funnel Plot

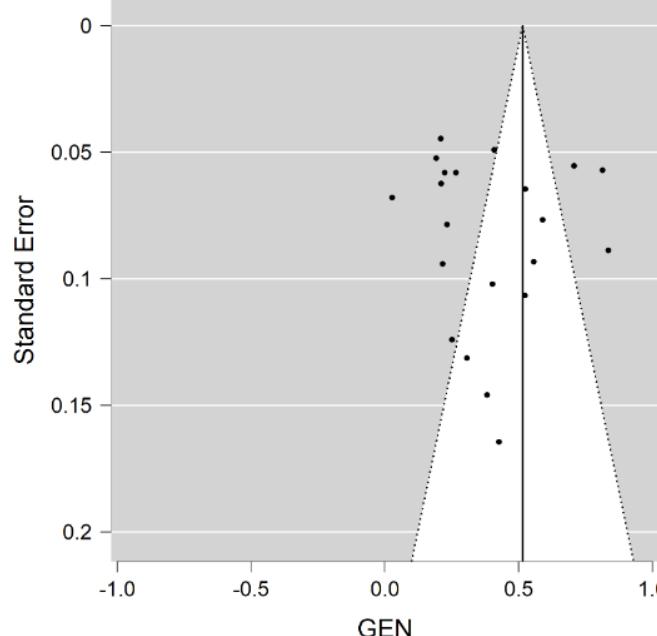


Figure 1. Meta-analysis forest plot and Funnel plot after trim-fill diagnosis

Figure 1 shows the forest plots for the 25 studies analyzed, showing that the reported effect sizes were distributed between 0.03 and 2.01. Furthermore, a plot funnel is created to assess whether or not there is publication bias. Commonly used in meta-analysis, Begg's funnel plot a scatter diagram is a useful tool for visually verifying the symmetry of research results and detecting potential publication bias. Figure 2 shows the funnel plot created based on the 25 studies analyzed this time. However, based on such visual considerations and plot symmetry, it is not enough to draw definitive conclusions about the existence or absence of publication bias. Therefore, to compensate for these limitations, further statistical tests were performed, specifically the Egger test. The results of the Egger test are presented in summary in Table 6.

Table 6. Regression test for Funnel plot asymmetry ("Egger's test")

	z	p
sei	0.291	0.427

According to the results of the Egger test shown in Table 6, the Z-value is 0.291, above the significance level of $p > 0.05$, indicating that the funnel plot is symmetrical.

From this it can be concluded that the results of this meta-analysis do not show the effect of publication bias.

Organizational Learning on OCB

Table 7 shows the results of the heterogeneity analysis and Table 8 gives an estimate for the residual heterogeneity.

Table 7. Heterogeneity test

	Q	df	p
Omnibus test of Model Coefficients	48.310	1	< .001
Test of Residual Heterogeneity	37.617	9	< .001

Note. p -values are approximate.

Table 8. Residual heterogeneity estimates

	95% Confidence Interval		
	Estimate	Lower	Upper
τ^2	0.024	0.009	0.160
τ	0.155	0.096	0.400
$I^2 (%)$	82.908	64.736	96.972
H^2	5.851	2.836	33.028

The results of the heterogeneity test showed substantial variation among the nine effects measures analyzed, with $Q = 48.310$, $p < 0.001$, $\tau^2 > 0$, and $I^2 (%)$

close to 100% confirming a high level of heterogeneity. As a result, the assessment of publication bias is carried out using a random effect model, after this, the average or summary effect size is calculated. The findings of this analysis are detailed in Table 8.

Table 9. Summary effect or mean effect size

	Estimate	Standard Error	95% Confidence Interval			
			z	p	Lower	Upper
intercept	0.387	0.056	6.951	< .001	0.278	0.496

Note. Wald test.

Results derived from the randomized effects model showed a statistically significant and positive relationship between proactive personality and performance, with $Z = 6.951$ and a 95% confidence interval [0.278; 0.496]. A p-value of less than 0.001 reinforces the strength of this relationship so as to support the acceptance of Hypothesis 2 (H2). The correlation coefficient ($r_{RE} = 0.387$) reflects

the moderate level of association based on the established classification criteria. Furthermore, these findings are graphically illustrated using a forest plot, which displays the size of the aggregate effect through point markers across specific intervals, thus allowing for comparative analysis across the included studies.

Figure 2 shows the forest plots derived from the nine studies included in this meta-analysis. The effect sizes reported in the study ranged from 0.16 to 0.99, as visually depicted in the image. After this, a funnel plot is generated. Beggs's funnel plot, a scattering diagram widely used in meta-analysis research, serves as a tool to visually detect potential publication bias by assessing whether the distribution of the study's effects appears symmetrical or asymmetrical. The funnel plots for the nine studies are shown in Figure 2, however, due to the inherent ambiguity in interpreting the funnel plot symmetry. Drawing conclusive conclusions about publication bias based solely on this plot is challenging. As a result, a more robust statistical assessment uses the Egger test. The test results are shown in Table 9.

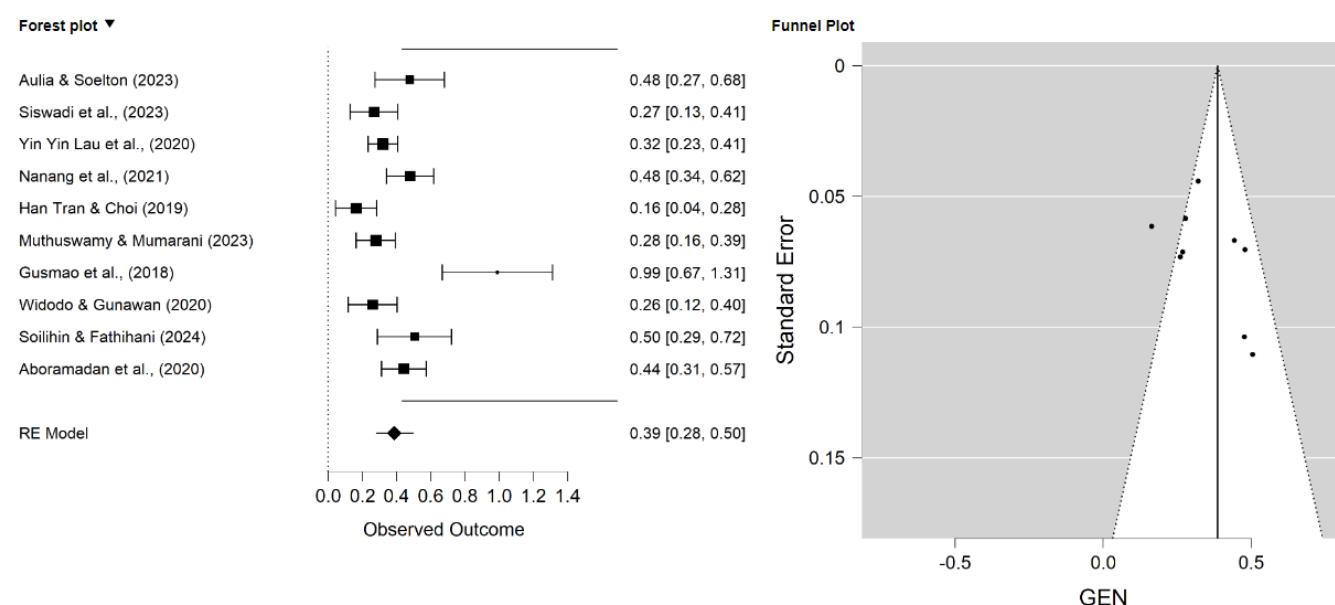


Figure 2. Meta-analysis forest plot and Funnel plot after trim-fill diagnosis

Table 10. Regression test for Funnel plot asymmetry ("Egger's test")

	z	p
sei	3.584	0.216

Table 10 provides information on the value of $Z = 3.584$ with a p value greater than 0.05, indicating that the plot funnel shows symmetry. Thus, the results show that this meta-analysis is not affected by publication bias.

Discussion

A meta-analysis of 35 studies reviewed revealed that transformational leadership and organizational learning have a strong impact on OCB. The impact of transformational leadership on OCB is greater than organizational learning, indicating a strategic priority for leadership development in schools (Triningsih et al., 2023) International research also supports these findings, showing that transformational leadership behaviors, such as inspirational motivation, intellectual

stimulation, and individualization, increase OCB through trust in management (Saif et al., 2025)

Furthermore, judging from the results of Egger's test and funnel plots, it is suggested that there is no publication bias in this study. Publication bias analysis is important for the reliability of the information referenced, the quality of the research methods used, the accuracy of the results obtained, and to minimize the impact of bias due to different sample sizes. Therefore, it is likely that other studies that are not included in this meta-analysis will have results similar to the trends shown in this study.

In this context, transformational leadership and organizational learning have been identified as having a clear and significant positive impact on work outcomes. This shows that transformational leadership and organizational learning contribute to the improvement of OCB. Therefore, leaders are encouraged to promote an environment that reflects elements such as presenting a vision, providing inspiration, collaborative communication, and formal evaluation and approval. Such a positive and warm attitude will have a positive impact on work performance and OCB, ultimately contributing to improving the quality of education and human resource development (Sulton & Gunawan, 2023)

The results of this meta-analysis provide clues that are useful for improving OCB in schools. The discovery that transformational leadership has a stronger effect than organizational learning suggests that it is the main driving factor that drives a person's positive behavior as well as the learning process in the organization (Kim & Park, 2019) Transformational leadership is a strong predictor of OCB (Hermawan et al., 2024; Novitasari, Asbari, et al., 2020) Teachers are expected to establish themselves as ideal beings to support students and parents. They are expected to be disciplined, honest, and responsible professionals in their educational activities. Teachers with transformational leadership inspire, motivate, and guide colleagues to grow and innovate (Tan & Lee, 2020)

In this study, organizational learning was less effective than transformational leadership, but it remained an important predictor of OCB. Someone who is able to detect and correct errors in the process is actually running organizational learning. Consistently, his role cannot be underestimated. Their daily lives will show to create, transfer, interpret, acquire, and share knowledge with the aim of changing behavior to reflect new insights (Gusmão et al., 2018).

One important conclusion drawn from the data analysis is that organizational learning can play a mediating or buffering role in the relationship between transformational leadership and OCB. Organizational learning is considered a pathway that creates an

additional connection between interpersonal trust and OCB. Even if interpersonal trust does not directly affect OCB, organizational learning can indirectly improve employees' civic behavior (Kim & Park, 2019).

In addition, organizational culture influences the extent to which organizational learning and transformational learning characteristics are accepted and reflected in their actual actions. Therefore, organizations need to pay attention to the recruitment and development of human resources with appropriate characteristics for OCB. It is also important to build and maintain an organizational culture that supports and promotes active civic engagement. With this cultural foundation and values, it is hoped that OCB will be further improved in the organization (Mubarok & Machali, 2023).

From another perspective, schools can recognize teachers' efforts in informal forms, such as praise, symbolic recognition, or attention from superiors, rather than financial rewards. This perception has the effect of increasing psychological satisfaction and a sense of belonging in the organization for teachers who behave outside of the assigned tasks based on intrinsic motivations to contribute to the organization's goals. Additionally, it is important to consider creating a supportive and comfortable work environment to further cultivate OCB and positive personality traits (Zhao et al., 2022).

In addition, the plot funnel and Egger's test that there is no publication bias, confirm the solid and reliable conclusions of this meta-analysis. This further reinforces the assertion that transformational leadership and organizational learning are strategic drivers for performance improvement. At the same time, it has also been shown that the analyzed research has a high level of methodological rigor, which is expected to serve as a reliable empirical basis for future research and policy formulation (Hsiao & Wang, 2020).

The main conclusion of this study is that transformative leadership and a proactive commitment to an organized learning culture can significantly reduce the impact of teacher organizational citizenship behavior (OCB) It can be an effective strategy to increase the number of people who want to improve their product. It can also have a positive impact on the overall performance of the school. The inspiration shown by leaders and a culture of active learning creates a positive and supportive work environment, fostering collaboration, ingenuity, and responsibility outside of normal work. In organizations with high OCB, this effort is also important in performance-based education funding policies, as there is a strong relationship between improving the quality of learning, active teacher engagement, and achieving institutional goals.

As a result, further research is needed, taking into account other mediating and moderation variables such as organizational culture and teachers' career paths, as factors that can influence transformational leadership, organizational learning, and OCB relationships. By adopting a longitudinal research design, it is possible to uncover the long-term effects of transformational leadership and organizational learning on teachers' positive behaviors outside of their work. In addition, a qualitative research approach is also important to better understand how leadership and learning culture in schools affect OCB and how teachers feel and respond to it.

In conclusion, the findings of this meta-analysis reaffirm the importance of transformational leadership and organizational learning in promoting OCB. As schools strive to achieve a collaborative, innovative, and resilient workplace culture, developing leadership skills and strengthening a learning culture are key steps. With synergy and functioning under flexible institutional support, OCB for teachers is expected to develop as a key driver to improve the quality of education.

Conclusion

This meta-analysis examines the role of transformational leadership and organizational learning in enhancing teacher OCB. The analysis reveals that both have an important impact on the improvement of OCB, especially the impact of transformational leadership on organizational learning. This suggests that while shaping a learning culture remains important, strategies to promote OCB for teachers must first focus on fostering transformational leadership. In addition, the research data collected were free from publication bias, and the consistency of surveys across various educational institutions supported the reliability of this study. These results complement existing previous research and provide strategic implications for promoting a collaborative and innovative workplace culture in schools.

In addition, future research that combines moderation variables such as the principal's leadership style and teachers' career stages is expected to deepen understanding. Utilizing longitudinal research and qualitative approaches can provide a clearer picture of the dynamics of the relationship between leadership, organizational learning, and OCB in educational settings. For policymakers, these findings will serve as important evidence to build leadership development and learning support measures that promote OCB for teachers to achieve sustainable, high-quality education.

Acknowledgments

We would like to thank all parties involved in the completion of this research.

Author Contributions

U.K.: Developing ideas, analyzing, writing, reviewing, responding to reviewers' comments; M.L., O.R., B.S.: analyzing data, overseeing data collection, reviewing scripts, and writing.

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflict of interest

References

Abdulrab, M., Zumrah, A. R., Alwaheeb, M. A., Al-Mamary, Y. H. S., & Al-Tahitah, A. (2020). The impact of transformational leadership and psychological empowerment on organizational citizenship behaviors: A PLS-SEM approach. *Journal of Critical Reviews*, 7(9), 908-917. <https://doi.org/10.31838/jcr.07.09.169>

Aboramadan, M., Dahleez, K. A., & Farao, C. (2022). Inclusive leadership and extra-role behaviors in higher education: does organizational learning mediate the relationship? *International Journal of Educational Management*, 36(4), 397-418. <https://doi.org/10.1108/IJEM-06-2020-0290>

Ali, U., & Waqar, S. (2013). Teachers' organizational citizenship behavior working under different leadership styles. *Pakistan Journal of Psychological Research*, 28(2), 297-316.

Alsalhi, N. R., Eltahir, M. E., & Alhubaishi, H. (2023). The Impact of Education Quality, Faculty Competence and Learning Environment on the Community Satisfaction in Terms of Student Performance: Moderating Role of Higher Education System. *Eurasian Journal of Educational Research*, 2023(103), 62-77. <https://doi.org/10.14689/ejer.2023.103.004>

Aulia, I. N., & Soelton, M. (2023). Don't Be Afraid to Change: Work Environment and Workload Affects Cyberloafing Behavior. *Archives of Business Research*, 11(9), 76-91. <https://doi.org/10.14738/abr.119.15471>

Bismala, L., Syaifuddin, & Sembiring, R. (2023). The Impact of Transformational Leadership on Organizational Citizenship Behavior with Employee Engagement Mediation. *Proceeding Medan International Conference Economics and Business*, 1(1), 751-762.

Bolondi, G., Del Zozzo, A., Ferretti, F., Garzetti, M., & Santi, G. (2021). Can Formative Assessment Practices Appear Spontaneously during Long

Distance Learning? In *International Conference on Computer Supported Education, CSEDU - Proceedings* (Vol. 1, Issue May). <https://doi.org/10.5220/0010475506250632>

Choong, Y. O., & Ng, L. P. (2024). Shaping teachers' organizational citizenship behavior through self-efficacy and trust in colleagues: moderating role of collective efficacy. *BMC Psychology*, 12(1). <https://doi.org/10.1186/s40359-024-02050-8>

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences. In *Sustainability (Switzerland)* (Vol. 11, Issue 1).

Field, A. P., & Gillett, R. (2010). How to do a meta-analysis. *British Journal of Mathematical and Statistical Psychology*, 63(3), 665-694. <https://doi.org/10.1348/000711010X502733>

Firmansyah, A., Chen, M. H., Junaedi, I. W. R., Arwani, M., & Kistyanto, A. (2022). The Role of Transformational Leadership and Knowledge Management and Learning Organization on Vocational Schools Performance During Digital Era. *Frontiers in Psychology*, 13(May), 1-4. <https://doi.org/10.3389/fpsyg.2022.895341>

Gusmão, F. D., Christiananta, B., & Ellitan, L. (2018). The Influence of Strategic Leadership and Organizational Learning on Organizational Performance with Organizational Citizenship Behavior as an Intervening Variable. *International Journal of Scientific Research and Management (IJSRM)*, 6(04), 124-131. <https://doi.org/10.18535/ijsrn/v6i4.sh06>

Han, Y., Abdullah, A., & Hwang, K. (2023). Transformational Leadership and Organizational Citizenship Behavior in Egypt: Roles of Organizational Commitment, Public Service Motivation, and Organizational Justice. *Journal of Policy Studies*, 38(4), 23-39. <https://doi.org/10.52372/jps38403>

Hanh Tran, T. B., & Choi, S. B. (2019). Effects of inclusive leadership on organizational citizenship behavior: The mediating roles of organizational justice and learning culture. *Journal of Pacific Rim Psychology*, 13(2010). <https://doi.org/10.1017/prp.2019.10>

Hapsari, R. D. C., & Riyanto, S. (2020). The Reactions over Organizational Citizenship Behavior (OCB) that viewed from Transformational Leadership, Organizational Culture, and Compensation Variables. *International Journal of Innovative Science and Research Technology*, 5(5), 1977-1984. <https://doi.org/10.38124/ijisrt20may059>

Hermanto, Y. B., Srimulyani, V. A., & Pitoyo, D. J. (2024). The mediating role of quality of work life and organizational commitment in the link between transformational leadership and organizational citizenship behavior. *Heliyon*, 10(6), e27664. <https://doi.org/10.1016/j.heliyon.2024.e27664>

Hermawan, F., Purnomo, H., Kusumastuti, D., Fitriana, R., Octaleny, E., Ie, M., & Sudadi. (2024). The role of transformational leadership, job satisfaction and organizational commitment on organizational citizenship behavior (OCB) of SMEs employees in the digital era. *Journal of Infrastructure, Policy and Development*, 8(7), 1-16. <https://doi.org/10.24294/jipd.v8i7.5194>

Hsiao, C. H., & Wang, F. J. (2020). Proactive personality and job performance of athletic coaches: organizational citizenship behavior as mediator. *Palgrave Communications*, 6(1), 1-8. <https://doi.org/10.1057/s41599-020-0410-y>

Huang, J. (2024). The Impact of Teaching Quality on Student Academic Performance: Student Engagement as a Mediator. *SHS Web of Conferences*, 209, 01009. <https://doi.org/10.1051/shsconf/202420901009>

Johnson, B. T., & Hennessy, E. A. (2019). Systematic reviews and meta-analyses in the health sciences: Best practice methods for research syntheses. *Social Science and Medicine*, 233, 237-251. <https://doi.org/10.1016/j.socscimed.2019.05.035>

Khan, A., Bibi, S., Lyu, J., Garavelli, A. C., Pontrandolfo, P., & de Angeles Perez Sanchez, M. (2020). Uncovering innovativeness in Spanish tourism firms: The role of transformational leadership, OCB, Firm Size, and age. *Sustainability (Switzerland)*, 12(10). <https://doi.org/10.3390/SU12103989>

Khaola, P., & Rambe, P. (2021). The effects of transformational leadership on organisational citizenship behaviour: the role of organisational justice and affective commitment. *Management Research Review*, 44(3), 381-398. <https://doi.org/10.1108/MRR-07-2019-0323>

Kim, E. J., & Park, S. (2019). The role of transformational leadership in citizenship behavior: Organizational learning and interpersonal trust as mediators. *International Journal of Manpower*, 40(7), 1347-1360. <https://doi.org/10.1108/IJM-12-2018-0413>

Mastur, M., Soim, S., Haryanti, N., & Gufron, M. (2022). The Influence of Transformational Leadership and Organizational Culture on Job Satisfaction and Organizational Citizenship Behavior (OCB) in Islamic Educational Institutions. *AL-TANZIM: Jurnal Manajemen Pendidikan Islam*, 6(3), 948-961. <https://doi.org/10.33650/al-tanzim.v6i3.3431>

Mohajan, H. K. (2020). Quantitative Research: A Successful Investigation in Natural and Social Sciences. In *Journal of Economic Development, Environment and People* (Vol. 9, Issue 4). <https://doi.org/10.26458/jedep.v9i4.679>

Mubarok, Z. M., & Machali, I. (2023). Exploring The

Interplay of Personality Dimensions and Organizational Culture on Organizational Citizenship Behavior. *MANAGERIA: Jurnal Manajemen Pendidikan Islam*, 8(1), 1-20. <https://doi.org/10.14421/manageria.2023.81-01>

Nanang, A., Setiawan, M., Hadiwidjojo, D., & Idris, I. (2021). Transformational leadership and organizational citizenship behavior: Exploring the mediation of organizational learning culture and organizational justice. *Jurnal Pendidikan Bisnis Dan Manajemen*, 7(2011), 66-79.

Ningsih, T. S. Y., Irawati, S., & Fuadiputra, I. ramadhani. (2023). The Effect of Transformational Leadership on Job Satisfaction Mediated by Organizational Citizenship Behavior (OCB). *Jamanika (Jurnal Manajemen Bisnis Dan Kewirausahaan)*, 3(02), 130-137. <https://doi.org/10.22219/jamanika.v3i02.26831>

Nohe, C., & Hertel, G. (2017). Transformational Leadership and Organizational Citizenship Behavior: A Meta-Analytic Test of Underlying Mechanisms. *Frontiers in Psychology*, 8(AUG), 1-13. <https://doi.org/10.3389/fpsyg.2017.01364>

Novianti, K. R. (2021). Does Organizational Commitment Matter? Linking Transformational Leadership With Organizational Citizenship Behavior (Ocb). *Jurnal Aplikasi Manajemen*, 19(2), 335-345. <https://doi.org/10.21776/ub.jam.2021.019.02.09>

Novitasari, D., Asbari, M., Wijayanti, L. M., & Hyun, C. C. (2020). 7. *The Role of Religiosity, Leadership Style, Job Satisfaction and OCB mediation on Woman Teacher Performance.pdf* (pp. 2953-2967).

Novitasari, D., Tinggi, S., Ekonomi, I., & Pembangunan, I. (2020). Hospital Employees Organizational Citizenship Behavior: How the Correlation of Transformational Leadership, Job Satisfaction and Organizational Commitment? *Journal of Industrial Engineering & Management Research*, 1(2), 252-259.

Nurjanah, S., Pebianti, V., & Handaru, A. W. (2020). The influence of transformational leadership, job satisfaction, and organizational commitments on Organizational Citizenship Behavior (OCB) in the inspectorate general of the Ministry of Education and Culture. In *Cogent Business and Management* (Vol. 7, Issue 1). <https://doi.org/10.1080/23311975.2020.1793521>

Purwanto, A. (2022). The Role of Transformational Leadership and Organizational Citizenship Behavior on SMEs Employee Performance. *Journal of Industrial Engineering & Management Research*, 3(5), 39-45.

Purwanto, A., Purba, J. T., Bernarto, I., & Sijabat, R. (2021). Effect of Transformational Leadership, Job Satisfaction, and Organizational Commitments on Organizational Citizenship Behavior. *Inovbiz: Jurnal Inovasi Bisnis*, 9(1), 61. <https://doi.org/10.35314/inovbiz.v9i1.1801>

Puspita, N. P. E. G., & Dewi, A. S. K. (2020). The Effect Of Transformational Leadership, Organizational Culture, And Motivation On Organizational Citizenship Behavior. *American Journal of Humanities and Social Sciences Research*, 4(3), 433-439.

Qalati, S. A., Zafar, Z., Fan, M., Sánchez Limón, M. L., & Khaskheli, M. B. (2022). Employee performance under transformational leadership and organizational citizenship behavior: A mediated model. *Helion*, 8(11). <https://doi.org/10.1016/j.helion.2022.e11374>

Rosenthal, R., & DiMatteo, M. R. (2001). Meta-analysis: Recent developments in quantitative methods for literature reviews. *Annual Review of Psychology*, 52, 59-82. <https://doi.org/10.1146/annurev.psych.52.1.59>

Saif, N., Ali, S., Hussain, M., Rubin, A., Yawar, R. B., Goh, G. G. G., Khan, S. U., & Khan, I. U. (2025). Exploring the psychology of transformational leadership: pathways to citizenship in higher education. *Future Business Journal*, 11(1), 1-15. <https://doi.org/10.1186/s43093-025-00466-1>

Saluy, A. B., Syawal, M., Sudjono, Pramudena, S. M., Kemalasari, N., & Gustiah, I. P. (2024). Organizational Commitment, Transformational Leadership and Job Satisfaction as Predictors of Organizational Citizenship Behavior Among Civil Servants in Indonesia. *Journal of System and Management Sciences*, 14(1), 275-289. <https://doi.org/10.33168/JSMS.2024.0116>

Shie, E. H., & Chang, S. H. (2022). Perceived Principal's Authentic Leadership Impact on the Organizational Citizenship Behavior and Well-Being of Teachers. *SAGE Open*, 12(2). <https://doi.org/10.1177/21582440221095003>

Siregar, U. R., & Hermawan, A. (2024). Strategies to Improve Teachers' Organizational Citizenship Behavior Through Strengthening Transformational Leadership and Self-Efficacy. *International Journal of Business and Applied Social Science*, November, 34-43. <https://doi.org/10.33642/ijbass.v10n11p4>

Siswadi, Y., Jufrizen, J., Saripuddin, J., Farisi, S., & Sari, M. (2023). Organizational Culture and Organizational Citizenship Behavior: the Mediating Role of Learning Organizations and Organizational Commitment. *Jurnal Riset Bisnis Dan Manajemen*, 16(1), 73-82. <https://doi.org/10.23969/jrbm.v16i1.7184>

Soilihin, A., & Fathihani. (2024). Transformational Leadership and Work Engagement on Organizational Citizenship Behavior With

Learning Organization as A Mediation Variable. *Dinasti International Journal of Management Science*, 5(3), 328-337.

Somech, A., & Ron, I. (2007). Promoting organizational citizenship behavior in schools: The impact of individual and organizational characteristics. *Educational Administration Quarterly*, 43(1), 38-66. <https://doi.org/10.1177/0013161X06291254>

Sulton, I., & Gunawan, I. (2023). Transformational Leadership and Organizational Citizenship Behavior of Virtual Teaching During the COVID-19 Pandemic in Indonesia: The Mediating Role of Job Satisfaction. *Educational Process: International Journal*, 12(3), 56-78. <https://doi.org/10.22521/edupij.2023.123.3>

Sumarmi, S., Winarni, T., & Sumarni, M. (2022). Transformational Leadership and Organizational Citizenship Behavior in the COVID-19 Era: Mediating Analysis. *KnE Social Sciences*, 2022, 855-867. <https://doi.org/10.18502/kss.v7i14.12037>

Sun, W., Liu, X., Liu, Y., Ding, S., Jiang, Y., & Lv, Z. (2024). The Relationship Between School Organizational Climate and Teachers' Organizational Citizenship Behaviors: The Mediating Role of Teaching Efficacy and Moderating Role of Optimistic Traits. *Behavioral Sciences*, 14(12). <https://doi.org/10.3390/bs14121130>

Tan, C. L., & Lee, M. C. C. (2020). *Transformational Leadership On Organizational Citizenship Behavior And Its Mediational Pathway*. 739-750. <https://doi.org/10.15405/epsbs.2020.10.67>

Tania, T., Haryadi, D., Wahyudi, W., & Khairusy, M. A. (2021). Improving Employee Performance with Structural Empowerment and Transformational Leadership Through Job Satisfaction, Organizational Citizenship Behavior And Interpersonal Trust (Study at PT. BPRS Cileg on Mandiri). *American Journal of Humanities and Social Sciences Research*, 5(11), 91-102.

Tian, H., Iqbal, S., Akhtar, S., Qalati, S. A., Anwar, F., & Khan, M. A. S. (2020). The Impact of Transformational Leadership on Employee Retention: Mediation and Moderation Through Organizational Citizenship Behavior and Communication. *Frontiers in Psychology*, 11(March), 1-11. <https://doi.org/10.3389/fpsyg.2020.00314>

Triningsih, Setyaningsih, S., & Herfina. (2023). An Analysis of the Transformational Leadership Style and Self-Efficacy Effects on Elementary School Teachers' Organizational Citizenship Behavior. *Pegem Journal of Education and Instruction*, 13(3), 403-414. <https://doi.org/10.47750/pegegog.13.03.41>

van Schaik, P., Volman, M., Admiraal, W., & Schenke, W. (2019). Approaches to co-construction of knowledge in teacher learning groups. *Teaching and Teacher Education*, 84, 30-43. <https://doi.org/10.1016/j.tate.2019.04.019>

Venugopal Muthuswamy, V., & Umarani, M. (2023). Exploring the Role of Learning Culture, Cultural Adaptability and Green Culture to Enhance Employee Retention. *Cultura. International Journal of Philosophy of Culture and Axiology*, 20(3), 159-180.

Wampold, B. E., Ahn, H., & Kim, D. (2000). Meta-analysis in the social sciences: *Asia Pacific Education Review*, 1(1), 67-74. <https://doi.org/10.1007/bf0326147>

Wardani, A. K., Hermawan, A., & Setyaningsih, S. (2024). Optimization of improving teacher organizational citizenship behavior (OCB) through strengthening transformational leadership and self-efficacy. *International Journal of Multidisciplinary Research and Growth Evaluation*, 5(6), 1348-1355. <https://doi.org/10.54660/.ijmrge.2024.5.6.1348-1355>

Widisatria, D., & Nawangsari, L. C. (2021). The Influence of Green Transformational Leadership and Motivation to Sustainable Corporate Performance with Organizational Citizenship Behavior for the Environment as a Mediating: Case Study at PT Karya Mandiri Sukses Sentosa. *European Journal of Business and Management Research*, 6(3), 118-123. <https://doi.org/10.24018/ejbmbr.2021.6.3.876>

Widodo, W., & Gunawan, R. M. B. (2020). The antecedence of lecturer's OCB: Evidence from Indonesia. *Management Science Letters*, 10(10), 2281-2286. <https://doi.org/10.5267/j.msl.2020.3.008>

Yin Yin Lau, P., Park, S., & McLean, G. N. (2020). Learning organization and organizational citizenship behaviour in West Malaysia: moderating role of team-oriented culture. *European Journal of Training and Development*, 44(8-9), 847-864. <https://doi.org/10.1108/EJTD-01-2020-0007>

Yu, J., Kreijkes, P., & Salmela-Aro, K. (2022). Students' growth mindset: Relation to teacher beliefs, teaching practices, and school climate. *Learning and Instruction*, 80(March). <https://doi.org/10.1016/j.learninstruc.2022.101616>

Zhao, X., Yang, Y. C., Han, G., & Zhang, Q. (2022). The Impact of Positive Verbal Rewards on Organizational Citizenship Behavior—The Mediating Role of Psychological Ownership and Affective Commitment. *Frontiers in Psychology*, 13(April), 1-12. <https://doi.org/10.3389/fpsyg.2022.864078>