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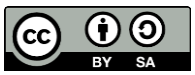

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The Interplay of Learning Motivation and Self-efficacy on English Learning Outcomes of EFL Learners: A Meta-Analysis

Lailul Fitriah[1], Mujiono[2], Riza Weganofa[3]
E-mail: lailulfitriah0510@gmail.com[1], moejie_nova@unikama.ac.id[2], rizaweganofa@unikama.ac.id[3]
[1,2,3]English Education Department, Universitas PGRI Kanjuruhan Malang

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Abstract

This study investigates how learning motivation (LM) and self-efficacy (SE) interact to influence English learning outcomes for EFL learners, addressing the critical need for an evidence-based understanding of these relationships through a meta-analysis. LM and SE have significantly related to EFL learners' learning outcomes. However, there is a need to thoroughly examine learning outcomes in language learning, particularly considering variations in students' LM. This study uniquely synthesizes findings from various correlation studies, employing a meta-analytical approach to confirm the relationship between LM and SE and explore the moderating effects of contextual factors such as educational level and instrument types, which have been largely overlooked in previous research. The evidence for the relationship between LM and SE in EFL students was analyzed using a meta-analysis. The study found that a random model was utilized, and the magnitude of the effect was exceptionally great (d.0576). The meta-analysis computed 11 effects, and the variable analysis moderator examined the study's source, sample size, student major, language learning target, educational level, and instrument type.

Keywords: *Learning Motivation, Self-efficacy, Learning outcomes, EFL*

Introduction

The skills, knowledge, attitudes, and values students acquire are learning outcomes from their learning experiences. Measurable changes in behavior and understanding typically manifest after students engage in structured learning activities (Khoirunikmah et al., 2023; Schneider & Preckel, 2017). Several factors contribute to improved learning outcomes for students, particularly EFL learners,

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including internal and external factors. Learning style, social skills, cognitive ability, learning attitude, and internal factors that influence learning outcomes include LM and SE, especially of EFL learners (Ancheta & Bocar, 2024; Ekowati, 2019; Haibar & Yuzarion, 2024; Khoirunikmah et al., 2023; Long & Tuyen, 2020; Wijaya & Bukhori, 2017). Meanwhile, external factors can include the school environment, teaching methods, attitudes, and student social support (Ancheta & Bocar, 2024; Ekowati, 2019). Indeed, these two factors can influence students' learning outcomes, but this research focuses on motivational factors and SE about the learning outcomes of EFL learners. Motivation is essential as a timer and task selection and can regulate the energy used in a particular task (Bakar, 2014; Haj & Benhima, 2024).

An individual's behavior towards change is driven by various tendencies that vary in frequency and intensity (Baumeister, 2016; Zheng et al., 2018). Furthermore, LM indicates students' learning outcomes in a foreign or second language, particularly for English learners (Gardner, 2001 an; Khodadad & Kaur, 2016). However, what often happens and is a significant problem is maintaining motivation over a more extended period, especially when facing challenges or tasks; this can be intrinsic or extrinsic motivation.

Intrinsic motivation comes from a high level of internal control and is fueled by personal interests that inspire individuals to carry out activities inside themselves, whereas extrinsic motivation comes from external influences (Engidaw, 2021; Pintrich, 2003). In addition, motivation is a significant aspect of encouraging individuals to develop, as well as self-efficacy, which is an aspect of achieving learning goals, high self-efficacy will produce motivation to succeed in learning activities because individuals with high SE will be more confident in their abilities to perform tasks (Aprianto et al., 2024; Farihah & Rakasiwi, 2020). Students with a strong sense of SE are more likely to be motivated to learn and fulfill their learning objectives.

Additionally, each person's long-term interests and personality traits influence sustainability (Filgona et al., 2020; Odabas, 2022). In contrast, students with low SE often avoid complex and challenging educational tasks (Shin, 2018; Tang et al., 2022). In this case, the function of motivation in English language learning can influence learning persistence; it is commonly recognized that highly motivated students have high levels of success in language acquisition (Dörnyei, 1998; Xue, 2021). Conversely, students who have low achievement, especially those who learn English, result from low motivation (Riyanti, 2019). This is often an obstacle for teachers, so teachers can encourage students' motivation to learn English in various ways using motivational strategies (Dörnyei, 2021 in Riyanti, 2019).

Individuals with solid beliefs and desires so they can overcome challenges in achieving goals and are more motivated to act usually have high self-efficacy (Lestari et al., 2020; Zhang & Li, 2021). Bandura (1997) stated that SE beliefs are vital in defining individual motivation and behavior (Bandura, 1997). SE has a subnational effect on learners' academic achievement and also drives them to succeed in meeting expected learning objectives. SE is a person's belief in their ability to attain goals or accomplishments, such as learning English. Odabas (2022) indicated that learners with more robust SE are more driven to learn, making it more straightforward to succeed when learning English, especially as a foreign language. Students with high SE are more likely to be confident and motivated to learn despite challenges in the learning process. Students with low efficacy tend to have no confidence due to fear of difficulties in learning (Moghari et al., 2011).

In general, SE refers to a person's belief in their ability to reach a level of performance that is a determinant of essential occurrences in their life (Bandura, 1994 in Odabas, 2022). SE is divided into three connected dimensions: on the level of task difficulty that an individual believes is achievable, this is referred to as *magnitude*; *power* refers to whether beliefs about magnitude are strong or weak, while *generality* is the extent to which expectation held by the individual are generalized across different situations (Bandura, 1977a in Gist, 1987).

In learning English, SE has a vital role as it can affect students' motivation, perseverance, and overall success in completing tasks and can improve overall academic performance in learning English (A. Aladini & Abu Owda, 2020; Rodliyah & Khoirunnisa, 2023). The relevance of SE can improve academic accomplishment, confidence in language abilities, and academic success (Dan et al., 2022). In general, it has been demonstrated that motivation and SE can boost an individual's desire to learn, particularly while learning English. There is a correlation between LM and self-efficacy (Gahemi & Damirchiloo, 2015). Furthermore, people with high motivation and SE might have a greater desire to attain a goal, specifically in language acquisition, because learners will be more confident in their abilities.

In other words, students will perceive challenges as opportunities to learn and grow in EFL learning (Gan et al., 2023; Han & Lu, 2017; Khodadad & Kaur, 2016). Several studies have found that learning motivation affects learning outcomes. LM can increase student satisfaction and performance in learning; learning motivation can also improve learning outcomes by encouraging students to try harder and overcome difficulties in the learning process.

Besides that, it can provide a higher level of student involvement in the learning process and an easier understanding of better material can improve their learning outcomes (Ersanlı, 2015; Peng & Fu, 2021; Ulfa & Bania, 2019; Wallace & Leong, 2020). In addition, the effect of SE can be felt in the long term by the students such as SE becomes a vital role as motivation, perseverance increases, resilience contributes to better learning outcomes, and a willingness to take on complex tasks

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(Genç et al., 2016; Mujiono, 2024; Yusof et al., 2021).

Despite extensive research on motivation and self-efficacy in EFL contexts, previous studies lack a comprehensive synthesis using meta-analytical methods to integrate and quantify these relationships. This gap restricts the ability to develop robust pedagogical strategies to optimize EFL learners' motivation, self-efficacy, and learning outcomes. This meta-analysis contributes to English language learning by systematically synthesizing existing research to provide teachers and policymakers with actionable insights on enhancing LM and SE, which are critical for improving EFL learners' engagement and academic performance and building on prior findings that emphasize the individual roles of learning motivation and self-efficacy in shaping EFL learners' outcomes.

This study integrates these variables through a meta-analytical approach to address the question: Is there a relationship between learning motivation and self-efficacy on learning outcomes, mainly when moderated by specific contextual variables? In this research, the researcher hypothesized that (1) there is a relationship between LM and SE on learning outcomes with the addition of a moderator.

Methods

Although this study utilized the meta-analysis technique compliant with PRISMA guidelines, potential limitations include variability in study methodologies, cultural differences across included studies, and the limited sample size in some cases, which may affect the generalizability of the findings (Liberati et al., 2009).

Study the Eligibility Criteria

This meta-analysis examined research involving English as a foreign language learner across various age groups. Data extraction entailed searching in defined databases for studies that met inclusion and exclusion criteria for peer-reviewed studies published from 2013 to 2024. The studies were assessed for quality based on predetermined criteria such as clarity, mission of research, appropriateness of methodology, and trustworthiness of instruments, so only high-quality data were included in the analysis.

Data Source

The literature search involved databases such as ERIC, Google Scholar, Scopus, and Taylor & Francis, using specific keywords including 'intrinsic motivation,' 'self-efficacy in learning,' 'English language learning outcomes,' and their combinations to ensure comprehensive retrieval of relevant studies.

Effect Size Calculation

The primary outcome of this study is the effect size (ES) of the standardized mean difference, which was estimated using the mean and standard deviation (Borenstein et al., 2009). The researchers investigated the overall ES individually, and a high ES suggests increased motivation and SE, whereas a negative ES indicates a reduction in these factors. A random effects model conformed to the guidelines for gathering ES (Borenstein et al., 2009). Analysis in this study used OpenMEE as a tool.

Heterogeneity and Small-Study Effect

Cochran's Q test was used to quantify heterogeneity, while inconsistency used the l2 statistic (Borenstein et al., 2009, 2017). Values in the 25% range are regarded as low, 50% are considered medium, and 75% are considered high or represent a large amount of inconsistency developed, suggesting using the funnel plot and Egger's regression test (Sedgwick & Marston, 2015). These methods ensure a balanced interpretation of results by identifying asymmetry and overestimation in the included studies.

Study Selection

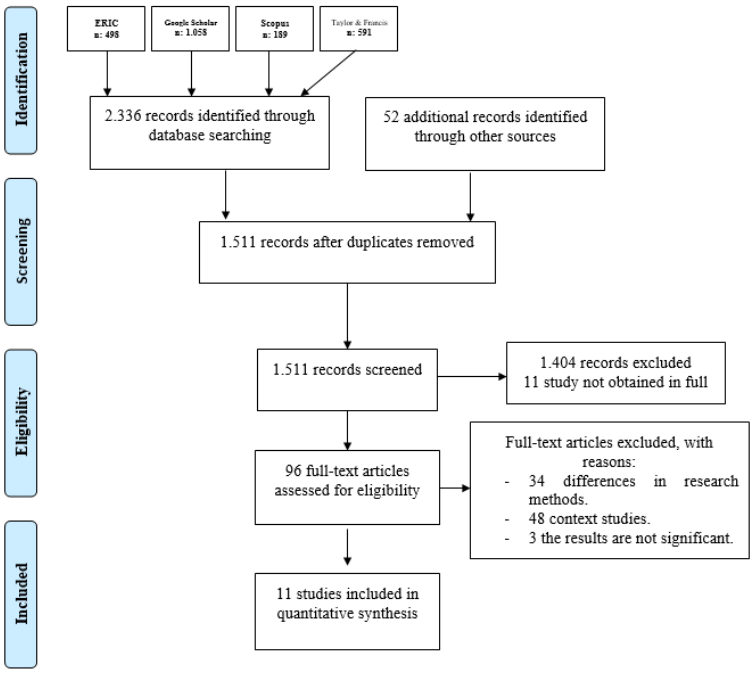

Figure 1. Flowchart of the studies selection.

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This meta-analysis covered eleven studies conducted between 2013 and 2024. They were selected based on stringent inclusion criteria, such as sufficient data to calculate effect size, using correlation research methods and focusing on LM, SE, and English learning outcomes. Figure 1 depicts a research process flowchart; electronic databases, likely ERIC, Google Scholar, Scopus, and Taylor & Francis, were used to search the literature. Separate search terms were used to search for LM, SE, and English achievement. The authors obtained 498 ERIC articles, 1,058 Google Scholar articles, 189 SCOPUS, and 591 Taylor & Francis. In addition, as shown in Figure 1, the researcher found 52 articles from other sources. The publication of the findings was limited to 2013 and 2024.

Inclusion and Exclusion Rules

A search in the database yielded 2,388 studies. The first screening yielded 1,511 studies relevant to the study. The inclusion criteria required studies to provide sufficient data for effect size computation, employ correlation research methods published between 2013 and 2024, specifically address learning motivation and self-efficacy in EFL contexts, and utilize standardized or validated measures for the constructs under investigation, so 96 were kept for further research and coding. Figure 1 shows that the meta-analysis looked at 11 studies.

Table 1. List of Selected Studies with Moderator Factors

Author	N	r	ES	Study's source	Sample size	Student major	Target language learning	Types of Instruments	Educational level	Geographic Region
Alieto Aricson & Torres Joel Mayo, 2019	160	0.514	0.568	Article	Large	Non-English	General English	Standardized Instrument	Senior High School	Southeast Asia
Aprianto Dedi, et al,. 2024	71	0.680	0.829	Journal	Medium	Non-English	General English	Custom Instrument	Collage	Southeast Asia
Celcima, D,. et al.,. 2024	85	0.580	0.662	Journal	Medium	Non-English	General English	Custom Instrument	Collage	Southeast Europe
Cheng Chang, Y & Ting Tsai, Y, 2022	450	0.187	0.189	Article	Large	Non-English	General English	Standardized Instrument	Collage	Southeast Asia
Fatemi	93	0.39	0.412	Journal	Medium	English	General	Standardized	Collage	Western

Hosseini, A, & Vahidnia F. 2013							English	Instrument		Asia
Khatimah, Z.H, et al,. 2023	34	0.834	1.201	Article	Small	Non-English	General English	Custom Instrument	Senior High School	Southeast Asia
Nunez, M. R, 2022	26	0.615	0.717	Article	Small	Non-English	General English	Standardized Instrument	Senior High School	Southeast Asia
Sabti, Ahmed. A., et al., 2019	100	0.785	1.058	Article	Medium	English	Writing	Standardized Instrument	Collage	West Asia
Sahril & Weda Sukardi, 2020	50	0.057	0.057	Article	Small	English	Writing	Custom Instrument	Collage	Southeast Asia
Wu Xia et al., 2022	223	0.361	0.378	Journal	Large	Non-English	General English	Custom Instrument	Collage	East Asia
Zaid Hassan, 2020	179	0.34	0.354	Article	Large	Non-English	General English	Custom Instrument	Collage	North Africa

Moderators Variables

Table 1 listed six factors that could function as moderators and likely sources of the study: sample size, major of students, target language learning, level of education, and type of instruments. Researchers also stated that the concentration on their students as English or non-English, English in general, and writing are the focus areas for learning. Two categories are used in instruments: (1) standard instruments and (2) customized instruments. Then, this analysis utilized meta-regression using OpenMEE.

Data Analysis

Meta-Analysis Utilizes

This study utilized confidence intervals (CI) and funnel plots to examine the heterogeneity of effect sizes and publication bias (Peters et al., 2010).

Publication Bias

If the value at risk of bias is above 50%, then there is a significant factor. This is usually due to publication bias, which means overestimating the effect or possibly not showing any effect (Van Aert et al., 2019).

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Moderator Analysis

A selection of variables was considered for the study as moderators: source, sample size, student major, target language learning, educational level, and instruments. These variables were meant to investigate their effects on LM and SE outcomes among EFL learners. They were mainly chosen as variables of interest because they often appeared in earlier meta-analyses and also were pertinent for understanding the different contexts related to English language learning, giving a better breadth of coverage for possible influence on the measured findings. These factors are collected using categorical variables and included in data collection, analysis, and conclusions.

Results

Heterogeneity and Small-Study Effects

Figure 2 shows the average heterogeneity test and adjusted variance for 11 different effect sizes, with an I2 value of 87.437 percent and a Q (df=10) of 79.598. This indicates that the level of heterogeneity is so high that the study continued using a completely random effect model investigation. The significant cumulative mean effect size (d = 0.576) determines the relationship between LM and SE on learning outcomes to be moderate to strong, with a 95% confidence interval consistent across studies. This holds that both factors are instrumental in determining academic success among EFL learners. The substantial mean effect size (d = 0.576, 95% CI: 0.402 – 0.750) suggests a moderately strong relationship between LM, SE, and learning outcomes, with the confidence interval highlighting the range of likely population effects.

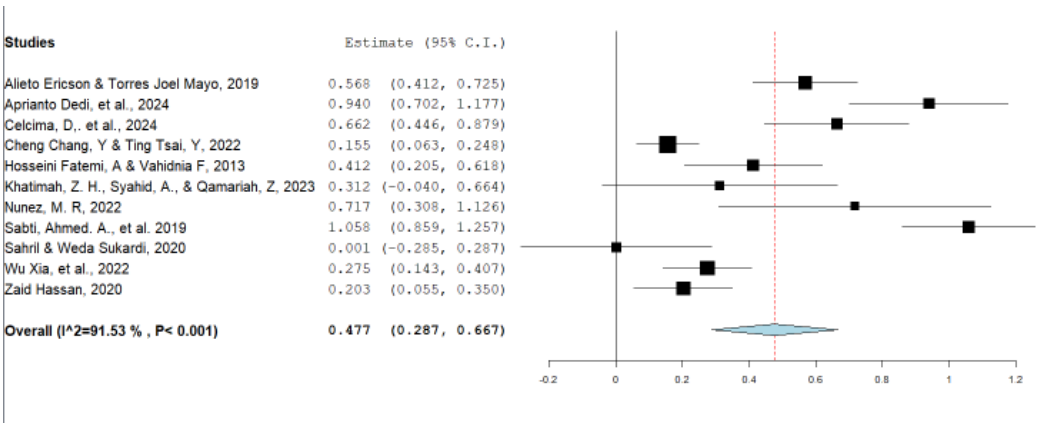

Figure 2. Forest Plot of Effect Sizes for LM Studies

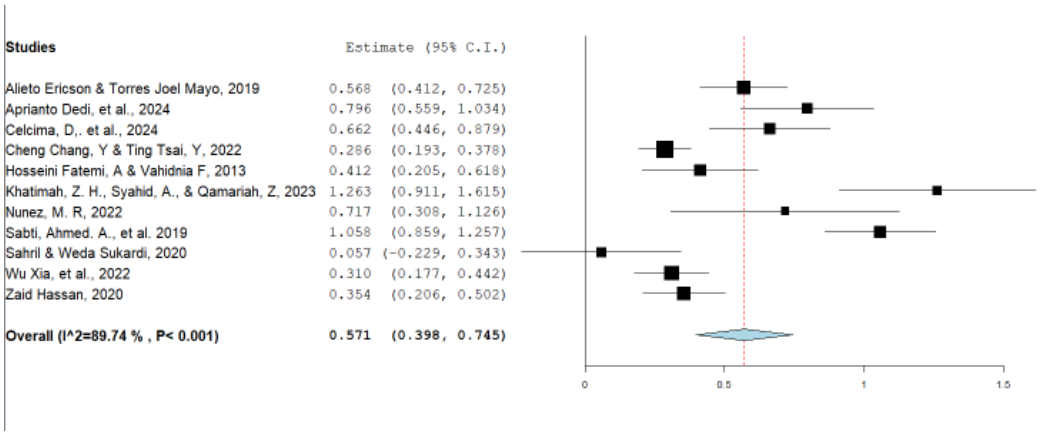

Figure 3. Forest Plot of Effect Sizes for SE Studies

In the forest plot above, the horizontal lines on each square show each study's ES, while the black boxes 95 percent represent confidence intervals. The vertical line in the middle has no effect. Furthermore, the forest plot in Figure 2 has an overall impact of 0.477 (95% CI: 0.287, 0.667). This suggests that there is a moderate positive effect on LM. Whereas Figure 3 has an overall impact of 0.571 (95% CI: 0.398, 0.745), this demonstrates that SE has a moderately positive effect on learning outcomes. In addition, on average, LM and self-efficacy influence learning outcomes.

Table 2. Effect sizes used for learning outcomes on LM and self-efficacy in multiple settings.

Variable Moderator	Effect Size			95% CI		P
	N	d	SE	Lower	Upper	
Source of study						
Article	7	0.557	0.142	0.298	0.856	<0.001
Journal	4	0.557	0.105	0.352	0.726	<0.001
Number of participants						
Small	3	0.652	0.362	-0.057	1.361	0.071
Medium	4	0.741	0.143	0.460	1.021	<0.001
Large	4	0.365	0.081	0.205	0.525	<0.001
Major of students						
Non-English	8	0.576	0.097	0.387	0.766	<0.001
English	3	0.516	0.289	-0.051	1.082	0.074
The target of language learning						

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General English	9	0.555	0.087	0.385	0.724	<0.001
Writing	2	0.563	0.501	-0.418	1.544	0.261
Level of education						
Senior High School	3	0.811	0.202	0.416	1.206	<0.001
Collage	8	0.491	0.107	0.281	0.705	<0.001
Type of instruments						
Standardized Instrument	4	0.686	0.152	0.387	0.984	<0.001
Custom Instrument	7	0.500	0.108	0.288	0.712	<0.001

Moderator Variable Analysis

The study considers the source, sample size, student major, language learning target, level of education, and types of instruments to act as moderators for their potential (modifying) influence on learning motivation (LM) and self-efficacy (SE) outcomes in EFL learners. These moderator variables were often found in previous meta-analyses and are relevant for understanding various contexts of learning English as a second language and thus to broaden the investigation into their effects on measured results.

Table 3. Moderator Variable Analysis

Variable Moderator	Effect Size			95% CI		P	Test of Heterogeneity
	N	d	SE	Lower	Upper		
The source of the study							
Article	7	0.557	0.142	0.298	0.856	<0.001	93.65
Journal	4	0. 557	0.105	0.352	0.726	<0.001	77.78
Number of participants							
Small	3	0.652	0.362	-0.057	1.361	0.071	92.06
Medium	4	0.741	0.143	0.460	1.021	<0.001	85.40
Large	4	0.365	0.081	0.205	0.525	<0.001	83.57
The major of students							
Non-English	8	0.576	0.097	0.387	0.766	<0.001	89.26
English	3	0.516	0.289	-0.051	1.082	0.074	94.65

The target of language learning							
General English	9	0.555	0.087	0.385	0.724	<0.001	87.72
Writing	2	0.563	0.501	-0.418	1.544	0.261	96.85
Level of education							
Senior High School	3	0.811	0.202	0.416	1.206	<0.001	80.79
Collage	8	0.491	0.107	0.281	0.705	<0.001	91.86
Type of instruments							
Standardized Instrument	4	0.686	0.152	0.387	0.984	<0.001	86.55
Custom Instrument	7	0.500	0.108	0.288	0.712	<0.001	90.92

(a). The study's source

The effect size in the journal article did not change considerably, with the sum d = 0.568 (SE = 0.094). There is no pu change in the mean quantity.

(b). Sample size

This study made predictions based on the sample size, which might have been small, medium, or large. In contrast, the mean effect of a study on the relationship between LM and SE was conducted in small, medium, and large groups; thus, the results are not statistically significant. Therefore, the P value (0.001) suggests that the observed effect is substantial.

(c) Student major

An unexpected finding was observed in the comparison between English and non-English majors. While non-English majors showed a significant relationship (P < 0.001), English majors displayed an insignificant relationship (P = 0.074). This result is counterintuitive as English majors were expected to have a stronger correlation due to their specialized focus on the language. A potential explanation might involve differences in curriculum structure or varying levels of intrinsic motivation and self-efficacy between the two groups, which require further exploration in future research.

(d). Target of language learning

The research on LM and self-efficacy depends on general English and writing. However, there is a difference between general English and writing. The effect on general English P (<0.001) showed that the results were significant, while writing with P (0.261) showed insignificant results. So, there is a difference between the general English and writing subgroups.

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(e). Educational level

There are two levels of education included, namely, senior high school and college level, which shows that the combined effect of the two levels is minimal (<0.001), identifying significant results between the two groups.

(f). Instrument type

The predictor includes two instruments, namely standard and customized tests. The combined effect of the two types of instruments used is very significant because P (<0.001) shows that the use of standardized or custom instruments gives an overall effect with (d = 0.686 vs. d = 0.500).

Publication Bias

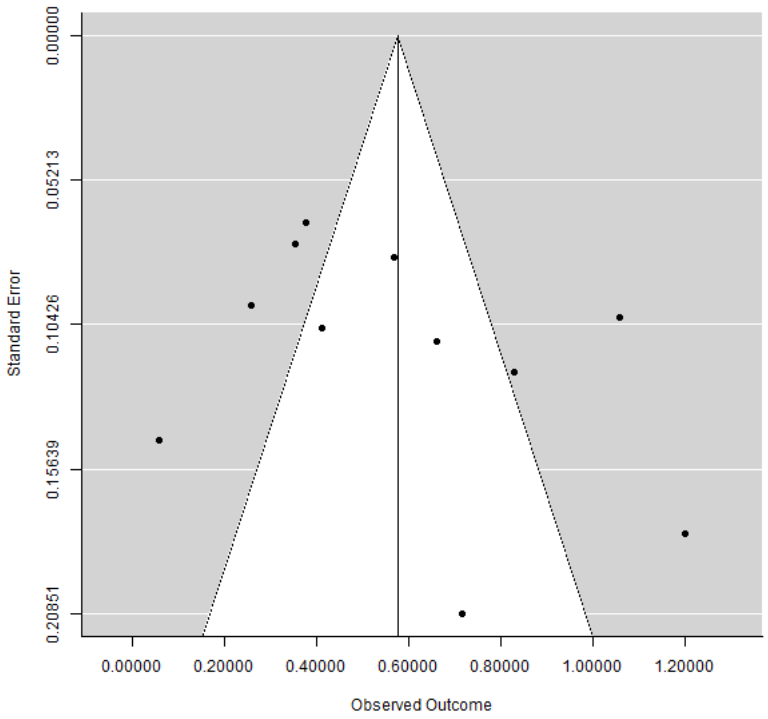

Figure 4. Funnel plot of publication bias

The funnel plot above features 11 research results added to a symmetrically distributed meta-analysis. Most of the distribution of research points is positioned upwards. Thus, the research used in the meta-analysis meets the criteria that have been determined. Therefore, publication bias cannot occur.

Discussion

This study examined eleven studies that analyzed impact measures to investigate the relationship of LM and SE on the learning outcomes of EFL learners. The chosen studies differed in primary, target language learning, and language acquisition outcomes, which were also investigated in various ways, including the number of participants in the study and journal articles.

a) Results of a study of LM and SE on learning outcomes of EFL learners.

This finding emphasizes the importance of high LM and SE in EFL students' learning outcomes, including general English and writing proficiency.

b) The relationship between LM and SE in various conditions.

LM and SE were consistently measured across studies, demonstrating their influence and relationship with EFL learners' learning outcomes. In this research, the researcher examined whether learning motivation and self-efficacy, along with moderator variables such as the study's source, sample size, student major, target of language learning, educational level, and instrument type, impact EFL learners' learning outcomes. Such as different studies based on the source of the study, there are two types, namely article and journal, with a P value <0.001.

This indicates a significant relationship so that both have the effect of both; then on the number of participants, there are three types, namely small, medium, and large, so there are different P values for the effect size small, medium, and large. The P value of 0.071 in the small effect indicates no significant relationship; however, in the medium and extensive impact, there is a significant relationship and has an influence. Then, the major of students has a different P value; in non-English students, there is a P value <0.001; this demonstrates that there is a significant relationship or influence between the variables studied; on the other hand, the primary English students produce a P value of 0.074, this indicates no considerable relationship and effect.

The following moderator variable is the target of language learning; there are different results in general English, giving results <0.001, while in English writing, P 0.261. This shows that there is no relationship between the variables studied. Furthermore, significant results are displayed at the level of education senior high school and college, with each result <0.001, and the last moderator variable, namely type of instruments, there are two instruments used, namely standardized instruments and custom instruments, with each P <0.001, this indicates a significant relationship between LM, SE and learning outcomes of EFL learners.

Overall, the analysis of moderator variables shows that the source of the study, the number of participants (medium and large), the major of students (non-English students), the target of language learning (general English), the level of education and the type of instrument show that there is a significant relationship to the variables studied. In contrast, the number of participants (small), the number of major students (English), and the target of language and learning (writing) give

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insignificant results, or there is no relationship between the variables studied.

This study found a significant relationship between LM and SE on learning outcomes. Although the findings demonstrate a significant relationship between learning motivation, self-efficacy, and EFL learners' outcomes, it is essential to consider alternative explanations. Cultural and socioeconomic factors and differences in measurement instruments across studies may have contributed to the observed results. Addressing these variables in future research would enhance the robustness and generalizability of these findings. Researchers compared relationships based on their language learning targets predicted general English (Alieto & Torres, 2019; Aprianto et al., 2024; Celcima et al., 2024; Cheng Chang & Ting Tsai, 2022; Hosseini Fatemi & Vahidnia, 2013; Khaimah et al., 2023; Roxanne Nuñez, 2022; Wu et al., 2022; Zaid, 2020) and English writing (Sabti et al., 2019; Weda, 2018). This study's results indicate a relationship between LM and SE on the learning outcomes of EFL students.

Thus, LM and SE can improve learning outcomes because high motivation can affect learning outcomes, especially for EFL students (Peng & Fu, 2021). In addition, LM and SE can affect learning outcomes for English language learners (Genç et al., 2016). On the other hand, high SE can help students in listening learning outcomes for EFL learners; this is proven in research by Rahimi & Abedini (2009) indicated that there was a significant relationship, in addition to SE being the strongest predictor of students' reading achievement (Yang et al., 2018).

The target language has a considerable effect on the learning outcomes of EFL learners, but the ES does not differ significantly depending on the target language. The researchers examined two learning outcomes in this study: general and writing English. The findings from the meta-analysis of previous research by Haidari et al. (2023) showed a significant relationship between SE, LM, and learning outcomes of EFL learners. This meta-analysis has notable limitations that should be acknowledged. Variability among the included studies, stemming from differences in research design, participant characteristics, and measurement tools, poses a challenge to synthesizing consistent findings. The limited number of studies included in the analysis further constrains the generalizability of the results, as a broader dataset could provide a more comprehensive understanding of the phenomena under investigation.

Additionally, inconsistencies in defining and operationalizing key variables, such as learning motivation and self-efficacy, may impact the reliability of the conclusions. Future research should address these issues by employing standardized methodologies, expanding the scope of included studies, and ensuring uniformity in variable measurement to enhance the robustness and applicability of the findings. The relationship between learning motivation, self-efficacy, and learning outcomes can be explained through their combined influence

on student engagement and persistence. Motivation drives effort and focus, while self-efficacy strengthens confidence and resilience in tackling challenges. These factors encourage active participation, effective learning strategies, and perseverance, ultimately leading to better academic performance. Understanding these mechanisms highlights the importance of fostering motivation and self-efficacy in education.

Conclusion

The results revealed that the mean effect measure value (d = 0.576) indicates a strong relationship between LM and SE and the learning outcomes of EFL learners. These findings underscore the importance of implementing tailored motivational strategies and interventions to enhance learning motivation and self-efficacy among EFL learners. Teachers can foster intrinsic motivation and build self-efficacy through targeted feedback, goal-setting practices, and classroom activities that challenge students while providing necessary support. Applying these findings in educational practice requires educators to implement strategies that enhance LM and SE. This can include personalized goal-setting, constructive feedback focusing on progress, and collaborative tasks that foster confidence and engagement. Schools should also emphasize professional development for teachers, enabling them to effectively cultivate student motivation and resilience. These approaches create a learning environment that enhances EFL learners' academic performance and fosters sustained success in their educational journey. Future research should explore the longitudinal effects of LM and SE on learning outcomes, investigate causal relationships through experimental designs, and examine how specific cultural and contextual factors mediate these interactions in different educational settings.

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