

Volume 5, Issue 1, 052504 (33-45)

Journal of Applied Linguistics Studies (JALS)

<https://doi.org/10.57647/jals.2025.0501.04>



A Mixed-Methods Approach to Investigating Self-Efficacy and Motivation Strategies: A Case of Writing Accuracy and Fluency

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Original

Received:
01 May 2025

Revised:
28 June 2025

Accepted:
20 July 2025

Published online:
30 September 2025

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Abstract:

Learners' writing development involves various psychological factors that may influence their performance. Among these contributing factors, self-efficacy and motivation strategies as two distinct constructs have been investigated in this research. To this end, 75 upper-intermediate EFL learners from a university in Rasht participated in this study. Employing an explanatory sequential mixed-methods design, quantitative data were collected via pretest-posttests with writing assessments, validated self-efficacy (Gaumer-Erickson et al., 2018) and motivation (Bai et al., 2022) questionnaires from 75 purposively sampled learners randomly assigned to control (n=25), self-efficacy strategy (n=25), or motivation strategy (n=25) groups. Qualitative data were gathered through criterion-based sampling of 11 domain experts (saturation at Interview 9). Analysis techniques included ANCOVA, correlations, and thematic analysis. The results of the analyses revealed that there was a significant positive relationship between self-efficacy strategies and both writing accuracy and fluency. The results also indicated that motivation strategies were significantly positively correlated with learners' writing accuracy and fluency. In fact, both self-efficacy and motivation strategies demonstrated substantial synergistic effects on writing outcomes according to qualitative findings. These findings showed that integrated self-efficacy and motivation strategies can effectively enhance writing performance among EFL learners. The pedagogical implications and suggestions for further studies were also highlighted.

Keywords: Error Correction; Higher Self-Efficacy; Motivation; Self-Efficacy; Writing Accuracy And Fluency

Cite this article: Ghanbarbeheshti, F., Pourkalhor, O., Nasrollahi Mouziraji, A. (2025). A Mixed-Methods Approach to Investigating Self-Efficacy and Motivation Strategies: A Case of Writing Accuracy and Fluency. *Journal of Applied Linguistics Studies*, 5(1), 33-45.

Introduction

Recent studies' have increasingly underscored the vital role of self-efficacy in language acquisition, particularly in enhancing writing accuracy and fluency. Self-efficacy has proven to be significant in educational contexts, as highlighted by Wei et al. (2023). Nonetheless, this concept requires further investigation, especially in terms of its influence on teaching practices within EFL settings, as

noted by Tsao (2021). Exploring this area is crucial for educators to design curricula that effectively integrate self-efficacy, thereby fostering improved writing accuracy and fluency among EFL learners. Motivation is another critical factor in this scenario, serving as the driving force that initiates and sustains learners' efforts. It provides the initial push required to embark on second language acquisition and maintain progress. In essence, motivation acts as an internal or external catalyst that encourages learners to take

action and persist in achieving their linguistic goals, the theorists in human motivation often distinguish between ‘two types: intrinsic and extrinsic motivation’ as explained by Pishghadam et al. (2021). In this case, they elaborated intrinsic motivation arises from an individual’s internal desire’ to engage in activities for personal satisfaction or interest (p.217). In contrast, extrinsic motivation is driven by external incentives such as rewards or academic grades. While extrinsic rewards can be motivating in the short term, they may not always sustain long-term commitment, as observed by Nasri et al. (2021).

In this context, Bandura (1997) reminds of self-efficacy role in language learning, proposing that learners’ confidence in their abilities directly influences both the accuracy and fluency of their writing. His framework suggests that these self-efficacy beliefs are pivotal in determining how learners approach writing tasks, as they can either facilitate or hinder performance. Notably, higher self-efficacy levels are linked to greater persistence and effort in writing activities, ultimately contributing to enhanced overall performance (Hwang, 2025; Zumbunn et al., 2019). Early theories of writing, such as those proposed by Graves in 1984 and Hayes and Flower in 1980, did not pay any attention to beliefs of students’ motivation in terms of writing. However, the perspective evolved during the 1990s as writing theorists began incorporating motivational factors into their conceptual frameworks (Graham & Harris, 2009). For example, Graham and Harris (2009) updated his earlier model developed to emphasize that motivational factors play a key role not only in shaping how writers tackle immediate objectives, such as finishing a particular assignment, but also in affecting their overall long-term attitudes toward writing. This shift emphasized the crucial role of self-efficacy and motivation in improving writing outcomes. These beliefs are shaped by previous experiences, whether positive or negative, and ultimately impact their willingness to engage in or avoid a given activity. Furthermore, when individuals perceive intrinsic value in carrying out an assignment, individuals tend to dedicate themselves to rendering a task (Wigfield & Eccles, 1992).

From this perspective, Bandura’s 1997 self-efficacy theory provides an alternative lens for understanding learner performance, shifting away from the traditional emphasis on inherent ability. Instead, it posits that self-efficacy beliefs enhance learners’ writing accuracy and fluency by fostering greater confidence and perseverance in writing tasks. This approach underscores the significance of emotional factors in language learning, suggesting that self-efficacy initiates a pivotal act in attributing learners’ engagement and task to navigate complex writing assignments. The present study operates within a framework that identifies self-efficacy as a critical factor influencing the writing performance of EFL learners, as also noted by Zimmerman in 2000. This framework is structured around three core elements: self-efficacy beliefs, writing accuracy, and writing fluency. Within this context, self-efficacy is analyzed through the dimensions of magnitude, strength, and generality, examining learners’ perceptions of their capability

to achieve specific levels of writing performance that ultimately affect their outcomes, as outlined by Bandura in 1997.

Understanding this concept is key to examining how learners approach writing tasks, as it significantly impacts their writing accuracy and fluency (Atai & Zare Alanagh, 2017). Bandura (1997) emphasized the importance of self-efficacy beliefs in explaining variations in language proficiency among learners, particularly their influence on successfully completing complex writing tasks. Building on this, several studies, such as those by Pajares (2003), Atai and Zaré Alanagh (2017), and Sari and Han (2024) have delved into the role of self-efficacy in second language writing performance. This study builds on foundational research conducted by scholars such as Bandura (1997) and Pajares (2003), who have explored self-efficacy interconnection on language acquisition. It aims to investigate how ‘inner-beliefs’ influence the writing accuracy and fluency of Iranian EFL learners during decision-making tasks. While prior research has predominantly focused on the effects of self-efficacy on spoken performance (e.g., Atai & Zare, Alanagh, 2017; Kormos & Dörnyei, 2004), this study shifts the focus to writing outcomes. Furthermore, by utilizing decision-making tasks instead of the narrative tasks commonly examined in earlier studies, it introduces a novel context for analyzing ‘the relationship between self-efficacy and writing performance’. Through a ‘mixed-methods approach’, the research attempts an approach to offering a substantial awareness of how self-efficacy beliefs are connected to writing accuracy and fluency among EFL learners.

Literature review

Self-efficacy had been playing a basic role in society, as highlighted by Pajares (2003). Bandura’s self-efficacy theory, in particular, is regarded as a foundational framework for understanding the relationship between beliefs and learning outcomes. Self-efficacy has been described as an evaluation of an individual’s ability to manage behaviors required to reach specific targets, a concept in which also extends to the language learning process (Bandura & Cervone, 1986; Deng & Liu, 2025; Schunk & Zimmerman, 1997; Zimmerman, 2000). Vicarious experiences involve observing ‘a completion being successful of an assignment’ by others, which can strengthen an individual’s belief in their own capabilities. Similarly, verbal persuasion, especially when stemming from credible sources, enhances self-efficacy through encouragement and positive reinforcement. Additionally, physiological states play a significant role in boosting self-efficacy (Alderman, 2008; Ormrod, 2012; Pajares, 2003; Schunk & Pintrich, 2008; Shen & Bai, 2022; Zimmerman, 2000). These factors are intricately linked to how learners perceive their writing abilities. Positive writing experiences foster confidence, witnessing peers’ achievements inspires motivation, constructive feedback reinforces belief in one’s writing potential, and effective stress management can lead to better writing performance (Pajares, 2003).

Several studies have investigated the impact of self-efficacy

on university students' motivation (Ghelichli et al., 2020; Maddux & Stanley, 1986; Multon, Brown, & Lent, 1991; Schunk, 2003), providing valuable foundational insights. However, many of these studies fail to delve deeply into the role of self-efficacy within specific learning contexts or across diverse demographic groups. Notably, Multon, Brown, and Lent (1991) conducted a meta-analytic review of approximately 70 studies focusing on persistence and motivation rate measures. This reinforces the convergent validity of self-efficacy concept. The researchers highlighted significant influence of self-efficacy on motivation and persistence in their findings. This indicates that learners with stronger self-efficacy tend to be more engaged and exert greater effort when faced with challenges (Rashid, Ghonsooly, & Ghanizadeh, 2023). Similarly, Kyndt et al. (2018) observed that as motivation increases, there is often a corresponding rise in 'self-efficacy'. This emphasizes the critical role that motivation plays during the transition to higher education (Boscolo & Hidi, 2006; Qin & Zhang, 2019). Ross (2006) also argued that certain studies have found that encouraging students to evaluate their own performance, without additional training, can lead to enhanced self-efficacy, stronger intrinsic motivation, and improved achievement. In alignment with this, McMillan and Hearn (2008) asserted that self-assessment fosters both self-efficacy and motivation. Nevertheless, while the paper studies major views into the connection between self-efficacy and motivation, they frequently fail to account for contextual factors such as socio-economic status, cultural variations, and peer support systems, all of which could significantly shape self-efficacy beliefs.

Building on these observations, a critical gap emerges when examining how self-efficacy frameworks interact with task complexity variables. While prior studies emphasize motivation's role in writing outcomes (e.g., Graham et al., 2024), few studies examine its interaction with task complexity under self-efficacy frameworks (Mitchell et al., 2023; Tabari & Goetze, 2024). This oversight gains significance when considering contradictory evidence between Bandura's (1997) position that self-efficacy mediates task perception and Tsao's (2021) findings attributing persistence primarily to motivation. This unresolved theoretical tension highlights the need for integrated investigations of these constructs' interplay during complex writing tasks. Motivation is a pivotal factor in writing performance, shaping not only the amount of writing produced but also its quality. Ryan and Deci (2000) classify motivation into two key types: intrinsic and extrinsic, both of which significantly influence the writing process. In one hand, intrinsic motivation, driven by an inherent enjoyment of writing, promotes creativity and engagement, leading to greater fluency and accuracy in written work (Deci, Vallerand, Pelletier, & Ryan, 1991). In this regard, on the other hand, extrinsic motivation, rooted in external rewards or pressures, can also enhance writing performance, although its effectiveness often depends on the specific context (Schunk, 2003). Moreover, self-efficacy and motivation underscores that 'students' who believe in their writing abilities are more inclined

to set ambitious goals and persevere through challenges (Zimmerman, 2000). This perspective is supported by Schunk and Zimmerman (2012), who highlight that motivation mediates the influence of self-efficacy on academic success, including writing tasks. Educators also play a crucial role in shaping the motivational climate for students. A supportive learning environment encourages students to take creative risks and explore new ideas in their writing (Myhill et al., 2023). Feedback and recognition from both peers and instructors further contribute by strengthening students' motivation and commitment to writing (Hattie & Timperley, 2007). Understanding the complex nature of motivation is therefore vital for designing instructional approaches that address the diverse needs of learners. By cultivating both intrinsic and extrinsic motivation, educators can help drive meaningful improvements in writing outcomes (Graham & Harris, 2009).

Numerous studies have demonstrated that self-efficacy beliefs serve as a strong predictor of learners' writing performance. These beliefs influence students' decision-making, the effort they put forth, their determination to engage with new writing tasks, and their anxiety levels when persisting with writing-related efforts. Schunk and Swartz (1993) emphasized that self-efficacy is a significant factor in predicting writing success among children. Similarly, research by McCarthy, Meier, and Rinderer (1985) revealed comparable outcomes. Further in a study conducted by (Shell, Murphy & Bruning, 1989) highlighted the predictive strength of self-efficacy in both reading and writing domains among college learners. Further investigations have consistently shown that self-efficacy beliefs play basic strategy in shaping learners' writing. These judgments impact students' choices, the energy they devote, their perseverance in approaching new writing challenges, and the level of anxiety experienced when maintaining efforts related to writing (Pajares & Johnson, 1998; Zimmerman & Risemberg, 1997; Boscolo & Hidi, 2006; Qin & Zhang, 2019; Shirian Dastjerdi et al., 2024; Teng, 2019; Teng et al., 2021; Teng & Wang, 2022; Teng, 2022). Schunk and Swartz (1993) found that self-efficacy accurately predicted writing performance in children, while McCarthy, Meier, and Rinderer (1985) identified patterns among individuals and demonstrated the relevance of self-efficacy in predicting both reading and writing success within the context of higher education (Schunk, 2003).

Previous studies exploring the influence of self-efficacy (Chen & Zhang, 2019; Derakhshan & Fathi, 2023; Dong et al., 2022; Lin & Wang, 2021; Tao & Yu, 2024) have produced mixed results, often failing to clearly distinguish its impact on writing accuracy and fluency within their research frameworks. This study sets out to address this gap by focusing specifically on Iranian upper-intermediate EFL learners, aiming to examine how self-efficacy influences both writing 'accuracy and fluency'. The findings could contribute to developing more targeted educational strategies tailored to this learner group. Furthermore, the study adopts a novel mixed-methods approach that integrates quantitative measures of writing performance

with qualitative analysis of learners' perceptions regarding their self-efficacy (Woottipong, 2020; Xu, 2021). This way seeks to explain more understanding of self-efficacy's role in writing development. To achieve these objectives, the study addressed the research questions as follows:

RQ1: Is there a significant relationship between self-efficacy strategies and motivation strategies in improving writing accuracy and fluency?

RQ2: How significantly does self-efficacy strategies impact the writing accuracy and fluency of Iranian upper-intermediate EFL learners?

RQ3: How do self-efficacy strategies and motivation strategies interact to influence writing accuracy and fluency in EFL contexts?

METHODOLOGY

Context

This study explored the influence of self-efficacy on writing accuracy and fluency among upper-intermediate EFL learners in Iran. Conducted at the Islamic Azad University in Rasht, the research involved 75 participants and employed a mixed-methods approach. Data were gathered through validated questionnaires, written tests, and semi-structured interviews. Participants were divided into control and experimental groups, with the experimental groups undergoing strategy-based exercises aimed at boosting 'self-efficacy'. The results underscore the pivotal role of self-efficacy in enhancing writing skills among EFL learners.

Participants

This study involved 75 Iranian upper-intermediate EFL learners from Islamic Azad University of Rasht, Iran. Participants were selected through purposive and maximum variation sampling to ensure diversity in experiences and backgrounds. To confirm language proficiency, all participants underwent a rigorous two-step verification process: initially, they were screened via TEFL expert-administered placement tests, and subsequently, their proficiency was retested using the Oxford Placement Test (Allan, 2004). Following this, participants were randomly assigned to three groups: the first group (n = 25) received self-efficacy strategy training, which included goal-setting, reflective journaling, and mastery feedback; the second group (n = 25) underwent motivation strategy interventions, such as extrinsic rewards and autonomy in topic selection; and the control group (n = 25) participated in standard writing instruction without targeted strategies. The participants comprised 38 male and 37 female learners aged between 20 and 29, all actively enrolled in academic programs. Ethical compliance was ensured through written informed consent, which emphasized voluntary participation and the right to withdraw without repercussions. By adhering to these protocols, the study-maintained alignment with ethical standards for human subject research.

Design and Data Collection Process

The study employed a mixed-methods approach to

investigate the interplay between 'self-efficacy', motivation strategies, and their impact on writing accuracy and fluency among Iranian EFL learners. Specifically, a pretest-posttest design was implemented across three cohorts: two experimental groups and one control group. The first experimental group (n = 25) received self-efficacy strategies, including goal-setting frameworks, reflective journaling, and mastery feedback, while the second experimental group (n = 25) engaged in motivation strategies, such as extrinsic rewards and autonomy in topic selection. The control group (n = 25) completed equivalent writing tasks without targeted interventions to establish baseline comparisons. Quantitative data were collected through pre/post writing assessments, validated self-efficacy questionnaires (Gaumer-Erickson et al., 2018), and motivation scales (Bai et al., 2022). Qualitative insights were derived from semi-structured interviews, enabling a comprehensive exploration of how self-efficacy shapes learners' writing practices. This dual-faceted approach combined statistical trends with experiential narratives, offering deeper insights into complex psychological and pedagogical dynamics. To ensure methodological rigor, the design followed a flexible, iterative process, allowing adjustments as new themes emerged during data collection. Such adaptability proved essential for addressing the intricate relationship between cognitive beliefs (e.g., 'self-efficacy') and motivational drivers. Ultimately, the integration of questionnaires, written tests, and interviews ensured a rich, triangulated dataset, aligning with best practices in educational research.

Instruments

Learners Self-Efficacy Questionnaire

To assess learners' self-efficacy levels, Gaumer-Erickson et al.'s (2018) Likert scale questionnaire was employed. This tool includes 13 items aimed at capturing various aspects of self-efficacy related to writing tasks. The scale offers five response options ranging from strongly disagree to strongly agree, enabling participants to indicate their confidence levels in their writing abilities. On average, participants took about 20 minutes to complete the questionnaire, allowing sufficient time for considered responses. Regarding reliability, a pilot study was conducted before the main research, and the reliability coefficient was determined using the Cronbach Alpha formula, which produced a score of approximately 0.85. This robust coefficient suggests the questionnaire is a consistently reliable measure of 'self-efficacy'. To establish its validity, an expert with a Ph.D. in Teaching English as a Foreign Language (TEFL) was consulted. Additionally, three validators reviewed the questionnaire's content validity, offering feedback on its clarity and relevance. This comprehensive validation process ensured the instrument effectively measured the self-efficacy levels of EFL learners during both pretest and posttest phases.

Bai et al. (2022) *Learners' motivation levels questionnaire* To evaluate Learners' motivation levels, Bai et al. (2022) Likert scale questionnaire was utilized. This tool has 36

items aimed at assessing various aspects of motivation related to writing task. This scale had five scores from “strongly disagree” to “strongly agree”. This study used pre- and post-tests to rate learners’ motivation magnitudes before and after the instructional phase, respectively. Regarding the matter of reliability, this questionnaire was piloted, and the reliability coefficient was calculated through the alpha formula. The reliability coefficient was reported to be around 85%, considering the existing literature in the TEFL field.

Writing Assessments

Writing accuracy and fluency were evaluated using written tests conducted at the start and end of the study. The assessments were carefully crafted to gauge multiple dimensions of writing performance, such as grammar, vocabulary, coherence, and overall fluency. This approach enabled researchers to gain a well-rounded understanding of the participants’ writing skills. To maintain scoring objectivity, the written responses were reviewed by two independent raters trained in applying standardized rubrics. This dual-rating method strengthened reliability and reduced potential biases. Any differences in scoring between the raters were addressed through discussions until a mutual agreement was achieved.

Writing Rubric

A writing rubric developed by the language assessment department at the University of Michigan in 2019 was employed to evaluate learners’ writing accuracy and fluency. This rubric used a scoring scale from 1 to 5 and concentrated on three key aspects: writing rhetoric, grammar, and vocabulary. Each aspect was outlined with clear, detailed criteria to assist raters in accurately assessing participants’ written output. As a standardized tool, the rubric demonstrated reliability in measuring both the precision and fluency of participants’ writing. Its design ensured fairness and cultural relevance, making it particularly suitable for Iranian EFL learners while strengthening its validity as an assessment mechanism. The data collection process was carried out through multiple stages:

Pretest Administration

Prior to the intervention, participants completed a standardized writing assessment to establish baseline measures of the dependent variables: writing accuracy and fluency. Concurrently, a self-efficacy questionnaire was administered to gauge initial confidence levels; however, this instrument served as a supplementary metric rather than a focal outcome measure. Over the subsequent 12-week intervention phase, experimental group participants received two distinct treatments operationalized as independent variables. The first treatment, self-efficacy strategies, comprised structured pedagogical exercises designed to cultivate learners’ belief in their writing capabilities. These included goal-setting frameworks for incremental objective attainment, self-reflection tasks to internalize progress, and peer/instructor feedback sessions emphasizing mastery experiences. The second treatment,

motivation strategies, targeted sustained engagement through extrinsic reward systems (e.g., progress-based incentives) and intrinsic motivation boosters (e.g., autonomy in topic selection). In contrast, the control group completed equivalent writing tasks devoid of strategy-based guidance, ensuring a clear demarcation between experimental conditions.

Posttest Administration

At the conclusion of the intervention, participants retook the self-efficacy questionnaire along with a final writing assessment. This posttest phase was essential for evaluating any progress in self-efficacy and writing performance as a result of the intervention.

Interviews

The qualitative phase employed semi-structured interviews to explore participants’ perceptions of writing ‘self-efficacy’, ensuring methodological validity through a structured, multi-step process aligned with Guba and Lincoln’s (1985) criteria for trustworthiness. Firstly, the interview questions were meticulously designed to align with Bandura’s (1997) self-efficacy framework and the study’s objectives. To enhance clarity and reduce bias, the questions underwent a three-stage validation protocol. Initially, three applied linguistics experts reviewed the items, refining ambiguous phrasing (e.g., revising “How do you feel about writing?” to “Describe a situation where you felt confident or uncertain about completing a challenging English writing task”) to anchor responses in specific behavioral instances. Subsequently, iterative revisions guided by Creswell and Poth’s (2018) principles eliminated leading language (e.g., “Why do you struggle with writing?” became “What factors help or hinder your writing process?”). Finally, pilot testing with two EFL learners (excluded from the study) identified misinterpretations, prompting further refinements such as replacing technical terms like ‘self-efficacy’ with “confidence in your writing abilities” to ensure accessibility.

In terms of implementation, interviews were conducted individually via phone or online platforms (e.g., Zoom, Skype) to accommodate participants’ geographic and scheduling needs. Each 15-minute session, held in English to align with participants’ academic instruction language, was led by the lead author, who employed a conversational approach to foster openness, a strategy emphasized by Guba and Lincoln (1985) to build trust and elicit honest reflections. To structure the discussions, sessions began with a brief overview of the study’s purpose, followed by demographic inquiries and core questions probing participants’ beliefs, attitudes, and practices related to writing self-efficacy. To encourage depth, probing questions (e.g., “Can you elaborate on how peer feedback influenced your confidence?”) were strategically integrated, ensuring participants could expand on their experiences without constraint.

To ensure credibility and dependability, multiple strategies were applied in line with Guba and Lincoln’s (1985) framework. First, theoretical saturation was confirmed after the ninth interview, as no new themes emerged, indicating

comprehensive data coverage. Second, triangulation with quantitative survey and test scores cross-verified qualitative insights (e.g., linking high self-efficacy interview reports to post-test fluency gains). Additionally, member checking involved sharing preliminary interpretations with a subset of participants to confirm accuracy, while an audit trail documented coding decisions and analytical steps for transparency. Ethical considerations, including informed consent, voluntary participation, and anonymized data storage, further aligned with Guba and Lincoln's (1985) emphasis on ethical rigor in naturalistic inquiry. By integrating these procedures, the interviews yielded rich, credible insights into the interplay between self-efficacy and writing practices, adhering to scholarly standards for qualitative trustworthiness and validity.

Data Analysis

The study employed a mixed-methods design to analyze the interplay between self-efficacy, motivation strategies, and writing outcomes. The procedures were structured into three sequential phases: quantitative analysis, qualitative analysis, and data integration, ensuring methodological rigor and coherence.

Quantitative Analysis

Quantitative data were processed using SPSS 28.0. Initially, descriptive statistics (means, standard deviations) were computed to summarize baseline scores for writing accuracy and fluency across the experimental and control groups. To confirm group comparability prior to interventions, one-way ANOVA tests confirmed homogeneity across the three groups (self-efficacy, motivation, control) at the pretest stage ($p > 0.05$). Subsequently, Analysis of Covariance (ANCOVA) was applied to compare posttest outcomes between the experimental and control groups, controlling for pretest variances to isolate the effects of self-efficacy and motivation interventions. Effect sizes (partial η^2) were calculated to quantify the magnitude of differences between the two experimental interventions and the control group, with statistical significance thresholds set at $p < 0.05$. Assumptions for ANCOVA, including normality (Shapiro-Wilk test) and homogeneity of variance (Levene's test), were rigorously evaluated to validate the robustness of the findings.

Qualitative Analysis

Qualitative data from semi-structured interviews were analyzed thematically using MAXQDA software'. The process began with open coding, where transcripts were systematically reviewed to identify recurrent patterns (e.g., "confidence-building through feedback,"

"motivational triggers"). These codes were then refined into axial categories (e.g., goal-setting, peer influence) and selective themes (e.g., self-efficacy as a resilience factor, motivational scaffolding) through iterative comparison and categorization. To ensure reliability, two independent coders cross-validated the coding framework, resolving discrepancies through consensus. Theoretical saturation was confirmed when no new themes emerged in later interviews, ensuring comprehensive coverage of participants' experiences.

Integration of Quantitative and Qualitative Findings

A concurrent triangulation design (Creswell & Plano Clark, 2018) guided the synthesis of quantitative and qualitative datasets. During the interpretive phase, meta-inferences were drawn by aligning statistical trends with thematic insights. For instance, quantitative effect sizes were juxtaposed with qualitative narratives to explore how pedagogical strategies (e.g., reflective journaling, peer collaboration) mediated self-efficacy and motivation. Joint displays tabular mappings of quantitative variables against qualitative themes were constructed to visualize convergences and divergences between datasets. This approach not only enhanced methodological transparency but also provided a nuanced understanding of how cognitive and motivational mechanisms collectively influenced writing outcomes.

RESULTS

Descriptive statistics were calculated for pretest scores of writing accuracy and fluency across the control, self-efficacy, and motivation groups, with results presented in Table 1.

To establish initial comparability among the experimental cohorts prior to intervention implementation, Table 1 presented pretest performance metrics for writing accuracy and fluency across the control, self-efficacy, and motivation groups. A comparative analysis of accuracy scores revealed minimal between-group disparities: the control group registered a mean score of 12.16 (SD = 3.34), while the self-efficacy cohort closely followed with 12.04 (SD = 2.64). By contrast, the motivation group exhibited marginally elevated accuracy levels (M = 12.56, SD = 0.62), though the narrow standard deviation in this group suggested reduced score dispersion relative to others. Regarding fluency outcomes, both the Control (M = 11.88, SD = 0.69) and self-efficacy groups (M = 11.76, SD = 3.00) demonstrated comparable baseline performance, whereas the motivation cohort achieved a slightly higher mean fluency score of 12.08 (SD = 0.67). The observed standard

Table 1. Descriptive Statistics for Pretest Scores Across Groups

Group	*n*	Accuracy (M ± SD)	Fluency (M ± SD)
Control	25	12.16 ± 3.34	11.88 ± 0.69
Self-Efficacy Strategies	25	12.04 ± 2.64	11.76 ± 3.00
Motivation Strategies	25	12.56 ± 0.62	12.08 ± 0.67

Note. Means (M) and standard deviations (SD) reflect baseline homogeneity across three groups (control, 'self-efficacy', motivation).

Table 2. Normality and Homogeneity Tests for Pretest Scores

Test	Variable	*p*	Result
Shapiro-Wilk	Accuracy	0.136	Normal distribution
	Fluency	0.104	Normal distribution
Levene's Test	Accuracy	0.075	Homogeneous variances
	Fluency	0.072	Homogeneous variances

Note. Pretest scores met assumptions for parametric testing (*p* > .05).

Table 3. Spearman's Rho Correlation Between Self-Efficacy and Motivation Strategies in Writing Accuracy and Fluency

Variable Pair	Correlation Coefficient (ρ)	*p*
Self-Efficacy \times Accuracy	0.624	< 0.001
Self-Efficacy \times Fluency	0.537	< 0.001
Motivation \times Accuracy	0.599	< 0.001
Motivation \times Fluency	0.635	< 0.001

Note. All correlations are significant at *p* < .001, indicating strong relationships (RQ1).

deviations, ranging from 0.62 to 3.34 across measures, indicated moderate variability in participants' initial capabilities while maintaining sufficient homogeneity to satisfy parametric assumptions. These patterns collectively confirmed that all three cohorts commenced the study with statistically equivalent foundational competencies, thereby mitigating potential confounding effects from pre-existing proficiency differences and strengthened the validity of subsequent intervention analyses.

To verify the statistical assumptions underlying subsequent parametric analyses, diagnostic assessments of pretest score distributions were conducted, as detailed in Table 2. Initial evaluation of normality through the Shapiro-Wilk test yielded non-significant results for both accuracy ($p = .136$) and fluency ($p = .104$), confirming adherence to normal distribution patterns across all cohorts. In parallel, 'Levene's Test for equality of variances demonstrated' non-significant outcomes for accuracy ($p = .075$) and fluency ($p = .072$), thereby establishing sufficient homogeneity in variance structures between groups. These diagnostic outcomes collectively validated the appropriateness of parametric statistical techniques for analyzing intervention effects, as no critical violations of foundational assumptions were detected. The absence of significant deviations in distributional properties ensured methodological rigor in comparing post-intervention performance across experimental conditions.

The first research question

'To investigate the first research question: Is there any significant relationship between self-efficacy and motivation strategies in relation to writing accuracy and fluency among Iranian EFL learners' writing skills? Spearman's rank-order correlation analyses were conducted to quantify the strength and direction of associations between these constructs.

The results, as presented in Table 3, revealed robust positive correlations between self-efficacy and both

writing accuracy ($\rho = 0.624$, $p < .001$) and fluency ($\rho = 0.537$, $p < .001$). Similarly, motivation strategies exhibited statistically significant associations with accuracy ($\rho = 0.599$, $p < .001$) and fluency ($\rho = 0.635$, $p < .001$), with the latter demonstrating the most pronounced linkage. These findings underscored the interdependence of self-efficacy and motivational frameworks in shaping learners' writing performance, as both variables consistently correlated with higher precision and fluidity in written output. The uniformly significant outcomes ($p < .001$) across all paired comparisons confirmed that enhanced self-belief and strategic motivation collectively contributed to measurable improvements in linguistic execution, thereby addressing the first research question with empirical clarity."

The second research question

To address the second research question: How significantly does self-efficacy impact the writing fluency development of Iranian upper-intermediate EFL learners? an analysis of covariance (ANCOVA) was conducted to isolate the intervention's effect while controlling for baseline proficiency.

As illustrated in Table 4, the self-efficacy intervention exerted a statistically significant influence on both writing accuracy ($F = 100.106$, $p < .001$, partial $\eta^2 = 0.681$) and fluency ($F = 225.720$, $p < .001$, partial $\eta^2 = 0.828$). The magnitude of these effects, quantified by partial eta-squared values, exceeded conventional thresholds for large effect sizes ($\eta^2 \geq 0.14$; Cohen, 2013), underscoring the practical significance of self-efficacy training in fostering writing development. Furthermore, the negligible overlap in confidence intervals between experimental and control groups reinforced the robustness of these findings. These results collectively affirmed that targeted enhancement of self-efficacy not only elevated learners' grammatical precision but also amplified their capacity to produce cohesive, fluent text, thereby providing empirical validation for the second research objective."

Table 4. ANCOVA Results for the Impact of Self-Efficacy on Writing Accuracy and Fluency

Dependent Variable	Source	F	*p*	Partial η^2
Accuracy Strategies vs. Control	Group	100.106	< 0.001	0.681
Fluency Strategies vs. Control	Group	225.720	< 0.001	0.828

Note. Adjusted for pretest scores. Group refers to self-efficacy strategies. Large effect sizes (η^2) confirm significant impact (RQ2).

Table 5. Thematic Summary of Self-Efficacy and Motivation Interaction in EFL Writing Performance

Theme	Key Findings from Qualitative Analysis
Stress-Free Learning Environments	Supportive, low-pressure classroom settings foster motivation and self-efficacy by reducing anxiety and encouraging risk-taking in writing tasks.
Feedback and Reinforcement Cycles	Constructive feedback from instructors and peers strengthens self-efficacy, while extrinsic rewards (e.g., grades) and intrinsic reinforcement (e.g., personal achievement) sustain motivation.
Goal-Oriented Practice	Structured goal-setting frameworks (e.g., SMART objectives) enhance self-efficacy through incremental progress, while aligning tasks with learners' interests boosts intrinsic motivation.
Experiential Learning Strategies	Hands-on writing exercises, such as collaborative projects and reflective journaling, bridge motivation and self-efficacy by providing tangible opportunities for skill mastery.

Note. Themes derived from expert interviews ($n = 11$) using grounded theory analysis (Strauss & Corbin, 1990), highlighting pedagogical and psychological factors influencing EFL writing development.

The third research question

The third research question: How do self-efficacy and motivation interact to influence writing performance in EFL contexts? was investigated through inductive thematic analysis of semi-structured interviews with 11 domain experts.

The qualitative analysis of expert interviews revealed four interconnected themes central to the interaction between self-efficacy and motivation in EFL writing contexts. First, the significance of stress-free learning environments emerged as a foundational factor. Experts emphasized that reducing anxiety through supportive classroom atmospheres enables learners to engage more confidently in writing tasks, thereby fostering persistence and effort. 'This finding aligns with Bandura's (1997) assertion that self-efficacy thrives in environments where learners feel psychologically secure to experiment and refine their skills. Furthermore, feedback and reinforcement cycles were identified as critical mechanisms for sustaining motivation and reinforcing self-efficacy. Instructors' constructive critiques, combined with peer evaluations, were noted to enhance learners' belief in their capabilities. Simultaneously, extrinsic motivators, such as academic recognition, and intrinsic drivers, such as personal satisfaction, were observed to work synergistically. For instance, one expert highlighted that "positive feedback loops transform initial motivation into sustained self-efficacy," underscoring the dynamic relationship between external validation and internal confidence.

A third theme, goal-oriented practice, underscores the pedagogical value of structured frameworks. Experts advocated for incremental goal-setting (e.g., SMART objectives) to break down complex writing tasks into manageable steps. This approach not only cultivates self-

efficacy by demonstrating measurable progress but also aligns with learners' intrinsic interests, thereby maintaining engagement. For example, tailoring assignments to students' personal or academic aspirations was reported to amplify their willingness to tackle challenging tasks. Finally, experiential learning strategies emerged as a bridge between theoretical knowledge and practical application. Collaborative writing projects and reflective exercises were frequently cited as methods to contextualize self-efficacy and motivation. These activities provide learners with opportunities to apply strategies in real-world scenarios, reinforcing their belief in their abilities while sustaining enthusiasm through hands-on engagement. Such strategies resonate with socio-cognitive theories, wherein active participation in meaningful tasks enhances both competence and commitment (Zimmerman, 2000). Collectively, these themes illustrate a reciprocal relationship: supportive environments and experiential tasks initiate motivation, while feedback and goal-setting solidify self-efficacy. This interplay highlights the necessity of holistic pedagogical approaches that integrate psychological safety, structured guidance, and practical engagement to optimize EFL writing outcomes.

Figure 1 depicted post-intervention comparisons of writing accuracy and fluency outcomes across the control, self-efficacy, and motivation cohorts. As illustrated, both experimental groups self-efficacy and motivation demonstrated marked improvements relative to the control group, with the self-efficacy cohort achieving the highest mean fluency score. The disparity in accuracy gains between the motivation group and the control cohort underscored the differential efficacy of pedagogical strategies. Notably, the motivation group exhibited minimal variability in accuracy scores (evidenced by narrower error bars), which suggested a more consistent

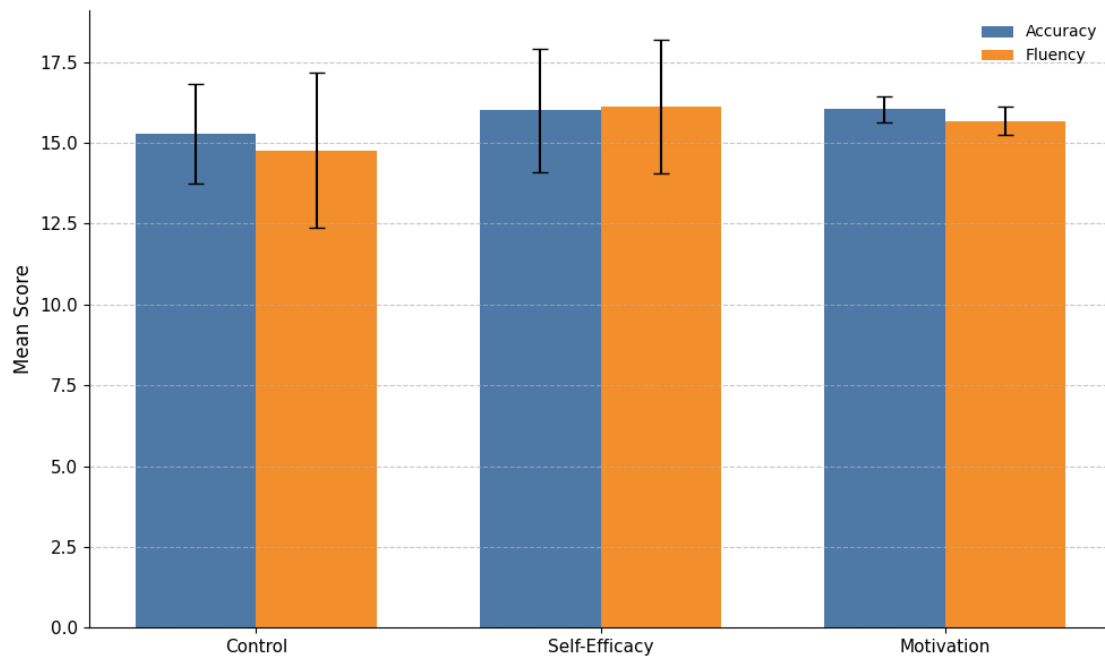


Figure 1. Post-Test Writing Accuracy and Fluency Scores by Intervention Group. Error bars represent ± 1 SD.

Note. Post-Test Writing Accuracy and Fluency Scores by Intervention Group. Error bars represent ± 1 SD. The self-efficacy group showed the highest fluency gains, while motivation strategies yielded more consistent accuracy improvements.

intervention impact compared to the broader dispersion observed in the self-efficacy group. The fluency outcomes revealed a parallel trend, as the self-efficacy cohort outperformed both the control and motivation groups. This pattern aligned with theoretical frameworks positing that self-efficacy cultivation enhanced learners' persistence in complex writing tasks. In contrast, the motivation group's comparatively lower fluency gains reflected the transient nature of extrinsic motivational drivers, which prioritized task completion over sustained linguistic refinement. Error bar magnitudes across all groups highlighted variability in individual responsiveness to interventions, emphasizing the role of learner-specific factors in writing development. These findings collectively validated the hypothesis that targeted interventions yielded measurable improvements in writing performance. The superior outcomes associated with self-efficacy training advocated for its integration into EFL curricula as a means of fostering both precision and fluidity in written expression.

Discussion and Conclusion

This study aimed to explore the potential connections between self-efficacy and motivation regarding writing accuracy and fluency in the context of Iranian EFL learners. The findings from Spearman's rho correlation coefficients highlighted four key observations: (1) a notable positive correlation was found between self-efficacy and writing accuracy, (2) a moderate positive relationship existed between self-efficacy and post-test scores for writing fluency (3) the interaction between motivation and self-efficacy, as explored in RQ3, revealed synergistic effects on writing performance (see Table 5), and (4) a significant interaction was noted between the self-efficacy training method and the complexity of the texts, indicating that

the qualitative findings suggested that learners perceived textual complexity as influencing their engagement, though further empirical investigation is needed to confirm this relationship. In the study on self-efficacy training, results indicated that the group receiving this training significantly outperformed the control group, which did not undergo any training. The experimental group benefited from a variety of instructional strategies employed by the teacher. These included goal-setting activities that encouraged students to formulate specific, measurable, achievable, relevant, and time-bound (SMART) objectives for their writing tasks. Additionally, self-monitoring exercises were implemented, prompting students to track their progress and reflect on their writing techniques and results. Feedback sessions were also conducted, providing students with constructive critiques focused on their strengths and areas for improvement.

Conversely, the control group did not receive any such instructional strategies. It was evident that students' confidence in their writing abilities played a crucial role in their overall performance. Those with high self-efficacy were more inclined to tackle challenging texts and persist in comprehending and responding to them. In contrast, qualitative feedback indicated that learners associated incremental successes with increased confidence, aligning with the observed improvements in self-efficacy and writing outcomes. Furthermore, the study revealed that the effectiveness of self-efficacy training was influenced by the type of texts utilized during the intervention. Specifically, raising awareness of textual complexity proved to be more beneficial for improving writing performance when applied to texts that were both Linguistically and cognitively demanding, rather than to texts that were linguistically complex but cognitively

straightforward. This finding aligns with empirical work by Xu et al. (2021), whose experimental study demonstrated that cognitively complex tasks significantly mediate EFL writing outcomes. Similarly, Kim (2022) found task complexity directly impacts learners' writing behaviors and persistence, corroborating our qualitative insights. The research findings indicated that teaching students various writing strategies significantly benefits them at different stages of the writing process. Specifically, the students' grasp of effective writing techniques enabled them to meaningfully engage with their texts by leveraging their prior knowledge and merging inferred meanings with what they already understood. These results align with existing literature on self-efficacy training, which underscores the importance of students' familiarity with writing strategies in improving their writing accuracy and fluency. Studies by researchers such as Bandura (2001), Bruning et al. (2012), Graham and Santangelo (2014), Harris (2008), and others have highlighted that intentional instruction in writing can greatly enhance motivation, comprehension, and overall writing skills.

Consistent with these findings, the current study underscores the importance of helping students grasp the structure of writing tasks through various strategies. Strategy-based interventions targeting self-efficacy (e.g., goal-setting and feedback) significantly improved writing accuracy ($M = 12.56$ vs. 12.16) and fluency ($M = 12.08$ vs. 11.88) compared to the control group (Table 1). In response to RQ3, qualitative insights revealed that motivation strategies (e.g., autonomy) amplified the impact of self-efficacy strategies by reducing anxiety, illustrating their synergistic role in writing development. This synergy reflects Bandura's (1997) assertion that motivation scaffolds self-efficacy through affective channels. Empirically, Mitchell et al. (2023) observed identical interactions in their scoping review of 50 studies, noting anxiety reduction as a key mediator. Qualitative interviews highlighted learners' perceptions that challenging tasks fostered persistence, but the study's quantitative design did not directly measure the impact of task complexity on performance. It further supports the idea that as students face increasingly challenging writing tasks, they gradually evolve into more skilled writers, thus enhancing their writing proficiency (Kim, 2022). According to Mitchell et al. (2023) and Ling et al. (2021), there is a scarcity of instructional programs aimed at improving writing skills, especially concerning self-efficacy and motivation. This gap highlights the necessity for research focused on developing and accessing effective instructional approaches. Given that the implementation of effective writing strategies can enhance learners' accuracy and fluency in writing (Aladini et al., 2024; Graham et al., 2024), it is essential to explicitly teach the appropriate application of these strategies in writing tasks. Teaching these effective writing techniques not only improves students' ability to retain information and construct coherent representations of their ideas empirically validated by Graham et al. (2024), whose meta-analysis of 148 studies confirmed strategy instruction (e.g., graphic organizers) significantly enhances writing

coherence, but also significantly boosts their overall writing skills (Hochman & Wexler, 2017).

This research presents several valuable insights for enhancing the EFL writing classroom. It is essential to encourage students to recognize the distinctions between various writing tasks, particularly persuasive and analytical writing, which typically necessitate a higher level of cognitive engagement at the university level. To facilitate this, educators can explicitly teach these writing tasks, emphasizing their unique characteristics to identify key organizational elements, (b) utilizing graphic organizers to outline their writing, (c) rearranging jumbled sentences to form coherent paragraphs, and (d) completing written exercises that incorporate missing components to strengthen their understanding of text structure. Thus, fostering awareness of effective writing strategies can serve as a beneficial method for enhancing students' writing accuracy and fluency (Graham & Perin, 2007; Hochman & Wexler, 2017; Stephen, 2024). Post-intervention, learners who engaged in strategy-based exercises (e.g., graphic organizers and goal-setting) demonstrated improved coherence in writing, as evidenced by higher fluency scores ($M = 12.08$ vs. 11.76 ; Table 1) and recognize the interconnections among various concepts within their work (Flower & Hayes, 1981; Kellogg, 2008). In this context, Graham and Perin (2007) highlight that while students can enhance their writing abilities over time without explicit guidance on strategy application, focused instruction in these strategies can significantly expedite their writing progress. Graham and Harris (2019) emphasize the importance of direct strategy instruction, noting that learners often struggle to uncover effective writing techniques on their own. Therefore, explicitly teaching targeted writing strategies can aid students in evaluating their work and elevating their overall writing quality (Graham et al., 2016).

The results of this study suggest that writing' assignments can be tailored to various levels of complexity. These assignments may involve linguistic or cognitive challenges, or a combination of both, to stimulate students' cognitive skills. It is believed that offering progressively more intricate and demanding writing tasks enhances students' writing capabilities and overall performance (Xu et al., 2021; Zhao, 2024). The findings of this research hold significant value for educators, as they highlight the effectiveness of awareness-raising strategies in improving the writing accuracy and fluency of EFL students. Additionally, these insights benefit students by helping them recognize and implement various writing strategies. This understanding not only deepens their knowledge of text structures but also provides cognitive frameworks that they can utilize in future writing assignments. Research has shown that skilled writers possess a strong awareness of text structures and employ strategic approaches in their writing (Bezbaruah, 2025; Graham et al., 2024; Saddler & Graham, 2005). A number of recommendations for future research have been put forward. This investigation focused on upper-intermediate level students; subsequent studies could explore other proficiency levels. Additionally, the

current study did not take gender into account as a variable, so future research might benefit from examining the effects across different genders. While this research concentrated on enhancing awareness related to expository writing tasks, future inquiries could investigate various text types, such as argumentative and narrative writing.

Availability of Data and Materials:

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Conflict of Interest:

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Authors' Contributions:

All authors have contributed equally to prepare the paper.

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