



EFFECTS OF EXPLICIT INSTRUCTION IN METACOGNITIVE WRITING STRATEGIES ON MOROCCAN ENGLISH DEPARTMENT LEARNERS' WRITING PERFORMANCE: AN EXPERIMENTAL STUDY

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Abstract:

Given the high momentum gained through prior evidence-based research on the synergy between metacognition and writing performance, the current study is oriented toward testing the impact of explicit metacognitive writing strategies instruction (EMWSI) on Moroccan university-level learners' expository and argumentative writing achievement in English (L3). Based on a one-group pretest-posttest design, this experimental study targeted an EFL group consisting of 55 university-level students. A paired-samples t-test was adopted with a view to drawing a clear-cut distinction between the pre-test and post-test writing outcomes attained by a single group of participants (n=55). In this regard, a variety of research instruments were implemented such as the writing tests (i.e., pre-test, post-test), the writing strategy intervention, and the weekly out-of-class writing assignments (expository & argumentative essays). The results uncovered that the targeted EFL subjects did benefit from the conducted explicit metacognitive writing strategies (i.e., planning, monitoring, evaluating) instruction as they achieved tangible, developmental advancement in writing performance scores at post-testing. Hence, a wide range of strategic courses of action relative to L3 writing instruction and pedagogy within the higher education landscape are recommended, and a host of stark limitations regarding the study are offered.

Keywords: metacognition, metacognitive writing strategies, self-regulation, writing strategy instruction, L3 writing performance

1. Introduction

The core viability of metacognition, as an effectual plan of action taken by learners for executing a particular cognitive task (i.e., reading, writing, speaking), has been

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underscored and accorded primary value by a group of eminent researchers (e.g., Baker & Brown, 1984; Flavell, 1981; Garner, 1987; Teng & Yue, 2023; Veenman *et al.*, 2006; Wenden, 1998). In fact, its overarching role in facilitating the skillful performance of a cognitively-oriented activity (i.e., writing, reading) cannot be overlooked, nor can it be precluded insofar as metacognitive thinking immensely helps learners to trace a coherent course of action toward quality-driven achievement in myriad learning endeavors. More explicitly, the potential ability to plan, self-regulate, self-monitor, and assess a learning-based task is utterly dependent on metacognition in differing ways and to substantive degrees. Thus, it is reasonable to put forth that metacognition can only be put into actual practice while performing a given cognitive task via the engagement in planning, monitoring, and evaluating, which are deemed the constitutive essentials underpinning metacognitive awareness (e.g., Flavell, 1981; Lv & Chen, 2010). The latter, occupying an indispensable part in evoking higher-order thought processes and orchestrating deep-level heuristics, contributes to the fulfillment of any assigned task in an efficient fashion. This leads to the articulation of the express perspective that metacognition is firmly predicated on learners' sense of reasoning, sense of purpose, rationality, and intentionality.

Admitting the vital contribution of metacognition to the improvement of learners' writing performance, as has been put forth in a myriad of seminal scholarly studies (e.g., Aripin & Rahmat, 2019; Cer, 2019; Kellogg, 1996; Khosravi *et al.*, 2023; Saleh *et al.*, 2025; Sitco, 1998; Teng, 2020, Teng *et al.*, 2021; Vijayan *et al.*, 2025; Wei *et al.*, 2014; Xiao, 2007), it is plain that the act of composing EFL written content is regulated and conditioned by metacognitive reflection and critical thinking. For clarification purposes, language learners' written production cannot aspire to the rigorous, sophisticated standards of academia unless they are exposed to the generic metacognitive writing strategies (MWSs) such as planning, monitoring, and evaluating, which fundamentally constitute the robust pillars of competent, diligent writing performance. This can be achieved through the purposeful delivery of metacognitive writing strategy instruction (MWSI) for alerting learners to the core essentiality, typical nature, and practical application of the basic heuristic processes and strategic operations. Accordingly, it is legitimate to foreground the premise that metacognition is considered an influencing variable on learners' meta-level strategic moves that ensure the developmental revamping of the written output, especially in English as a second/ foreign language (ESL/EFL).

As declared by Silva (1993), writing in a foreign language (FL) is cognitively demanding and apparently ineffective amongst learners. On the basis of this articulated principle, it is posited that many EFL university-level students do encounter a spectrum of eventual difficulties and manifest hindrances in advanced-level EFL writing. This stated view is based on both learners' frequent complaints and their grades on the writing tests (i.e., essay writing). Assuming the attested fact that advanced-level writing in English (L3) imposes cognitive load on learners' working memory (Eggen & Schellenberg, 2010), it is undeniable that sensitizing learners about the key importance of planning strategies (i.e., goal-setting, background knowledge activation, idea listing)

monitoring strategies (i.e., self-monitoring, self-regulating, self-questioning), and evaluating strategies (i.e., content reprocessing, reviewing, editing) is of paramount importance for upgrading their writing competency and high-level composing heuristics. By taking account of these stated assumptions and considering the impediments confronted by learners during the cognitive process of L3 writing on a multiplicity of assigned topics (e.g., narrative, descriptive, expository, argumentative), this experimental study is intended to test the overriding usefulness of explicit metacognitive writing strategies instruction (EMWSI) in the enhancement of Moroccan university-level learners' L3 expository and argumentative written output.

2. Literature Review

2.1. Metacognition

The concept of metacognition, denoting 'thinking about thinking' or 'knowing about knowing' within the dynamic discipline of cognitive psychology, was first implemented by John Flavell in the late 1970s. According to Flavell (1976), metacognition, an alternative perceptual form of 'cognition about cognition', is conceptualized as the overall knowledge involving cognitive processes for carefully monitoring and controlling the execution of different learning-oriented tasks (i.e., writing, reading). This reveals that metacognition entails not only creative and critical thinking for the facilitation of the undertaking of a wide spectrum of highly demanding academic endeavors, but it also necessitates rational reflection, conscious processing modes, and reasonable meta-processing. These constitutive components, representing metacognition in all its plain properties and explicit manifestations, occupy a crucial part in both the improvement of the necessary procedures put into practice during task execution and the upgrading of the conceived quality of processing modalities resorted to by learners in coping with the higher-order demands of any cognitive activity (i.e., writing, reading) within the realm of academia.

Viewed both as a sophisticated form of self-initiated thinking and an academic enabler for easing the execution of differing high-level tasks relevant to scholarly studies, metacognition assists learners in planning, monitoring, self-regulating, and assessing their cognitive performance (Garner, 1987; Veenman *et al.*, 2006). It enables learners to assume full control over the meta-strategic processes used in coping with the assigned tasks that require the possession of declarative knowledge (i.e., consciousness of one's cognitive capacities, task requirements, and strategy use), procedural knowledge (i.e., cognizance of how to employ strategies), and conditional knowledge (i.e., awareness of when, where, and why to use strategies) (Brown, 1987; Schraw & Moshman, 1995) on the part of learners for achieving academic success. This uncovers that metacognitive thinking, entailing attentional operations, psychological mechanisms, and control processes on a massive scale, is central to assuring high-quality achievement in such highly complex cognitive skills as reading, writing, speaking, and listening, which are

part and parcel of any language (e.g., Arabic, French, English, Amazigh, Spanish, Portuguese, Italian, Russian).

Most significantly, metacognition, delineated as a complex 'fuzzy' construct in the cognitive and psychological literature (e.g., Brown, 1987; Flavell, 1976), involves an inventory of self-reflective skills (Lam, 2018). In plain terms, the critical reflection on one's thoughts, the systemic orchestration of strategic moves, and the actual performance of the cognitive activity exhibit the meta-level function of the human memory system. The latter is potentially accountable for enabling individuals to take a cohesive course of action with a view to storing, retrieving, processing, encoding, and decoding differential pieces of information and conceptual discourse. Involving neural mechanisms and operations more substantially, the cognitive memory system equips learners with the toolkits and directs them toward the fitting pathways for meeting the required standards of efficiency, especially in performing such cognitively complex processes as reading, writing, and translating. For the sake of illustration, human cognition performs a pivotal role in processing thoughts, attitudes, and assumptions (Wang & Chiew, 2010) and evaluating their perceived relevance to the task under critical study. This can only be realized if learners immerse themselves in metacognitive reflection, fluid meta-synthesis, and flexible reasoning for operating their thought processes, high-order strategies, and self-regulatory mechanisms.

Overall, metacognition, embodying such core variables as knowledge of cognition and regulation of cognition (Baker & Brown, 1984), assists learners to strategically self-regulate, manage, and direct their thinking processes (Msaddek, 2016, 2025). Reflecting all the multifaceted forms of metacognitive knowledge (i.e., declarative, procedural, and conditional knowledge), metacognitive experience, and strategy use (Garner, 1987), metacognition remains an autonomous, mature form of self-regulation/ self-control for resiliently tackling a multiplicity of cognitively demanding learning-oriented tasks (i.e., writing, reading, speaking) in English (L3), French (L2), Arabic (L1), or even in other languages (e.g., Amazigh, Spanish, Portuguese, German, Italian, Russian). Thus, metacognition, self-regulation, self-control, self-reflection, and critical thinking are synergistically interconnected as they are potentially contributive to aiding the execution of myriad cognitive tasks (i.e., writing, reading) within the broad sphere of academia.

2.2. Role of Self-regulation in Learning

Self-regulation is viewed as "*processes by which the self intentionally alters its own responses, including thoughts, emotions, impulses, performance, and behaviors*" (Baumeister & Vohs, 2018, p. 79). It is a proactive process whereby learners put forward goals for their learning and engage in monitoring and regulating their cognition and behavior (Pintrich, 2000). Put succinctly, self-regulated learning (SRL), facilitating academic achievement in various ways and advancing it to differential degrees, is a multifaceted act that involves the flexible deployment of executive skills and heuristic strategies which play a facilitative role in carrying out a set of learning-relevant tasks (i.e., writing, reading, speaking). This reveals that the dynamic engagement in self-regulated learning (SRL), as

a mature form of coping with a vast plethora of learning-oriented tasks that are predominantly cognitive in essence, helps learners to take charge of their learning practices, use cognitive, metacognitive and socio-emotional strategies and regulate their adopted course of action in a diversity of learning endeavors.

As expressly declared by many well-established and well-published researchers (e.g., Wang *et al.*, 2013; Wenden, 1991; Zimmerman, 1990, 1995) in the extant cognitive psychology literature, self-regulation assists learners to muster up their cognitive capacities and motivate themselves for coping with differential task demands imposed on them within the scope of academia, especially in writing, reading, speaking, listening, and translating. This evinces that through the use of self-regulatory strategies/ heuristics in dealing with such complex tasks as writing and reading, learners can succeed in both abiding by the efficiency-bound standards of academia and achieving the intended positive results in their learning-oriented endeavors. Therefore, self-regulation, incarnating all the psychological aspects and grounded in strategic behaviors that are involved in learning performance, aids learners, both skilled and unskilled, in flexibly charting the proper pathway toward undertaking the assigned tasks in an accomplished, sophisticated manner.

Most crucially, self-regulation, as a potential form of metacognitive thinking (Rahimi & Abedi, 2015), is heavily reliant upon reflection in action and reflection on action. This reveals the challenges presented by a varied corpus of learning-oriented tasks (i.e., writing, reading, speaking) requiring learners to reflect upon the steps taken during the performance of the task and rethink the quality of the finalized version of the generated learning-relevant output, namely in core productive skills such as writing and speaking. Granted the reflective nature and the goal-oriented scope of self-regulation as a robust medium through which differential study-related tasks can be accomplished diligently, it is incumbent upon learners to self-regulate their meta-strategic behaviors and involve themselves in utter self-control with a view to overcoming the obstacles that they may encounter whilst coping with the cognitive demands of the task (Wenden, 1991). The immersion in self-regulatory mechanisms and neurocognitive processes helps learners to be in full charge of the assigned task, and thus detect any probable pitfalls that may adversely impact the overall quality of their learning achievement. This unveils that the self-regulatory processes deployed throughout the procedure of tackling any type of assigned task constitute the effectual means of attaining the set learning-relevant goals.

As some distinguished researchers and prominent psychologists (e.g., Baumeister & Vohs, 2018; Wenden, 1991) straightforwardly postulate, self-regulation, being conceptualized as an embodiment of self-efficacy beliefs and control processes, is used interchangeably with self-control in the global literature on cognitive and educational psychology. Both of the two concepts (self-regulation and self-control) foreground a range of overlapping properties and plain commonalities since they are intricately associated with autonomy and sense of agency, which are the fundamental determinants of sophisticated high-order self-directed learning. Further, it is plausible that learners' adoption of SRL across differential learning-bound assignments falling within the

confines of academia is an authentic reflection of their ability to exert a substantive amount of effort and depend upon selective attention resources as well as working-memory mechanisms that assure marked improvement at the level of task execution. Thus, as emphatically affirmed by Schunk (2005), self-regulation, among other such influencing factors as motivation, persistence and goodwill, culminates in successful learning outcomes.

2.3. Writing as a Neurocognitive Process

Writing is deemed to be one of the most complex cognitive activities in the vast universe of academia. It is a neurocognitive process (Decker *et al.*, 2016) requiring such meta-strategic procedures as mobilizing one's cognitive effort, resorting to working memory mechanisms, and reflecting upon the content to be produced. For the sake of clarity, transcribing one's thoughts into high-quality written form and rethinking the embedded stated views, assertions, and ideational content entail the fostering of a conscious and cautious approach in an attempt to ensure utmost proficiency, manifest efficiency, and plain accuracy, which are the sturdy pillars of an efficacy-driven type of writing. Considered a cognitively demanding practice and typified by a high degree of complexity (Silva, 1993), writing necessitates a sophisticated kind of reflective thinking on an immeasurable scale (Lam, 2018) in order to align with the set prescriptions and adhere to the accurate norms of an acceptable form of academic writing. Obviously, not only does writing, as a promising channel allowing the mental translation of ideas into written output, require the possession of a vast spectrum of vocabulary items, grammatical rules, and syntactic knowledge on the part of EFL learners, but it also entails taking ownership of such deep-level strategic moves as planning, monitoring, and evaluating for synthesizing and composing an efficiency-oriented type of L3 written discourse.

In essence, the effortful nature of writing (Lam, 2018; Silva, 1993), namely in English as a foreign language (EFL), prompts learners to immerse themselves in a concrete course of action that entitles them to produce an advanced-level cohesive written output. That is, the performance of L3 writing, as a systematic mental process necessitating automatic and controlled processing modes as well as a robust sense of agency to apparently various degrees, is contingent upon both substantive metacognitive knowledge (Teng, 2020) (i.e., declarative procedural, and conditional knowledge) and substantial metacognitive experience gained through the sustained, frequent act of producing high-level written discourse relatable to a diversity of insightful academic topics. This showcases that writing in EFL, entailing the reflection of self-regulated and self-reflective behaviors on the part of learners (Lam, 2018), remains a dynamic, multi-step process which rests upon critical thinking capacities as well as deeper-level cognitive mechanisms.

In examining the extant literature relevant to cognitive psychology, it is found that working memory (WM) occupies a pivotal part in the writing process (Baddeley, 1986; Hayes, 1996; Kellogg, 1996). This unearths that the dynamic act of discourse generation/

production is regulated and directed by the working memory system insofar as learners are expected to allocate their cognitive capacities to the writing task and access their stored knowledge by activating their 'short-term' as well as 'long-term' working memory. In other terms, the conceptualization of writing as a higher-order thinking mechanism demanding the richness and density of lexis unravels the core importance of the human memory system, which is responsible for retrieving, generating, organizing, and weaving ideas together, thereby making them syntactically coherent and semantically cohesive. Hence, the chief function of the neural patterns and neurocognitive mechanisms in the process of L3 writing holds substantial potential in transcribing one's thoughts and perspectives into a coherent written form (Decker *et al.*, 2016). This underpins the claim that writing, as an iterative process, is characteristically typified by stark complexity (Silva, 1993) in the sense that it entails critical thinking dispositions, self-regulatory processes, sufficient vocabulary knowledge, and linguistic proficiency which are the determinants of writing maturity in EFL tertiary education settings.

Writing efficiently and expertly on a multiplicity of subject matters within the broader parameters of academia entails the provision of pertinent content that is lexically rich and syntactically dense. In express terms, the meaning-making procedure cannot be effected by student-writers without utmost mastery of rich lexical items which are the overarching building blocks of academically acceptable paragraphs that are incorporated in differing typologies of written discourse ranging from essays, reports, summaries, articles, monographs to theses. This features that quality writing, requiring metacognitive regulation (Cer, 2019; Teng, 2020) and self-reflective processes (Lam, 2018) to a greater extent, is an essential productive skill that occupies a functional, intrinsic part in facilitating the articulation of internal thoughts, perceptions, epistemologies, and knowledge claims. In this regard, many distinguished researchers (e.g., Craswell & Poore, 2011; Gopee & Deane, 2013; Zimmerman & Bandura, 1994) outstandingly declare that academic success is conditioned by the quality of writing exhibited by learners within the evolving academic landscape.

Thus, it can be articulated that metacognitive writing strategies (MWSs) are of pivotal significance and potential value in the multidimensional writing procedure (Huang & Zhang, 2022). They enable learners to avoid any probable writer's block that can impede their ongoing progress in the L3 composing activity. In specific terms, planning one's course of action, monitoring one's writing progression, and evaluating one's final written product are the basic essentials that undergird high-quality writing in all its explicit characteristics and properties. This uncovers that metacognition/metacognitive thinking is core to writing achievement (Lv & Chen, 2010; Wang *et al.*, 2025) as it helps student-writers to manage, organize, and enunciate their thoughts in the writing act in a highly effective, skilled mode. Apparently, whilst planning can be put into practice by learners before embarking on the systemic writing process, monitoring can be exercised during the process of composing a piece of writing for spotting any unexpected inadequacies and loopholes. As regards evaluating, which is executed at the

post-writing stage, it pushes student-writers to assess the quality of their written production and gauge the effectiveness of the strategies deployed throughout the writing procedure. In essence, the performance of L3 writing cannot be conducted skillfully without the efficient use of these core generic MWSs (i.e., planning, monitoring, evaluating), which formulate the basal ingredients of a cohesive composing process.

2.4. Writing Strategy Instruction (WSI)

It is of paramount significance to state that writing strategy instruction (WSI) contributes to the progressive development of learners' metacognitive writing ability (Cer, 2019; Xiao, 2007). This features that the ultimate attainment of academic excellence at the level of writing emanates from the delivery of explicit, structured writing strategy training. The latter purposely aims at altering the strategic writing behaviors and strengthening the self-efficacy beliefs and rhetorical patterns fostered by learners throughout their academic journey. Yet, it is plausible that linguistic proficiency, as emphatically argued by many researchers (e.g., Lu & Ai, 2015; Li, 2023), plays a complementary role insofar as it aids learners in flexibly articulating their inner thoughts and conceptual views pertaining to diverse topics. This immensely endorses the underlying notion that language proficiency, along with systematic WSI, does facilitate the fluid retrieval of information from memory and the smooth encoding of the retrieved thoughts into the written discourse (i.e., paragraphs, essays, reviews, summaries) among EFL student-writers at the tertiary education level.

In effect, the sturdy potential held by WSI has been markedly highlighted by a group of well-established researchers (e.g., Cer, 2019; Han, 2024; Liu *et al.*, 2022; Wang *et al.*, 2025) interested in second/ foreign language (SL/ FL) writing. It enables learners to foster a mature form of metacognitive regulation and monitoring capacity for generating a high-quality written text that is fittingly congruent with the academic paradigms and prescriptions. Viewed as robust scaffolding within the higher education setting, WSI is resolutely intended to expose student-writers to the core stages that make up the multifaceted cognitive process of L3 writing. In manifest terms, initiating learners into planning, monitoring, and evaluating strategies can trigger them to assume thorough responsibility for the efficacious production of written work and to engage in a reflective, reflexive mode of thinking that ensures the smooth expression of ideas, assumptions, and knowledge claims. Clearly, only via alerting learners to the potentiality of the key metacognitive writing strategies (MWSs) (i.e., planning, monitoring, evaluating) through WSI is it possible that they will cultivate higher-level metacognitive thinking and deep-level meta-reasoning that result in revamped composing mechanisms and engender the ultimate writing growth in English (L3).

Hence, utter advocacy for metacognitive writing strategy instruction (MWSI) and its instrumental role in aiding learners to maintain rigor and integrity in SL/ FL writing within the parameters of academia has been affirmed in the large body of literature relevant to systemic metacognitive writing instruction. For instance, Lv and Chen (2010) addressed a cohort of 86 Vocational College students (Experimental Group: n=44; Control

Group: n=42). The experimental group was taught metacognitive writing strategies (MWSs) for a semester-long period, whereas the controls received the traditional writing instruction. Their reached findings reveal that MWSI did contribute to the drastic improvement of the treatment group's writing performance and manifest its core, utmost efficacy in potentially optimizing the learners' metacognitive abilities and self-regulatory mechanisms in the performance of the writing tasks.

Moreover, by targeting a cohort of 44 secondary school-level learners (Control Group: n=21; Experimental Group: n=23), Cer (2019) carried out a quasi-experimental study by instructing the experimental group in a repertoire of metacognitive writing strategies (MWSs) in order to substantiate the dynamic effect of 'knowledge of cognition' and 'regulation of cognition' on the targeted learners' composing heuristics and writing practices. The study's findings plainly evinced that the developmental, increased enhancement of the learners' writing performance is fundamentally predicated on the systematic use of MWSs. Thus, the quasi-experiment underscores the intrinsic viability of the role of MWSI in consolidating the student-writers' metacognitive capacities and skills and revamping their writing achievement in an effectual manner.

Another seminal empirical study, which addressed 72 first-year university students, was systematically undertaken by Huang and Zhang (2022). The intervention-based study involved two groups which were assigned to differential conditions (control condition & experimental condition). The experimental group (n=40) was provided with a systematic process-genre writing instruction. As to the comparison group participants (n=32), they received writing instruction in the conventional mode. The research study foregrounded the plausible conclusion that the process-genre writing training incrementally boosted the strategy-trained students' systematic use of metacognitive writing strategies (MWSs), self-regulated monitoring, as well as genre knowledge/awareness in accomplishing differing writing tasks.

In addition, Wang *et al.* (2025) conducted a quasi-experimental study by exposing the experimental group (n=32) to metacognitive instruction and collaborative writing which significantly improved their writing achievement compared to the control group (n=30) that did not reflect any concrete enhancement at the level of writing scores. Further, targeting a sample of 60 advanced EFL learners (Treatment group: n=30; Control Group: n=30), Moshirirad *et al.* (2025) investigated the perceived impact of blended metacognitive writing strategy instruction (MWSI) on Iranian advanced-level learners' metacognitive awareness and writing performance. Their attained research outcomes indicate that the experimental group did outperform the group in the control condition at the level of writing test scores. Thus, they put forth that MWSI is a potentially robust predictor of improved EFL writing achievement.

The above-cited groundbreaking research studies, which are purely empirical in essence, manifest the inherent centrality of MWSI in assisting learners to nurture higher-order control mechanisms and deploy meta-level strategic processes for the assurance of effective discourse production in English (L3). This unveils the beneficial aspects of MWSI in differing EFL contexts as it makes learners autonomous, critical writers who can

compose a diversity of formal written works (i.e., essays, reports, summaries, syntheses, analyses, research papers, and reviews) within the academic arena. More importantly, MWSI purports to furnish student-writers with the self-regulatory heuristics and deeper-level writing strategies (WSs) which can augment their self-efficacy beliefs, strengthen their metacognitive knowledge base, and shape their self-regulation in academic writing. Only in such conditions is it likely that learners will adhere to such essential constituents as clarity, rigor, conciseness, consistency, and coherence during the multidimensional composing process in a foreign/ second language (FL/ SL).

3. The Current Study

3.1. Participants

A total of 55 third-semester university learners belonging to the English Language Department participated in this conducted semester-long experimental study. They were undertaking their English studies at a public Moroccan university during the academic year 2018-2019. In fact, their ages ranged between 19 and 24 years old. However, it is worth noting that a tiny number of the participants were aged over 24.

3.2. Research Objectives & Research Questions

The study under scrutiny, premised on qualitative and quantitative research approaches, is intended to unearth the perceived effect of metacognitive writing strategies instruction (MWSI) on university-level learners' composing performance in English as a foreign language (EFL). To address this overarching objective, which robustly underpins the current experimental study, and investigate it at full length, two prime research questions were crafted. They are as follows:

- 1) To what extent does the delivery of explicitness-bound metacognitive writing strategies instruction impact the third-semester EFL learners' L3 expository and argumentative writing performance?
- 2) Is the process of assigning the third-semester EFL learners out-of-class expository and argumentative essay writing a supplementary factor in improving their L3 writing practices?

3.3. Procedure

Founded upon a one-group pretest-posttest design, this experimental research study targeted a single EFL group consisting of 55 university learners. After being pre-tested, the subjects received explicitness-based instruction in metacognitive writing strategies (MWSs) (i.e., planning, monitoring, evaluating) for a semester-long period. In clearer terms, a three-stage approach to writing (i.e., pre-writing stage, while-writing stage, post-writing stage), which incarnates process writing in all its typical characteristics, was systematically adopted by the researcher in this experimental study. The targeted group was instructed in planning strategies (i.e., goal-setting, background knowledge activation, idea listing), monitoring strategies (i.e., self-monitoring, self-regulating, self-

questioning), and evaluating strategies (i.e., content reprocessing, reviewing, editing) to ensure a high level of writing efficiency. More plausibly, whilst the pre-writing stage initiated the subjects into the planning writing strategies for strengthening their cognitive preparedness for the complex writing process, the while-writing stage introduced the learners to the monitoring writing strategies for enabling them both to supervise/ oversee their developmental progress as to content generation and idea organization and to remove any irrelevant perspectives and inconclusive claims. As to the post-writing stage, it did push the learners to utilize the evaluative writing strategies with a view to enhancing the included L3 content and according it a great measure of rigor and integrity.

Of potential benefit is the premise that the EFL learner-writers were exposed to free writing, idea listing, mind mapping, semantic mapping, and outlining which were implemented at the planning stage. In addition, at the monitoring stage, the learners were trained in writing the first draft whilst monitoring and regulating their writing performance. This was consolidated through encouraging the learners to resort to self-questioning via asking themselves such high-order, metacognitively-oriented questions as *"What am I required to write about? What are the preliminary steps to be taken? How should the thesis statement be formulated? Are my stated ideas clear and relevant? Are the set forth arguments conclusive? Am I progressing effectively in the writing process? Are the sentences/ paragraphs logically connected? Shall I include further ideas/ points? Does the use of the transitional devices sound smooth? Shall I modify the structure of the sentences included in the paragraphs? Are there any run-on sentences, comma splices, and sentence fragments? Is the whole essay well-designed and well-articulated? Does the content of my essay align with set the academic requirements?"* These critically reflective questions, among others, did assist the targeted student-writers to judge the quality of the included ideas and their relevance to the topicality of the assigned academic essay. At the evaluating stage, the learner-writers were prompted to reprocess, review, edit, and revamp their L3 written output. These meta-level evaluative strategic steps (i.e., content reprocessing, reviewing, editing) entitled the learners to engage in the multifaceted process of perfecting the end-product of their writing performance.

Further, in an endeavor to consolidate their metacognitive mode and improve their critical thinking capacities in crafting a well-thought-out, effective academic essay, the targeted EFL group was assigned a myriad of out-of-class essay topics of expository and argumentative types. This provided them with an ample opportunity to put into action the instructed MWSs whilst composing the expository and argumentative essays. To enable the learners to avoid some marked pitfalls and shortcomings that are germane to their written output and to ensure some developmental progress regarding the productive skill of writing in L3, a series of essays written by the students belonging to the group were randomly selected and corrected in class at the level of L3 content, writing style, and the choice of vocabulary items for fifteen (15) minutes. This assisted the student-writers to alert themselves to the stark inefficiencies and apparent inadequacies that might adversely impact the quality and quantity of their subsequent L3 written output. Indeed, the reception of corrective, informative feedback, namely peer and

teacher feedback, served as a catalyst for the learners to further reinforce their mastery of MWSs and, thereby, deploy them in advanced-level expository and argumentative essay writing. Following this, the EFL subjects were exposed to a post-test in order to reflect any marked progress made after the delivery of explicit strategy-based metacognitive writing instruction.

The study adopted a pre-post-test procedure in order to gauge the practical usefulness and notable efficacy of metacognitive writing strategy training. In actuality, conceived as the foundational, determinant components of writing performance in starkly varying dimensions, the pre-test (i.e., expository, argumentative) and post-test (i.e., expository, argumentative) were depended upon for determining the degree of comparability or discrepancy at the level of L3 writing performance both before and after the reception of explicit instruction in metacognitive writing heuristics (i.e., planning, monitoring, evaluating). The targeted EFL group was subject to both a writing pre-test (expository & argumentative) for one and a half hours (90 min) and a writing post-test (expository & argumentative) for a 90-minute period. Each assigned writing test on a particular topic (i.e., expository, argumentative) was allotted 45 minutes at both the pre- and post-testing stage. Indeed, the argumentative and expository essay topics assigned to the pre-test were different from the ones given to the same participants on the post-test at the end of the instructional intervention.

With respect to the scoring rubric, a 20-point scoring scale was used. Both expository and argumentative essays in the pre-test were assigned twenty (20) points per each, and a similar pattern of the scoring scale was applied to the writing post-test (expository and argumentative essay writing). Worthy of note is that the grades obtained by the EFL participants ranged from one (01) to fifteen (15) points. In fact, the scoring procedure was premised on a strict set of robust criteria which are plausibly manifested in (a) relevancy of the content, (b) thesis statement formulation (c) coherence and clarity of ideas, (d) persuasiveness of the arguments/ evidence, (e) content organization, (f) grammatical accuracy, (g) ideational fluency, and (h) style and formality. These eight core criteria, whilst constituting the backbone of any academic piece of writing (i.e., paragraphs, essays, summaries, reports, reviews) performed within the broad universe of academia and representing a substantive measure of formality, embody the potential requisites of an academically acceptable form of writing. Thus, utter adherence to these put forth standards and rhetorical conventions relative to formal, scholarly writing is a precondition to both achieving efficiency and straightforwardness at the level of content and assuring pertinence and plausibility of the ideational perspectives and intriguing arguments that are articulated within the frame of the written discourse (expository & argumentative essays).

The data collected through the conduct of this experimental study were analyzed by using the SPSS Software Program (Version 16.0). In this regard, descriptive as well as inferential statistical analyses were executed to prove the extent to which explicit instruction in MWSs (i.e., planning strategies, monitoring strategies, evaluating strategies) impacted the writing test scores gained by the addressed EFL university-level

students. More specifically, a statistical analysis was conducted by means of the paired samples t-test with a view to revealing the means, standard deviations, and the significance level at both the pre-testing and post-testing levels.

4. Findings

4.1. EFL Group's Scores on Expository Writing Performance on the Pre-and Post-tests

It is plausible that an incremental increase at the level of the mean score was typically marked among the targeted EFL group from pre- to post-testing in advanced-level L3 expository essay writing. This shows that the noticeable enhancement of the learners' L3 expository writing accomplishment is traceable to EMWSI. The two tables presented below exhibit the mean scores attained by the subjects in expository writing performance in English (L3).

Table 1: Descriptive Statistics on Expository Essay Writing
Scores on Pre-test & Post-test among the Targeted EFL Group

		Mean	N	Std. Deviation	Std. Error Mean
Expository Writing	Pre-test	7.1545	55	2.77534	.37423
	Post-test	10.0455	55	2.55726	.34482

Table 2: The Paired Samples t-test for the Group's
Expository Writing Performance at Pre-testing & Post-testing

	Paired Differences					T	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pre-test – Post-test	-2.89091	3.68266	.49657	-3.88647	-1.89535	-5.822	54	.000

P < .05

As evinced in Tables 1 and 2, it is noteworthy to put forth that drawing a parallel between the mean scores attained by the same group on the pre- and post-intervention expository writing tests (Pre-test: M= 7.15; Post-test: M=10.04), it can be declared that the EFL student-writers belonging to the targeted group achieved slightly higher scores relevant to writing achievement. In specific terms, the meticulous execution of the paired samples t-test showcased that positive, concrete improvement did mark the subjects' expository writing performance gains. The mean difference (-2.89091) between the paired means generated a t-value of (-5.822) with a manifestly significant level of (.000). This dramatic difference at the level of the means gained across the pre-post-test continuum represents an apparently statistical significance which is lower than the set probability value (P < .05). Hence, the substantial, developmental advance pertaining to the EFL subjects' expository writing test scores at post-testing evidences the considerable influence that was exerted by EMWSI on their L3 composing performance and writing proficiency throughout the semester-long period.

4.2. EFL Group's Scores on Argumentative Writing Performance on the Pre- and Post-tests

As far as the L3 argumentative writing test is concerned, the student-writers reflected somewhat higher performance at the post-testing level. The resultant output foregrounded in the two tables (Tables 3 & 4) below shows that the subjects belonging to the addressed EFL group realized a notable advancement in the dimensional process of composing an argumentative essay from the pre- to the post-testing stage.

Table 3: Descriptive Statistics on Argumentative Essay Writing
Scores on Pre-test & Post-test among the Targeted EFL Group

		Mean	N	Std. Deviation	Std. Error Mean
Argumentative Writing	Pre-test	7.5364	55	2.66815	.35977
	Post-test	9.6909	55	2.26791	.30581

Table 4: The Paired Samples t-test for the Group's
Argumentative Writing Performance at Pre-testing & Post-testing

	Paired Differences					T	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pre-test – Post-test	-2.15455	3.50908	.47316	-3.10318	-1.20591	-4.553	54	.000

P < .05

As manifestly noted above, the pairwise statistical comparison between the pre-test and the post-test outcomes features that substantive achievement gains in argumentative essay writing were made by the EFL student-writers. Actually, the mean score (M=9.69; SD=2.26791) reached at the post-testing level seems to be significantly higher than the mean (M=7.53; SD=2.66815) achieved at the pre-testing stage. This observed noticeable outperformance attests to the intrinsic viability of EMWSI in heightening the learner-writers' metacognitive awareness of writing strategies (WSs) and strengthening their compositional capacities, reasoning skills, and strategic heuristics. The paired means yielded a t-value of (-4.553) with a significance level of (.000) which is not superior to the set probability value (P < .05). In essence, the produced output of the paired samples t-test showing somewhat improved writing achievement outcomes is attributable to the instructional writing-based intervention conducted which did inculcate the core MWSs as well as the writing rhetorical conventions in the targeted learners' minds.

5. Discussion

The present study, situated within the wider scope of cognitive theorizing (e.g., Matlin, 2005) and embedded within the metacognitive regulation framework (e.g., Baker & Brown, 1984; Flavell, 1971) aimed at probing into the conceived effect of explicitness-oriented metacognitive writing strategies instruction (EMWSI) on Moroccan EFL

university learners' L3 writing test outcomes. The findings substantiate the pivotal role of EMWSI in enabling the learners to plan, monitor, and evaluate their writing performance in accordance with the academic norms and rigorous dimensions that embody formality in all its intricate characteristics. In effect, the provided writing strategy instruction, which is firmly grounded in the overall metacognitive theory, served as a potential catalyst for encouraging the student-writers to depend upon their cognitive resources, to activate their working memory, and to deploy the metacognitively-driven writing strategies (WSs) (i.e., planning, monitoring, evaluating) with a view to yielding a conceptually well-thought-out L3 written discourse (expository and argumentative essays).

More fundamentally, it is to be put forth that metacognitive knowledge, as asserted by Teng (2020), informs, shapes, and guides the multifaceted writing process. In succinct terms, though the generation of an effectual, coherent form of written work requires retrieving stored knowledge, embedding conceptually rich information, and injecting pertinent views, the systemic procedure of informing the learners about declarative (the what), procedural (the how), and conditional knowledge (the when, where, and why) of deeper-level writing strategies (WSs) assisted them to be metacognitively aware of the pertinence of the retrieved ideas, the usage of cohesive transitional devices, and the construction of syntactically sound sentences/ propositions which are the core constituents of scholarly written output. In addition, EMWSI can enlighten learners about the quality of the expressive ideas and views incorporated in the written product (i.e., essay) as they can take an enabling set of steps intended to self-reflectively judge the grammatical soundness and accuracy of the included sentences and the logical structure of the crafted paragraph/s.

The undertaken study's findings affirm the functional centrality of EMWSI in the EFL tertiary education context. This espouses the claim that the integration of EMWSI within the higher education arena is of critical consideration. Actually, the attained research outcomes parallel the ones foregrounded by other prominent researchers (e.g., Cer, 2019; Lv & Chen, 2010; Nourazar *et al.*, 2022; Oktoma *et al.*, 2020; Pitenoe *et al.*, 2017; Wang *et al.*, 2025) interested in higher-order metacognitive writing. These mentioned research studies, conducted within different geographical areas and situated within diverse cultural and linguistic settings, reflect utter espousal for the potential utility of MWSI in elevating learners' writing accomplishments on an appreciable scale. This state of affairs reinforces the research results reached by the current small-scale study. That is, the upgrading of the learners' writing competency and proficiency in English (L3) is causally linked to EMWSI, which consolidates their strategic moves as well as their self-regulated practices in retrieving stored information and encoding it in their writing practice. Accordingly, EMWSI, whilst assisting learners to overcome the constraints and restraints imposed by their working memory, initiates them into planning, monitoring, and evaluating strategies which play a great part in organizing, generating, and refining the included content of an advanced-level L3 written discourse.

Therefore, the conquering of writer's block and the overcoming of the limited memory capacity, which represent the major constraints imposed on the learners' cognitive system, require the delivery of systematic EMWSI and the assignment of out-of-class expository and argumentative essay topics. These two components (i.e., writing strategy instruction, out-of-class writing assignments) are of invaluable importance in that they appreciably help learners to fluidly access their working memory, invoke effective writing strategies, generate relevant content, and keep track of their progressive advancement in their deep-level composing procedure in L3. Further, learners, upon the receipt of EMWSI, can allocate their cognitive abilities, attentional control, as well as metacognitive regulation to the overall integrity of their L3 written production by applying some 'fix-up'/ remedial strategies with the intention of remedying any pitfalls and inconsistencies that can detrimentally affect the intrinsic quality of their generated L3 output. This allows them not only to detect run-on sentences, fragments, comma splices, but also to spot any disconnected ideas and irrelevant perspectives that disrupt the smoothness of thoughts and the grammatical accuracy of their written production. In that way, student-writers can assure an appreciable measure of formality, readability, cohesion, and succinctness of the content of their advanced-level essays or any academic written work accomplished within the set parameters of academia.

It is to be put forward that the enhancement of the learners' writing performance is founded upon EMWSI as well as out-of-class expository and argumentative essay assignments. Being instructed in MWSs such as planning strategies (i.e., goal-setting, background knowledge activation, idea listing), monitoring strategies (i.e., self-monitoring, self-regulating, self-questioning), and evaluating strategies (i.e., content reprocessing, reviewing, editing), along with regular take-home essay assignments, did occupy a major part in fortifying their metacognitive knowledge of writing strategies (WSs) and augmenting their writing achievement scores. This immensely valorizes the great, robust potential held by MWSI in enhancing learner-writers' metacognitive strategic capabilities, self-reflective behaviors, and writing achievement outcomes. In actuality, systemic instruction in MWSs cannot help EFL learner-writers bring their writing potentialities to fruition, nor can it contribute to inculcating the generic MWSs (i.e., planning, monitoring, evaluating) in their minds, unless they are prompted to read varying forms of academic written discourse in English (L3), ranging from narrative, descriptive, expository, to argumentative types. This was emphasized to the learners throughout the conduct of this instructional intervention to enable them to acquire a rich repertoire of vocabulary items and an epistemic knowledge base through the habitual practice of L3 reading.

Typically, EFL learners should be prompted to involve themselves in the practice of higher-order forms of L3 reading. This showcases that the constant encouragement of learners to engage in extensive L3 reading is mandatory since it contributes to revamping their writing performance, as many researchers (e.g., Kirin, 2010) claim. Acknowledging the established fact that intensive and extensive L3 reading tremendously aids in accumulating a vast repertoire of lexical items and enlivening background knowledge

(i.e., formal, content, cultural, and linguistic schemata) on an exceedingly massive scale, it is necessary that student-writers be initiated into reading advanced-level L3 written texts pertaining to varied subject matters in an endeavor to gain richer knowledge and invest it in their higher-order writing tasks. In fact, the synergy between reading and writing is remarkably robust (Kirin, 2010) since the actual perfection of writing performance is sturdily grounded in the typical mode of reading conducted by learners. Based on the reached findings, it is plain that the dramatic improvement of learner-writers' L3 composing performance resides in the provision of EMWSI and the assignment of high-level expository and argumentative essay writing tasks. This shows that EMWSI, as a structured form of strategic training aimed at improving learners' writing competencies and meta-level composing patterns, should be coupled with regular out-of-class writing assignments as well as frequent assigned L3 readings of narrative, expository, descriptive, scientific, and argumentative types. In essence, though it plays a subsidiary role in elevating writing performance, the act of triggering learner-writers to immerse themselves in an extensive form of reading is contributory to enriching their knowledge base of a diversity of topical issues and getting them acquainted with the writing styles implemented by distinguished writers/ authors in a panoply of L3 written discourse. Only in this way can university-level learners develop the potential capacity of integrating their acquired background knowledge in the inherent content of their written language output, and thus overcoming writer's block which prevents them from developmentally advancing in their L3 writing performance.

6. Conclusions, Implications & Limitations

The study aimed at investigating the impact of explicit metacognitive writing strategies instruction (EMWSI) on Moroccan university-level learners' expository and argumentative writing achievement gains in English (L3). The results indicated a strong correlation between L3 writing strategy training and improved writing practices. Indeed, the reflection of L3 writing maturity and efficiency and the obtaining of somewhat substantial writing achievement gains amongst the targeted subjects at post-testing are attributable to the differing strategic modes (i.e., planning, monitoring, evaluating) involved in high-order, metacognitive writing to which they were exposed throughout the semester-long period. Deemed an authentic predictor of writing development in varying ways and extending learners' self-reflective processes as well as writing-oriented procedures to substantive degrees, EMWSI did play a crucial part in assisting the learners to foster a reflective, deliberate mode of thinking and cultivate self-regulatory writing behaviors with a view to meeting the rigorous requirements of academic formality and conforming with the meticulous prescriptions and norms of scholarly writing in English (L3).

The targeted learners' receipt of EMWSI is of critical, utmost benefit for the attainment of potential writing growth. This typology of strategy-oriented writing instruction, which is sturdily founded upon the componential dimensions of

metacognitive regulation and self-reflective thinking on myriad fronts, can alert learners to the importance of planning strategies (i.e., goal-setting, background knowledge activation, idea listing) monitoring strategies (i.e., self-monitoring, self-regulating, self-questioning), and evaluating strategies (i.e., content reprocessing, reviewing, editing). More explicitly, developing cognizance of these core writing strategic moves provides learners with an ample opportunity to generate, organize, monitor, self-regulate, and review their L3 written output in a deliberate, accomplished fashion. This reveals that these multiple self-regulatory strategies initiate learners into such procedures as evoking relevant perspectives/ ideas, making the required adjustments, elaborating upon the stated assumptions, editing the constructed content, and assessing the core quality of their L3 written discourse as well as the soundness of the steps taken from the outset. Only via the adoption of these procedural footsteps in the L3 composing act is it likely that university learners will perfect their writing style and maintain the profile of autonomous, effective student-writers who can craft a diversity of scholarly written discourse (i.e., paragraphs, essays, research papers, articles, theses) characterized by efficiency, sophistication, and robustness.

It is plausible that the multifaceted, meta-level act of transferring metacognitive knowledge of writing strategies (WSs) into actual practice among EFL learners is conditioned by EMWSI. The latter does entitle learners to be 'proactive agents' and potential 'self-regulators' of the multi-dimensional L3 writing procedure insofar as student-writers can succeed in making use of their memory skills and MWSs, and thus perfecting their L3 writing performance on a substantive scale. This showcases the synergistic interrelatedness existing between the metacognitively-driven writing strategy instruction and revamped composing performance in L3. In explicit recognition of the complicated nature of the meta-level composing processes and considering the cognitive constraints and demands imposed on learners' working memory (i.e., short-term memory, long-term memory) whilst immersing themselves in the multifaceted L3 writing procedure, it is mandatory that learners be instructed in planning, monitoring, and evaluating strategies for the improvement of their retrieval mechanisms, strategic actions, and generative processes which are operated by the cognitive memory system.

It is expected that a wide corpus of practical implications be drawn from this small-scale study. First, university learners, especially those studying in the first, second, and third semesters, should be exposed to EMWSI in order to construct a solid understanding of the potential heuristic mechanisms aiding the production of a coherent written discourse that fulfills the expectations of academia. Second, educational practitioners are supposed to sensitize student-writers about the promising techniques of surmounting writer's block which constitutes a genuine obstacle to the achievement of tangible progress in L3 writing. For instance, the importance of goal-setting, freewriting, brainstorming, self-monitoring, self-questioning, (re) drafting, pausing for a while, content reprocessing, and editing should be emphasized in the courses of 'Paragraph Writing', 'Composition', and 'Advanced Composition' for the facilitation of the process of generating high-order perspectival views and ideational content. Third, student-

writers are to be assigned differing forms of higher-level reading material for enabling efficient, competent writing. Put in succinct terms, it is not enough to instruct learners in MWSs (i.e., planning, monitoring, evaluating) and assign them a range of out-of-class expository and argumentative writing tasks, but it is necessary that learners be encouraged to immerse themselves in frequent, critical reading about a plurality of subject matters in order to expand their background knowledge base and facilitate the acts of retrieving and generating conceptually pertinent ideas. This exhibits the neat, intricate correlation existing between the receptive skill of reading and the productive skill of writing as the former fruitfully informs and structurally shapes the latter.

Yet, it is not to be overlooked that this research study manifests a range of limitations. This study depended upon a single group (n=55) majoring in English Studies for reflecting the perceived impact of MWSI on university-level students' L3 writing performance. However, it is recommended that prospective research regarding the interplay between explicit metacognitive strategy training and writing test scores within the higher education landscape adopt a two-group, or even a multi-group experimental design, for further substantiating the potential value of MWSI in improving writing practices among EFL university-level learners. In addition, the present study squarely focused on English (L3) argumentative and expository essay writing as they entail the fluid application of high-order metacognitive strategies (MSs) on an appreciably large scale. This opens up promising avenues for future researchers to undertake a broad plethora of scholarly studies for investigating the dramatic influence of explicitness-driven MWSI on the meta-strategic act of composing narrative, descriptive, scientific, and technical essays in English (L3) among Moroccan EFL university-level learners in differing geographical areas.

Moreover, given that the transfer of MWSs (i.e., planning, monitoring, evaluating) across languages (e.g., English, French, Arabic, Amazigh, Spanish, Portuguese, Italian, German, Russian...etc.) substantially requires a sophisticated level of language proficiency and a high degree of multilingual awareness, namely in performing quality academic writing, the conduct of rigorous research in this fruitful area is of utmost significance. This is contributive not only to the accumulation of a massive body of seminal research studies pertaining to cross-linguistic metacognitive writing strategy application, but also to the enriched furtherance of voluminous research in such languages as Arabic, French, Amazigh, Spanish, Portuguese, Italian, German, and Russian. Thus, small-scale as well as large-scale research studies on metacognitive writing strategies instruction (MWSI) are to be undertaken and replicated in differing university departments (e.g., English Department, Arabic Department, French Department, Amazigh Department, Spanish Department, German Department, Italian Department) both nationally and internationally. Further, the gender variable is to be taken into consideration in future research endeavors with a view to elucidating whether male or female EFL university student-writers can substantially benefit from the structured, explicitness-oriented instruction in metacognitive writing heuristics.

Authenticity Statement

This manuscript is typified by originality. The research design (a pre-post-test design coupled with instructional strategy intervention) implemented in tackling the productive skill of writing (explicit instruction of metacognitive writing strategies) in this manuscript is predicated on the one used in investigating the receptive skill of reading in my previously defended doctoral thesis (Defended in 2015) which targeted the explicit cognitive and metacognitive reading strategies instruction at the university level by drawing a comparison between a control group (n=50) and an experimental group (n=63) for a semester-long period (Autumn Semester: 2012-2013).

Conflict of Interest Statement

The author declares no conflicts of interest.

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Mohammed Msaddek is an Associate Professor at the Faculty of Letters and Human Sciences- Mohammedia, Hassan II University, Casablanca. He obtained his PhD on the intercorrelation between explicit cognitive/metacognitive reading strategies instruction and Moroccan EFL university learners' strategy use and reading achievement scores from Mohamed V University, Rabat, in 2015. He has recently published a book entitled '*Embedding Cognitive and Metacognitive Reading Strategies Instruction in Tertiary Education*' (2025), which is predicated on his doctoral thesis (Defended in 2015). His research interests include Applied Linguistics, Cognitive and Educational Psychology, Psycholinguistics, Neurolinguistics, Metalinguistics, and English for Specific Purposes (ESP).

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