HOW AI WRITING ASSISTANTS SHAPE THE WAY SECOND-LANGUAGE LEARNERS WRITE: A PSYCHOLINGUISTIC PERSPECTIVE

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Abstract

Artificial intelligence (AI) writing assistants such as Grammarly, Cha tGPT, and Microsoft Copilot are now embedded in the daily writing routines of millions of second-language (L2) learners worldwide. While these tools offer clear practical benefits — real-time grammar correction, vocabulary suggestions, and stylistic feedback — their deeper effects on how learners think and write remain underexplored. Drawing on psycholinguistic theory, this paper investigates how AI writing assistants affect the cognitive processes and language choices of L2 writers, with particular attention to sentence construction and word selection. We argue that frequent reliance on AI suggestions can reshape a learner's mental language system in both productive and potentially limiting ways. The paper concludes by calling for pedagogically informed guidelines on AI tool integration in L2 writing instruction.

Keywords: AI writing assistants, second language writing, psycholinguistics, syntactic processing, lexical choice, L2 acquisition

Introduction

Writing in a second language is one of the most cognitively demanding tasks a language learner faces. Unlike speaking, writing requires a writer to simultaneously manage grammar, vocabulary, discourse structure, and audience awareness — all while operating in a language that is not yet fully automatic. AI-powered writing

assistants have stepped into this cognitively loaded space, offering real-time guidance that many learners now find indispensable.

The rapid adoption of tools such as Grammarly, ChatGPT, and DeepL Write raises an important question: are these assistants genuinely helping learners develop their writing ability, or are they partly substituting for the mental effort that drives language learning? Psycholinguistic research suggests that language acquisition depends on noticing gaps, generating output, and receiving meaningful feedback (Swain, 2005). When an AI corrects a sentence automatically, the learner may accept the change without understanding why it was made, bypassing a critical learning moment.

This paper takes a psycholinguistic approach to examine two specific areas where AI tools exert the most visible influence: syntactic structure (how sentences are built) and lexical selection (which words are chosen). By drawing on established models of L2 writing and recent empirical findings, we aim to clarify what AI assistance genuinely offers L2 writers — and where it may inadvertently slow their development.

Theoretical Background

Psycholinguistics provides a useful framework for understanding L2 writing because it treats language production as a multi-stage cognitive process. Levelt's (1989) influential model describes speaking — and by extension writing — as moving through conceptual planning, grammatical encoding, and phonological/orthographic formulation. In L2 writers, each stage is slower and more error-prone than in first-language (L1) writers, because the underlying linguistic representations are less consolidated.

A key concept in this context is working memory. L2 writers must hold their communicative intention in mind while simultaneously retrieving vocabulary, applying grammar rules, and monitoring their output. Research consistently shows that this

cognitive load constrains the quality of L2 written output, particularly among lower-proficiency learners (Kormos, 2012). AI writing assistants reduce this load by handling some monitoring tasks — but the consequence is that learners may not develop the independent monitoring capacity they need.

Krashen's Input Hypothesis and Swain's Output Hypothesis together highlight a productive tension at the heart of language acquisition: learners benefit from comprehensible input but grow most when pushed to produce output that stretches their current competence. AI tools flood learners with corrected input (revised sentences) while reducing the push to produce accurate output independently. This imbalance is theoretically significant and has practical consequences for classroom practice.

AI Writing Assistants and Syntactic Structure

Syntax — the rules governing sentence structure — is one of the areas where L2 learners struggle most persistently. Common difficulties include word order in questions and subordinate clauses, the use of passive voice, and the placement of adverbs and modifiers. AI tools address these difficulties directly by suggesting syntactically correct alternatives, often drawing on large-scale statistical patterns learned from native-speaker corpora.

While such suggestions can expose learners to more complex and varied sentence structures, they can also push writing toward a narrow band of high-frequency, statistically typical patterns. Firth and Wagner (1997) argued that language use is inherently social and context-dependent; AI tools, by contrast, optimize for generic correctness rather than communicative appropriateness. An L2 writer producing a personal narrative may receive suggestions that are grammatically flawless but stylistically flat, trained toward the conventions of formal academic or business prose.

A related concern is syntactic fossilization through outsourcing. If a learner consistently accepts AI-generated sentence rewrites without attempting to produce complex structures independently, the learner may never develop robust syntactic knowledge. Recent classroom studies have found that L2 learners who use AI correction tools intensively show short-term accuracy gains but slower growth in syntactic complexity over a semester compared to peers who received teacher feedback only (Li & Zhang, 2023). This suggests that AI assistance, while helpful for polishing a final draft, may reduce the productive struggle that drives syntactic development.

AI Writing Assistants and Lexical Selection

Vocabulary is perhaps the most visible dimension of L2 writing, and it is where AI tools make their most frequent interventions. Tools like Grammarly's tone detector or ChatGPT's rewriting prompts routinely suggest synonyms, flag overused words, and propose more formal or precise alternatives. For learners with limited vocabulary, this can feel transformative — gaps are filled, and the text suddenly reads more fluently.

From a psycholinguistic standpoint, however, word choice is not merely a surface feature; it reflects the depth of lexical knowledge, including collocational knowledge (knowing which words naturally occur together), register awareness, and semantic precision. Nation (2001) demonstrated that productive vocabulary knowledge — the ability to use a word accurately and appropriately — develops through repeated, effortful encounters with words in context. When an AI substitutes a sophisticated word for a simpler one without explanation, the learner gains a polished text but may not acquire the word they did not choose.

There is also evidence that AI tools introduce a homogenizing effect on L2 learner writing. Because these tools are trained predominantly on English-language corpora dominated by American and British academic and professional text, their vocabulary suggestions reflect those norms. Learners from diverse linguistic

backgrounds may find that AI recommendations systematically suppress their own rhetorical traditions — what Canagarajah (2013) describes as translingual practices — in favor of a single standardized variety. This raises equity questions about whose language is being taught when AI corrects an L2 writer's work.

Pedagogical Implications

The analysis above suggests that AI writing assistants are neither straightforwardly beneficial nor harmful for L2 writers; their impact depends heavily on how they are used. Three principles emerge for pedagogically sound integration. First, teachers should encourage reflective, not passive, use of AI suggestions. Learners who are required to explain why they accepted or rejected an AI recommendation engage in the metalinguistic reflection that promotes genuine language development. Second, AI tools should supplement rather than replace teacher feedback, particularly on higher-order concerns such as argument structure and audience awareness, where human judgment remains superior. Third, writing tasks that are submitted without AI assistance — what some researchers call unplugged writing — should be preserved in curricula so that learners continue to develop independent writing capacity.

Institutions should also consider transparency policies that require AI-assisted work to be disclosed, not as an academic honesty measure alone, but as a data point that helps teachers understand the support a learner is actually receiving. Only with this information can instructors calibrate their feedback and design tasks that genuinely stretch each learner's current competence.

6. Conclusion

AI writing assistants are powerful tools that offer real benefits to second-language writers: they reduce cognitive load, surface errors, and expose learners to fluent models of the target language. Yet a psycholinguistic analysis reveals that these same features can, under certain conditions of use, reduce the effortful processing that

drives syntactic and lexical development. The challenge for applied linguists, educators, and tool designers is not to eliminate AI from the writing classroom but to understand its cognitive footprint well enough to deploy it wisely.

Future research should employ longitudinal designs that track learners over full academic years, combining corpus analysis of learner writing with process-tracing methods such as keystroke logging and think-aloud protocols. Only by examining both the product and the process of AI-assisted L2 writing will the field build an evidence base robust enough to guide policy and pedagogy at scale.

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