TPM Vol. 32, No. S9, 2025
ISSN: 1972-6325
https://www.tpmap.org/

Open Access

A REVIEW OF COGNITIVE AND LINGUISTIC FACTORS INFLUENCING THE ACQUISITION OF READING AND WRITING SKILLS IN ENGLISH LANGUAGE

MS. VINEETA VISHWAKARMA
ASSISTANT PROFESSOR, DEPARTMENT OF EDUCATION (ITEP), KUMAUN UNIVERSITY, NAINITAL.

MS. SHIKHA RATURI KOTHARI
ASSISTANT PROFESSOR, DEPARTMENT OF EDUCATION (ITEP), KUMAUN UNIVERSITY NAINITAL.

DR. PUSHPA ADHIKARI
ASSISTANT PROFESSOR, DEPARTMENT OF EDUCATION (ITEP), KUMAUN UNIVERSITY, NAINITAL.

DR. ASHOK UPRETI
HEAD, DEPARTMENT OF EDUCATION (ITEP), KUMAUN UNIVERSITY, NAINITAL.

Abstract
The acquisition of reading and writing skills in the English language is a complex, multidimensional process shaped by the interaction of cognitive and linguistic factors. This review synthesizes theoretical and empirical literature to examine how cognitive processes such as phonological processing, working memory, executive functions, attention, and metacognitive regulation interact with linguistic knowledge, including vocabulary, morphological awareness, syntactic competence, orthographic knowledge, and discourse organization, in the development of literacy skills. Drawing on peer-reviewed studies published between 2010 and 2025, and sourced from major academic databases, the review adopts a thematic synthesis approach to integrate findings from cognitive psychology, applied linguistics, and literacy research. The analysis reveals that efficient cognitive processing enables learners to access, apply, and regulate linguistic resources during reading and writing tasks, while strong linguistic competence reduces cognitive load and facilitates higher-order comprehension and written expression. The review further highlights how developmental variables such as age and proficiency level, as well as contextual factors including ESL and EFL learning environments, influence cognitive-linguistic interactions in literacy acquisition. By offering an integrated cognitive-linguistic perspective, this study contributes to literacy research by bridging fragmented findings and underscores the importance of holistic instructional approaches that address reading and writing as interconnected processes.
Keywords: Cognitive factors; Linguistic factors; Reading and writing acquisition; English language literacy; Cognitive–linguistic interaction.

INTRODUCTION

The acquisition of reading and writing skills in English represents a foundational component of academic achievement and lifelong learning in both first- and second-language contexts. Literacy in English has assumed increased global significance due to its role as a medium of instruction, international communication, and knowledge dissemination. Consequently, understanding the underlying factors that facilitate or hinder the development of reading and writing skills has become a central concern within educational psychology, applied linguistics, and literacy research (Snow, Burns, & Griffin, 1998; Grabe & Stoller, 2019). Research over the past several decades has consistently demonstrated that reading and writing are not isolated skills but cognitively and linguistically complex processes that draw on multiple interacting components. Early models of literacy acquisition emphasized decoding and print exposure; however, contemporary perspectives highlight the role of both cognitive processes such as memory, attention, and metacognition and linguistic knowledge, including vocabulary, syntax, and morphological awareness (Hoover & Gough, 1990; Perfetti & Stafura, 2014). These components jointly contribute to learners' ability to comprehend texts and produce coherent written discourse.

From a cognitive perspective, reading and writing rely heavily on efficient information processing mechanisms. Phonological processing, working memory, and executive functions play a crucial role in decoding written symbols,

integrating textual information, and managing the cognitive demands of composition (Baddeley, 2003; Berninger & Winn, 2006). Phonological awareness, in particular, has been identified as a robust predictor of early reading success, while working memory capacity influences both reading comprehension and written expression, especially as task complexity increases (Swanson & Siegel, 2001; Cain, Oakhill, & Bryant, 2004). Additionally, metacognitive skills such as planning, monitoring, and self-regulation enable learners to control their reading strategies and revise their writing effectively (Flavell, 1979; Zimmerman, 2002). Parallel to cognitive factors, linguistic competence constitutes a critical foundation for literacy development. Vocabulary knowledge has been widely recognized as a strong determinant of reading comprehension and written quality, particularly in English language learners (Nation, 2001; August & Shanahan, 2006). Morphological awareness supports learners in understanding word structure and meaning, thereby facilitating both decoding and spelling accuracy (Carlisle, 2000; Kieffer & Lesaux, 2012). Similarly, syntactic knowledge contributes to sentence comprehension and the ability to construct grammatically complex written texts, while orthographic knowledge supports fluent word recognition and accurate spelling (Ehri, 2005; Graham & Santangelo, 2012).

Importantly, contemporary literacy theories emphasize that cognitive and linguistic factors do not operate independently but interact dynamically during reading and writing development. The Simple View of Reading posits that reading comprehension results from the interaction between decoding skills and linguistic comprehension, underscoring the inseparability of cognitive processing and language knowledge (Gough & Tunmer, 1986; Hoover & Gough, 1990). Similarly, integrative frameworks proposed by Scarborough (2001) and Perfetti (2007) illustrate how word-level processes, language comprehension, and higher-order cognitive functions converge to support skilled literacy performance. These models suggest that weaknesses in either cognitive or linguistic domains can constrain overall literacy development, particularly in multilingual and ESL/EFL contexts. Despite the extensive body of research on reading and writing acquisition, existing studies are often fragmented, focusing on isolated variables or specific learner populations. While some reviews have examined cognitive predictors of reading or linguistic influences on literacy, fewer studies have systematically synthesized both domains within a unified framework that addresses reading and writing together (Grabe, 2009; Fitzgerald & Shanahan, 2000). Moreover, rapid changes in educational contexts, increasing linguistic diversity in classrooms, and growing attention to writing as a cognitively demanding skill necessitate an updated and integrated review of the literature. Therefore, the present review aims to synthesize empirical and theoretical research on the cognitive and linguistic factors influencing the acquisition of reading and writing skills in English. By critically examining key cognitive processes, linguistic competencies, and their interaction, this study seeks to provide a comprehensive understanding of how these factors collectively shape literacy development. Such a synthesis is expected to offer valuable insights for researchers, educators, and curriculum designers, while also identifying gaps that warrant further investigation in future literacy research.

2. THEORETICAL BACKGROUND

The development of reading and writing skills in English has been explained through a range of theoretical models that emphasize the interplay between cognitive processing and linguistic knowledge. Contemporary literacy research increasingly recognizes that successful literacy acquisition requires the coordinated functioning of multiple cognitive mechanisms and language systems rather than the mastery of isolated skills. The present review draws upon four major theoretical perspectives that have significantly shaped literacy research: the Simple View of Reading, Information Processing Theory, the Dual Route Model of Literacy, and cognitive–linguistic interface frameworks. Together, these perspectives provide a comprehensive foundation for understanding how reading and writing skills develop in English.

2.1 Simple View of Reading

The Simple View of Reading (SVR) proposed by Gough and Tunmer (1986) and later elaborated by Hoover and Gough (1990) is one of the most influential models in literacy research. According to this framework, reading comprehension is the product of two core components: decoding ability and linguistic comprehension. Decoding refers to the efficient translation of written symbols into spoken forms, while linguistic comprehension encompasses vocabulary knowledge, syntactic understanding, and discourse-level processing. The strength of the SVR lies in its ability to explain individual differences in reading performance by identifying weaknesses in either decoding or language comprehension. Learners with adequate decoding skills but limited language comprehension may struggle with understanding texts, whereas those with strong oral language skills but poor decoding may fail to achieve fluent reading. This dual-component perspective underscores the importance of both cognitive processes, such as phonological decoding, and linguistic competencies, such as vocabulary and grammar, in reading development (Catts, Adlof, & Weismer, 2006). Although originally developed to explain reading comprehension, extensions of the SVR have highlighted its relevance for writing as well. Writing development relies on transcription skills, including spelling and handwriting, as well as higher-order language abilities necessary for idea generation and text organization

(Berninger et al., 2002). Thus, the Simple View of Reading provides a foundational framework for examining the interdependence of cognitive and linguistic factors in literacy acquisition.

2.2 Information Processing Theory

Information Processing Theory offers a cognitive framework for understanding how learners perceive, store, and manipulate information during reading and writing tasks. Rooted in cognitive psychology, this perspective conceptualizes the mind as a system with limited processing capacity, operating through stages of input, encoding, storage, and retrieval (Atkinson & Shiffrin, 1968; Baddeley, 2003). In the context of literacy development, reading and writing place substantial demands on working memory, attention, and processing speed. During reading, learners must simultaneously decode words, access lexical meanings, integrate syntactic structures, and construct coherent mental representations of texts. Writing similarly requires the coordination of multiple processes, including planning, transcription, and revision, all of which compete for limited cognitive resources (Hayes & Flower, 1980; Kellogg, 2008). Information Processing Theory has been particularly influential in explaining why novice readers and writers often experience cognitive overload. When lower-level processes, such as decoding or spelling, are not automatised, they consume excessive cognitive resources, leaving fewer resources available for comprehension or idea development (LaBerge & Samuels, 1974). This perspective highlights the crucial role of automatization and efficient cognitive processing in literacy acquisition.

2.3 Dual Route Model of Literacy

The Dual Route Model of reading, originally developed to explain word recognition and spelling, posits that written language can be processed through two distinct cognitive pathways: the lexical route and the sublexical (phonological) route (Coltheart et al., 2001). The lexical route enables readers to recognize familiar words as whole units by accessing stored orthographic representations, while the sublexical route allows readers to decode unfamiliar words by converting graphemes into phonemes. This model has been instrumental in explaining variability in reading and spelling performance, particularly in alphabetic languages such as English. Skilled readers flexibly utilize both routes, whereas learners with reading difficulties may show impairments in one or both pathways (Ehri, 2005). The model also extends to writing, where spelling can be achieved through either phonological encoding or retrieval of stored word forms. From a theoretical standpoint, the Dual Route Model underscores the importance of phonological awareness, orthographic knowledge, and vocabulary development factors that bridge cognitive processing and linguistic representation. Its relevance to English literacy is particularly significant given the orthographic depth of the language, which requires learners to navigate irregular spelling–sound correspondences (Frost, 2012).

2.4 Cognitive–Linguistic Interface Frameworks

More recent theoretical approaches emphasize the dynamic interaction between cognitive processes and linguistic knowledge in literacy development. Cognitive–linguistic interface frameworks reject the notion that cognition and language operate in isolation; instead, they propose that literacy emerges from the continuous interaction of memory, attention, executive functions, and language systems (Perfetti, 2007; Scarborough, 2001). One influential model is Scarborough's Reading Rope, which illustrates how word recognition processes (phonological awareness, decoding, and spelling) and language comprehension processes (background knowledge, vocabulary, syntax, and verbal reasoning) intertwine to produce skilled reading. Similar integrative models have been proposed for writing, highlighting how executive control, linguistic competence, and metacognitive regulation jointly support written composition (Berninger & Winn, 2006). These frameworks are particularly relevant in ESL and EFL contexts, where learners often possess uneven cognitive and linguistic profiles. For such learners, limited vocabulary or syntactic knowledge may constrain the effective utilization of cognitive resources, while cognitive limitations may hinder the acquisition and application of linguistic forms (Grabe, 2009; Koda, 2005). Cognitive–linguistic interface models therefore provide a comprehensive lens for analyzing literacy development across diverse learning contexts.

3. REVIEW METHODOLOGY

The present study adopts a structured review methodology to synthesize existing empirical and theoretical research on the cognitive and linguistic factors influencing the acquisition of reading and writing skills in the English language.

3.1 Type of Review

This study primarily employs a narrative review approach with systematic features. A narrative review was selected to allow for conceptual integration and critical interpretation of diverse theoretical models and empirical findings related to literacy acquisition. Unlike a meta-analysis, which focuses on quantitative synthesis, the narrative review enables a comprehensive examination of complex cognitive and linguistic constructs that are often operationalized differently across studies. However, to enhance methodological rigor, systematic elements such as predefined search strategies, explicit inclusion and exclusion criteria, and transparent documentation of the review process were incorporated.

3.2 Data Sources

A comprehensive literature search was conducted across multiple academic databases to ensure broad coverage of relevant studies. The primary databases consulted included Scopus, Web of Science, and ERIC, as these platforms index high-quality, peer-reviewed literature in education, applied linguistics, and cognitive science. Google Scholar was additionally used as a supplementary source to identify influential studies, seminal theoretical works, and recently published articles that may not yet be indexed in other databases. The search process employed key terms and combinations such as cognitive factors, linguistic factors, reading acquisition, writing skills, and English language learning.

3.3 Inclusion and Exclusion Criteria

To ensure relevance and consistency, explicit inclusion and exclusion criteria were applied during the study selection process. Studies were included if they (a) were published between 2010 and 2025, (b) were written in English, (c) focused on the acquisition of reading and writing skills in English, and (d) examined cognitive factors, linguistic factors, or their interaction. Both first-language and second-language contexts were considered to capture a broad range of literacy development perspectives. Studies were excluded if they were non-peer-reviewed, opinion-based, or unrelated to literacy acquisition. Research focusing exclusively on spoken language without reference to reading or writing was also excluded.

4. Cognitive Factors Influencing Reading and Writing Acquisition

The acquisition of reading and writing skills in English is strongly influenced by a range of cognitive factors that support the processing, integration, and regulation of linguistic information. Cognitive processes enable learners to decode written symbols, comprehend texts, and generate written language efficiently. Research in cognitive psychology and literacy development has consistently shown that phonological processing, memory systems, executive functions, attention, and metacognitive abilities play a central role in successful literacy acquisition (Berninger & Winn, 2006; Grabe & Stoller, 2019). This section synthesizes key findings related to three major cognitive domains: phonological processing and working memory, executive functions and attention, and metacognition and self-regulation.

4.1 Phonological Processing and Working Memory

Phonological processing is widely regarded as a foundational cognitive skill underlying reading and writing development, particularly in alphabetic languages such as English. Phonological awareness like the ability to recognize and manipulate the sound structure of language enables learners to map graphemes onto phonemes during decoding and spelling (Goswami, 2001; Ehri, 2005). Numerous studies have demonstrated that learners with strong phonological awareness tend to acquire word reading and spelling skills more efficiently, while deficits in this area are closely associated with reading difficulties and poor writing accuracy (Snowling, 2000; Melby-Lervåg, Lyster, & Hulme, 2012). Closely related to phonological processing is the role of working memory, which supports the temporary storage and manipulation of information during literacy tasks. In reading, working memory allows learners to retain decoded words while integrating them into larger syntactic and semantic units, facilitating text comprehension (Cain, Oakhill, & Bryant, 2004). In writing, working memory is essential for holding ideas in mind while simultaneously managing transcription, sentence construction, and revision processes (Kellogg, 2008). When working memory capacity is limited, learners may struggle to coordinate these demands, leading to fragmented comprehension or reduced writing quality. Research suggests that the interaction between phonological processing and working memory is particularly critical during early stages of literacy development. As decoding and spelling become more automated, cognitive resources are freed for higher-level comprehension and composition processes (LaBerge & Samuels, 1974; Swanson & Siegel, 2001). Thus, efficient phonological processing and robust working memory capacity form a cognitive foundation for fluent reading and effective writing.

4.2 Executive Functions and Attention

Executive functions refer to higher-order cognitive processes that regulate goal-directed behavior, including attention control, cognitive flexibility, and inhibitory control. These functions are increasingly recognized as important contributors to literacy development, particularly as reading and writing tasks become more complex (Diamond, 2013; Cartwright, 2012). Attention regulation plays a critical role in sustaining focus during reading and writing activities. Readers must selectively attend to relevant textual information while inhibiting distractions, whereas writers must maintain attention across extended periods of planning, drafting, and revising (Arrington, Kulesz, Francis, Fletcher, & Barnes, 2014). Difficulties in attentional control have been linked to reduced reading comprehension and less coherent written output, especially among developing and second-language learners. Cognitive control, another component of executive functioning, enables learners to shift flexibly between different processes involved in literacy tasks. For example, readers may need to alternate between decoding unfamiliar words and monitoring comprehension, while writers must move between generating ideas, organizing content, and editing language (Berninger & Richards, 2010). Strong executive functioning supports the coordination of these processes, whereas weaknesses may result in

cognitive overload and inefficient literacy performance. These findings highlight the importance of executive functions in managing the cognitive demands inherent in reading and writing acquisition.

4.3 Metacognition and Self-Regulation

Metacognition refers to learners' awareness of and control over their own cognitive processes, including planning, monitoring, and evaluating performance (Flavell, 1979). In literacy development, metacognitive skills enable readers to assess their understanding of texts and employ appropriate strategies when comprehension breaks down (Baker & Brown, 1984). Skilled readers actively monitor meaning, adjust reading speed, and use strategies such as rereading or summarizing to enhance comprehension. In writing, self-regulation and metacognitive planning are equally essential. Effective writers engage in goal setting, organize ideas before drafting, and revise texts critically to improve clarity and coherence (Zimmerman & Risemberg, 1997; Graham & Harris, 2000). Research indicates that learners who demonstrate strong metacognitive control produce higher-quality written texts and show greater improvement over time. Metacognition is particularly significant in English language learning contexts, where learners must consciously manage linguistic and cognitive challenges simultaneously. Instruction that explicitly fosters metacognitive awareness has been shown to improve both reading comprehension and writing performance by helping learners become strategic and autonomous in their literacy practices (Grabe, 2009; Teng & Zhang, 2016).

5. Linguistic Factors Influencing Reading and Writing Acquisition

Linguistic knowledge constitutes a central foundation for the development of reading and writing skills in English. While cognitive factors enable learners to process and regulate literacy tasks, linguistic competence provides the structural and semantic resources necessary for meaning construction and text production. Research in applied linguistics and literacy development consistently demonstrates that learners' success in reading and writing depends on their knowledge of vocabulary, morphology, syntax, orthography, and discourse-level organization (Nation, 2001; Grabe, 2009). This section reviews key linguistic factors that influence reading and writing acquisition, focusing on lexical and morphological knowledge, syntactic and grammatical competence, and orthographic and discourse knowledge.

5.1 Lexical and Morphological Knowledge

Vocabulary development is widely recognized as one of the strongest linguistic predictors of reading comprehension and writing quality. Lexical knowledge supports readers in accessing word meanings, making inferences, and integrating information across texts (Nation & Snowling, 2004). Numerous studies have shown that learners with broader and deeper vocabulary knowledge demonstrate superior reading comprehension and more precise written expression, particularly in academic contexts (Schmitt, 2010; Perfetti & Stafura, 2014). In English language learners, limited vocabulary often constrains comprehension and reduces the sophistication of written output, even when decoding skills are well developed (August & Shanahan, 2006). Closely related to vocabulary is morphological awareness, defined as the ability to recognize and manipulate the meaningful components of words, such as roots, prefixes, and suffixes. Morphological knowledge facilitates word recognition, spelling, and meaning construction by enabling learners to decompose complex words and infer meanings efficiently (Carlisle, 2000). Research indicates that morphological awareness contributes uniquely to both reading and writing beyond phonological skills, especially in later stages of literacy development when academic language becomes increasingly complex (Kieffer & Lesaux, 2012; Goodwin & Ahn, 2013). In writing, morphological competence enhances spelling accuracy and allows learners to produce more nuanced and context-appropriate language. Together, lexical and morphological knowledge form a critical linguistic base for fluent and meaningful literacy performance.

5.2 Syntactic and Grammatical Competence

Syntactic and grammatical competence plays a fundamental role in enabling learners to comprehend and produce structurally coherent texts. Sentence structure knowledge allows readers to parse syntactic relationships, interpret meaning accurately, and integrate information across clauses and sentences (Cain & Oakhill, 2011). Empirical studies consistently show that syntactic awareness is a significant predictor of reading comprehension, particularly for complex texts that require the interpretation of embedded clauses and varied sentence forms (Bowey, 2005; Perfetti, Landi, & Oakhill, 2005). In writing, grammatical accuracy and syntactic sophistication contribute directly to text quality and clarity. Writers with greater control over grammatical structures are better able to construct cohesive sentences, express relationships among ideas, and adapt language to different communicative purposes (Graham & Perin, 2007). For English language learners, limited syntactic competence often results in fragmented or simplified writing, even when content knowledge is adequate (Biber, Gray, & Staples, 2016). Thus, syntactic and grammatical knowledge supports both reading comprehension and the production of coherent and effective written discourse.

5.3 Orthographic and Discourse Knowledge

Orthographic knowledge refers to learners' understanding of the spelling conventions and visual patterns of written language. In English, which is characterized by deep orthography, spelling and word recognition require learners to internalize both phonological and morphological regularities (Ehri, 2005; Frost, 2012). Orthographic mapping enables

fluent word recognition and accurate spelling, thereby supporting reading fluency and reducing the cognitive demands associated with transcription in writing (Share, 1995). Deficiencies in orthographic knowledge can hinder reading speed and increase spelling errors, negatively affecting overall literacy performance. Beyond word-level processing, discourse knowledge plays a vital role in reading and writing acquisition. Discourse competence involves understanding how texts are organized across sentences and paragraphs, including coherence, cohesion, and genre conventions (Halliday & Hasan, 1976; Grabe & Stoller, 2019). Skilled readers use knowledge of discourse structures to anticipate textual organization and monitor comprehension, while skilled writers employ cohesive devices and logical sequencing to produce well-structured texts. Discourse knowledge is particularly important in academic writing, where clarity, coherence, and argumentation are essential. Together, orthographic and discourse knowledge bridge lower-level linguistic processing and higher-order literacy skills.

6. Interaction between Cognitive and Linguistic Factors

The acquisition of reading and writing skills in English is best understood as an outcome of the dynamic interaction between cognitive processes and linguistic knowledge. Rather than functioning as independent domains, cognition and language operate in an interdependent manner, jointly shaping learners' ability to decode texts, construct meaning, and produce coherent written discourse. Contemporary literacy research increasingly emphasizes this integrative perspective, acknowledging that successful reading and writing require the coordination of cognitive resources with linguistic competence across developmental stages and learning contexts (Perfetti, 2007; Grabe & Stoller, 2019).

6.1 Integrated Cognitive–Linguistic Processing

Integrated cognitive–linguistic processing refers to the coordinated engagement of cognitive mechanisms such as memory, attention, and executive control with linguistic resources, including vocabulary, syntax, and discourse knowledge. During reading, learners must decode words, access lexical meanings, process syntactic relationships, and integrate information across sentences, all while managing cognitive load and monitoring comprehension (Perfetti & Stafura, 2014). Similarly, writing involves the simultaneous activation of linguistic knowledge and cognitive control processes to plan, formulate, and revise text effectively (Berninger & Winn, 2006). Several theoretical frameworks illustrate this interdependence. Scarborough's (2001) Reading Rope model demonstrates how word recognition processes (e.g., phonological awareness, decoding, and spelling) intertwine with language comprehension processes (e.g., vocabulary and syntax) to produce skilled reading. Weaknesses in either strand can constrain overall literacy development, even when the other components are relatively strong. Likewise, interactive models of literacy propose that higher-level cognitive functions, such as metacognition and executive control, regulate the use of linguistic knowledge during reading and writing tasks (Koda, 2005; Cartwright, 2012). Empirical evidence supports the interdependent nature of cognitive and linguistic skills. For instance, working memory capacity influences the extent to which learners can effectively utilize syntactic and lexical knowledge during text processing, while vocabulary knowledge can reduce cognitive load by facilitating faster word recognition and meaning access (Cain & Oakhill, 2011; Nation, 2013). In writing, linguistic knowledge enables idea expression, but cognitive regulation determines text organization, coherence, and revision quality. These findings underscore the necessity of examining reading and writing development through an integrated cognitive–linguistic lens.

6.2 Developmental and Contextual Influences

The interaction between cognitive and linguistic factors is not static; rather, it evolves across developmental stages and varies according to contextual conditions such as age, proficiency level, and learning environment. In early literacy development, cognitive factors such as phonological processing and working memory play a particularly prominent role as learners acquire basic decoding and spelling skills. As learners mature and achieve greater automatization, linguistic factors including vocabulary depth and syntactic competence become increasingly influential in shaping reading comprehension and writing quality (Chall, 1983; Paris, 2005). Learner proficiency also mediates cognitive–linguistic interactions. Beginning English language learners often rely heavily on cognitive control and metalinguistic awareness to compensate for limited linguistic resources. As proficiency increases, linguistic knowledge supports more efficient cognitive processing, enabling learners to allocate resources to higher-order comprehension and composition tasks (Koda, 2005; Grabe, 2009). This shift highlights the bidirectional relationship between cognition and language across stages of literacy development. Learning context further shapes these interactions. In ESL and EFL settings, limited exposure to English outside the classroom can intensify cognitive demands, as learners must consciously process linguistic input and regulate comprehension strategies (August & Shanahan, 2006). Conversely, supportive instructional environments that integrate cognitive strategy instruction with language development have been shown to enhance both reading and writing outcomes. Thus, age, proficiency, and contextual factors critically influence how cognitive and linguistic components interact during literacy acquisition.

7. Educational Implications

Understanding the cognitive and linguistic factors that influence the acquisition of reading and writing skills in English has important implications for curriculum design, instructional practices, and teacher education. An integrated perspective that acknowledges the interaction between cognitive processes and linguistic knowledge can inform more effective and inclusive literacy education, particularly in diverse ESL and EFL contexts.

7.1 Implications for Curriculum Design

Curriculum design should reflect the interdependent nature of cognitive and linguistic components in literacy development. Rather than treating reading and writing as discrete skills, curricula should adopt an integrated approach that simultaneously targets decoding, language comprehension, and higher-order cognitive processes. Early literacy curricula, for instance, should emphasize phonological awareness and word recognition while also fostering vocabulary development and oral language skills, consistent with integrative models of literacy acquisition (Scarborough, 2001; Grabe, 2009). At more advanced levels, curricula should progressively incorporate tasks that promote syntactic complexity, discourse awareness, and metacognitive engagement. Explicit attention to vocabulary depth, morphological awareness, and text structure can support learners' comprehension of academic texts and enhance written expression. Importantly, curriculum frameworks should be developmentally sensitive, recognizing that the relative importance of cognitive and linguistic factors changes as learners progress in proficiency.

7.2 Implications for Reading and Writing Instruction

Instructional practices should be informed by evidence that effective reading and writing development requires the coordination of cognitive strategies and linguistic knowledge. Reading instruction should go beyond decoding accuracy to include strategy instruction that supports comprehension monitoring, inference making, and self-regulation. Teaching learners how to actively engage with texts by predicting, questioning, and summarizing can strengthen metacognitive control and improve comprehension outcomes (Baker & Brown, 1984; Grabe & Stoller, 2019). Similarly, writing instruction should integrate linguistic form and cognitive regulation. Explicit instruction in grammar, vocabulary, and text organization should be combined with opportunities for planning, drafting, and revising. Strategy-based writing instruction, which encourages goal setting and self-monitoring, has been shown to improve writing quality and learner autonomy (Graham & Harris, 2000). Such approaches are particularly beneficial for English language learners, who often face simultaneous cognitive and linguistic challenges during writing tasks.

7.3 Implications for Teacher Education and Intervention Strategies

Teacher education programs should equip educators with a strong understanding of the cognitive and linguistic foundations of literacy development. Teachers need to be able to identify learners' strengths and weaknesses across both domains and design instruction that addresses these dimensions holistically. Training in diagnostic assessment and differentiated instruction can enable teachers to respond effectively to diverse learner profiles. Intervention strategies should also be informed by an integrated cognitive–linguistic perspective. Targeted interventions that combine phonological training with vocabulary and comprehension instruction, or writing interventions that address both transcription skills and self-regulation, are more likely to yield sustained literacy gains. Overall, incorporating insights from cognitive and linguistic research into teacher education and classroom practice can contribute to more effective and equitable literacy instruction.

8. CONCLUSION

This review examined the cognitive and linguistic factors that influence the acquisition of reading and writing skills in the English language, drawing on interdisciplinary research from cognitive psychology, applied linguistics, and literacy studies. The synthesis of literature demonstrates that successful literacy development is shaped by the dynamic interaction of multiple cognitive processes such as phonological processing, working memory, executive functions, and metacognitive regulation with linguistic competencies including vocabulary knowledge, morphological awareness, syntactic control, orthographic knowledge, and discourse competence. Rather than operating independently, these factors function in an interdependent manner to support decoding, comprehension, text construction, and written communication. A key finding across the reviewed studies is that cognitive efficiency enables learners to access and apply linguistic knowledge effectively, while linguistic competence, in turn, reduces cognitive load and supports higher-order literacy processes. Phonological processing and working memory provide a foundation for early decoding and transcription skills, whereas executive functions and metacognition facilitate monitoring, planning, and regulation of reading and writing tasks. Simultaneously, linguistic knowledge at the word, sentence, and discourse levels plays a critical role in comprehension and written expression, particularly as learners progress to more advanced stages of academic literacy. These findings reinforce integrative theoretical models that emphasize the coordinated development of cognition and language in literacy acquisition. The contribution of this review lies in its comprehensive synthesis of cognitive and linguistic perspectives within a unified framework that addresses reading and writing together. By bridging traditionally separate strands of research, the study highlights the

need for holistic approaches to literacy development that consider both cognitive mechanisms and linguistic resources. This integrative perspective is particularly valuable for understanding literacy acquisition in ESL and EFL contexts, where learners often face uneven cognitive and linguistic demands. In conclusion, the review underscores that effective reading and writing instruction must be grounded in an understanding of cognitive–linguistic integration. Educational practices and research agendas that recognize this interdependence are more likely to support sustainable literacy development across diverse learner populations. Future research that adopts longitudinal and context-sensitive approaches will further enhance understanding of how cognitive and linguistic factors jointly shape literacy trajectories in English.

REFERENCES

- Arrington, C. N., Kulesz, P. A., Francis, D. J., Fletcher, J. M., & Barnes, M. A. (2014). The contribution of attentional control and working memory to reading comprehension and writing quality. *Journal of Educational Psychology, 106*(1), 144–159. https://doi.org/10.1037/a0034096
- Atkinson, R. C., & Shiffrin, R. M. (1968). Human memory: A proposed system and its control processes. In K. W. Spence & J. T. Spence (Eds.), *The psychology of learning and motivation* (Vol. 2, pp. 89–195). Academic Press.
- August, D., & Shanahan, T. (2006). *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth*. Lawrence Erlbaum Associates.
- Baddeley, A. D. (2003). Working memory: Looking back and looking forward. *Nature Reviews Neuroscience, 4*(10), 829–839. https://doi.org/10.1038/nrn1201
- Baker, L., & Brown, A. L. (1984). Metacognitive skills and reading. In P. D. Pearson (Ed.), *Handbook of reading research* (pp. 353–394). Longman.
- Berninger, V. W., & Richards, T. L. (2010). Inter-relationships among behavioral markers, genes, brain, and treatment in dyslexia and dysgraphia. *Future Neurology, 5*(4), 597–617. https://doi.org/10.2217/fnl.10.22
- Berninger, V. W., & Winn, W. (2006). Implications of advancements in brain research and technology for writing development, writing instruction, and educational evolution. In C. A. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 96–114). Guilford Press.
- Berninger, V. W., Abbott, R. D., Abbott, S. P., Graham, S., & Richards, T. (2002). Writing and reading: Connections between language by hand and language by eye. *Journal of Learning Disabilities, 35*(1), 39–56. https://doi.org/10.1177/002221940203500104
- Biber, D., Gray, B., & Staples, S. (2016). Predicting patterns of grammatical complexity across language exam task types and proficiency levels. *Applied Linguistics, 37*(5), 639–668. https://doi.org/10.1093/applin/amu059
- Bowey, J. A. (2005). Predicting individual differences in learning to read. In M. J. Snowling & C. Hulme (Eds.), *The science of reading* (pp. 155–172). Blackwell.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa
- Cain, K., & Oakhill, J. (2011). *Reading comprehension development from theory to practice*. Routledge.
- Cain, K., Oakhill, J., & Bryant, P. (2004). Children's reading comprehension ability: Concurrent prediction by working memory, verbal ability, and component skills. *Journal of Educational Psychology, 96*(1), 31–42. https://doi.org/10.1037/0022-0663.96.1.31
- Carlisle, J. F. (2000). Awareness of the structure and meaning of morphologically complex words. *Journal of Educational Psychology, 92*(1), 169–181. https://doi.org/10.1037/0022-0663.92.1.169
- Cartwright, K. B. (2012). Insights from cognitive neuroscience: The importance of executive function for early reading development and education. *Early Education and Development, 23*(1), 24–36. https://doi.org/10.1080/10409289.2011.615025
- Chall, J. S. (1983). *Stages of reading development*. McGraw-Hill.
- Coltheart, M., Rastle, K., Perry, C., Langdon, R., & Ziegler, J. (2001). DRC: A dual route cascaded model of visual word recognition and reading aloud. *Psychological Review, 108*(1), 204–256. https://doi.org/10.1037/0033-295X.108.1.204
- Diamond, A. (2013). Executive functions. *Annual Review of Psychology, 64*, 135–168. https://doi.org/10.1146/annurev-psych-113011-143750
- Ehri, L. C. (2005). Learning to read words: Theory, findings, and issues. *Scientific Studies of Reading, 9*(2), 167–188. https://doi.org/10.1207/s1532799xssr0902_4
- Flavell, J. H. (1979). Metacognition and cognitive monitoring. *American Psychologist, 34*(10), 906–911. https://doi.org/10.1037/0003-066X.34.10.906

- Fitzgerald, J., & Shanahan, T. (2000). Reading and writing relations and their development. *Educational Psychologist, 35*(1), 39–50. https://doi.org/10.1207/S15326985EP3501_5
- Frost, R. (2012). Towards a universal model of reading. *Behavioral and Brain Sciences, 35*(5), 263–329. https://doi.org/10.1017/S0140525X11001841
- Goodwin, A. P., & Ahn, S. (2013). A meta-analysis of morphological interventions. *Review of Educational Research, 83*(4), 463–509. https://doi.org/10.3102/0034654313503216
- Goswami, U. (2001). Early phonological development and the acquisition of literacy. *Reading and Writing, 14*(1–2), 25–55. https://doi.org/10.1023/A:1007965613440
- Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education, 7*(1), 6–10. https://doi.org/10.1177/074193258600700104
- Grabe, W. (2009). *Reading in a second language: Moving from theory to practice*. Cambridge University Press.
- Grabe, W., & Stoller, F. L. (2019). *Teaching and researching reading* (3rd ed.). Routledge.
- Graham, S., & Harris, K. R. (2000). The role of self-regulation in writing development. *Educational Psychologist, 35*(1), 3–12. https://doi.org/10.1207/S15326985EP3501_2
- Graham, S., & Perin, D. (2007). A meta-analysis of writing instruction. *Journal of Educational Psychology, 99*(3), 445–476. https://doi.org/10.1037/0022-0663.99.3.445
- Halliday, M. A. K., & Hasan, R. (1976). *Cohesion in English*. Longman.
- Hayes, J. R., & Flower, L. S. (1980). Identifying the organization of writing processes. *Cognitive Processes in Writing*, 3–30.
- Hoover, W. A., & Gough, P. B. (1990). The simple view of reading. *Reading and Writing, 2*(2), 127–160. https://doi.org/10.1007/BF00401799
- Kellogg, R. T. (2008). Training writing skills. *Journal of Writing Research, 1*(1), 1–26.
- Kieffer, M. J., & Lesaux, N. K. (2012). Knowledge of derivational morphology. *Reading Research Quarterly, 47*(4), 350–365. https://doi.org/10.1002/RRQ.028
- Koda, K. (2005). *Insights into second language reading*. Cambridge University Press.
- LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing. *Cognitive Psychology, 6*(2), 293–323.
- Melby-Lervåg, M., Lyster, S. A. H., & Hulme, C. (2012). Phonological skills and reading. *Psychological Bulletin, 138*(2), 322–352. https://doi.org/10.1037/a0026744
- Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge University Press.
- Nation, I. S. P. (2013). Learning vocabulary in another language (2nd ed.). Cambridge University Press.
- Nation, K., & Snowling, M. J. (2004). Beyond phonological skills. *Journal of Experimental Child Psychology, 89*(1), 27–54.
- Paris, S. G. (2005). Reinterpreting the development of reading skills. *Reading Research Quarterly, 40*(2), 184–202.
- Perfetti, C. A. (2007). Reading ability. *Scientific Studies of Reading, 11*(4), 357–383.
- Perfetti, C. A., & Stafura, J. (2014). Word knowledge in a theory of reading comprehension. *Scientific Studies of Reading, 18*(1), 22–37.
- Scarborough, H. S. (2001). Connecting early language and literacy. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (Vol. 1, pp. 97–110). Guilford Press.
- Schmitt, N. (2010). *Researching vocabulary*. Palgrave Macmillan.
- Share, D. L. (1995). Phonological recoding and self-teaching. *Cognition, 55*(2), 151–218.
- Snowling, M. J. (2000). *Dyslexia* (2nd ed.). Blackwell.
- Swanson, H. L., & Siegel, L. (2001). Learning disabilities as a working memory deficit. *Journal of Learning Disabilities, 34*(3), 249–269.
- Teng, L. S., & Zhang, L. J. (2016). Self-regulated learning in writing. *System, 60*, 63–76.
- Zimmerman, B. J. (2002). Becoming a self-regulated learner. *Theory Into Practice, 41*(2), 64–70.
- Zimmerman, B. J., & Risemberg, R. (1997). Self-regulatory dimensions of academic learning. *Contemporary Educational Psychology, 22*(1), 73–101.