# A Psycholinguistic Perspective on Second Language Learning and Teaching
# 心理语言学视角下第二语言学习与教学研究

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## 1 Introduction

This chapter introduces the background, purpose, significance, research questions, and methods of the study. With the increasing globalization of communication, second language acquisition (SLA) has emerged as a vital field across linguistics, education, and psychology. Traditionally, SLA emphasized behavioral or structural aspects of language input and output. However, recent developments in cognitive science call for a deeper understanding of how language is processed, stored, and retrieved in the mind. Psycholinguistics, as an interdisciplinary field that integrates psychology and linguistics, provides a powerful framework for exploring these mental processes.

The rationale for this study lies in the belief that a clearer understanding of learners' cognitive mechanisms—such as memory, attention, and lexical access—can significantly enhance language pedagogy. If teachers understand how learners mentally store vocabulary, construct grammar, and process sentences, they can develop more effective and cognitively aligned teaching methods. In line with the shift in SLA toward recognizing internal mental processes, this research positions psycholinguistics as both a timely and necessary perspective for modern, learner-centered teaching approaches.

The primary aim of this study is to examine second language learning and teaching through a psycholinguistic lens, especially focusing on how language processing theories can inform classroom practices. Key concepts include the structure and activation of the mental lexicon, sentence comprehension, and how these relate to vocabulary and grammar instruction.

This study adopts a qualitative, theory-oriented approach, relying on analysis of both Chinese and international SLA literature and psycholinguistic theories. In addition, selected classroom cases are analyzed to demonstrate how theoretical insights can be translated into pedagogical strategies.

The thesis consists of five chapters. Chapter One outlines the background and research framework. Chapter Two presents a literature review of psycholinguistic approaches to SLA. Chapter Three introduces a theoretical model focusing on lexical and syntactic processing. Chapter Four applies these theories to teaching practices. Chapter Five summarizes the findings, discusses implications for instruction, and proposes directions for future research.

## 2 Literature Review

This chapter reviews and synthesizes major research developments on second language acquisition (SLA) from a psycholinguistic perspective, focusing on both international and domestic contributions. It highlights key theoretical advancements, representative scholars, major achievements, and existing limitations within the field.

Internationally, the integration of psycholinguistics into SLA has expanded significantly over recent decades. Early studies emphasized cognitive mechanisms such as memory, attention, and lexical access. Stephen Krashen's Input Hypothesis (1982) laid the groundwork for understanding acquisition as a function of comprehensible input. As research evolved, attention turned to internal processing models. Scholars like Levelt and Aitchison provided detailed accounts of the mental lexicon and word retrieval processes, leading to broader applications in second language contexts. The concept of spreading activation became particularly influential, explaining how related lexical items are triggered through associative networks during language use.

Syntax processing has also gained scholarly attention. The Shallow Structure Hypothesis proposed by Clahsen and Felser (2006) suggests that L2 learners tend to rely on semantic cues rather than deep syntactic structures, distinguishing their processing patterns from native speakers. With the rise of neurocognitive approaches using ERP and fMRI technologies, researchers have found that L1 and L2 are processed differently at the neurological level, particularly in relation to lexical and syntactic integration. These findings have strengthened the case for explicit instruction to foster L2 automaticity. Moreover, usage-based models, especially those proposed by Ellis (2008), stress the role of input frequency, salience, and meaningful contextual exposure in shaping language acquisition—elements that closely align with psycholinguistic findings.

In the Chinese context, early SLA studies were strongly influenced by Western theories but have gradually shifted toward more localized and practice-oriented research. Scholars like Wu (1984), Wang (1990), and Dong (2005) introduced cognitive processing concepts into EFL instruction, exploring issues such as attention, memory, and the development of the mental lexicon. Later work by Gao, Peng, and Chen expanded these insights by linking psycholinguistic theory to vocabulary learning, sentence comprehension, and error analysis, highlighting how learners' cognitive strategies can inform teaching practices. More recently, researchers like Yang (2024) have advocated for connecting theory with classroom implementation, considering factors such as attention span, working memory, and learner anxiety.

Major achievements in the field include improved understanding of how L2 learners retrieve vocabulary, process sentence structures, and respond to repeated input. Empirical research suggests that L2 learners often rely on semantic associations rather than morphological depth, leading to pedagogical strategies such as semantic field teaching, lexical chaining, and collocation-based instruction. In grammar pedagogy, findings on syntactic parsing have led to more processing-oriented teaching, emphasizing learners' syntactic sensitivity over traditional grammar rules. Psycholinguistic research has also

informed instructional practices such as input enhancement, noticing, and repetition tasks that foster attention control and long-term retention.

Despite these advancements, notable gaps remain. Much of the current research is theoretical or lab-based and lacks applicability to real classrooms, especially those with diverse learners. While neurocognitive methods offer detailed insights, their limited accessibility and high cost hinder wider use. There is also an imbalance in focus: vocabulary has received considerable attention, while sentence-level processing, speaking, and writing remain underexplored. In China, studies are often short-term and rarely integrate emotional or sociocultural factors, such as motivation, classroom interaction, or cultural norms, into their frameworks.

Therefore, future research should aim to bridge theory and practice, integrating cognitive, emotional, and contextual dimensions to better explain how language is acquired and applied in real-world educational settings.

# 3 Theoretical Framework

This chapter introduces essential psycholinguistic theories related to second language (L2) acquisition, focusing on how learners store, access, and process lexical and syntactic information. Grounded in cognitive psychology and neurolinguistic research, these theories form the foundation for the pedagogical approaches discussed later.

The mental lexicon is a complex cognitive system responsible for storing lexical entries, encompassing semantic, phonological, and grammatical features. Early structural models, such as Collins and Quillian's (1969) hierarchical semantic network, conceptualized the lexicon as a tree-like structure with words linked by categorical relations (e.g., *"bird"* linked to *"animal"* and *"can fly"*). Aitchison (2021) expanded on this, noting that lexical connections also arise from phonological similarity, usage frequency, and contextual co-occurrence. A fundamental mechanism within the mental lexicon is spreading activation, wherein activation of one lexical item (e.g., *"doctor"*) unconsciously triggers semantically or associatively related words (*"nurse," "hospital"*). However, for L2 learners, this activation process tends to be slower and less automatic, often impeded by interference from the first language. The bilingual lexicon evolves from initial reliance on L1 translations toward more direct L2 conceptual links. Pedagogical implications include the use of semantic clustering, associative mapping, and extensive high-frequency exposure to enhance lexical access and automatization.

Syntactic processing, another critical psycholinguistic domain, concerns how learners parse and comprehend sentence structures in real time. The Garden Path model (Frazier & Rayner, 1982) posits that readers initially adopt the simplest syntactic interpretation, revising it if subsequent input contradicts this, which results in processing disruption. Native speakers typically resolve such ambiguities efficiently, but L2 learners often struggle due to limited working memory and attentional resources. The Shallow Structure Hypothesis (Clahsen & Felser, 2006) explains this by asserting that L2 learners rely more

heavily on lexical-semantic cues than on fully detailed syntactic parsing, resulting in less robust grammatical representations. Just and Carpenter's (1992) capacity theory of comprehension highlights the role of working memory in sustaining multiple syntactic interpretations simultaneously. These insights advocate for grammar instruction that emphasizes meaningful, example-rich input over explicit rule memorization, using techniques such as sentence-mixing tasks and visual sentence parsing to facilitate syntactic comprehension.

Recent theoretical advancements move beyond isolated cognitive components to integrated models of L2 processing. Ellis's (2008) usage-based model emphasizes the frequency and salience of input, contending that language acquisition hinges on repeated exposure to meaningful form-function mappings, which align with psycholinguistic principles of pattern recognition, lexical chunking, and attentional allocation. Ullman's Declarative/Procedural Model (2001, 2004) differentiates between two memory systems underpinning language learning: declarative memory, responsible for conscious knowledge of vocabulary and grammar, and procedural memory, which governs automatized processing of morphosyntactic patterns through practice. This model elucidates why L2 learners may perform well on explicit grammar tasks but falter in spontaneous language use, underscoring the need for sustained practice to foster proceduralization.

Neurocognitive research employing event-related potentials (ERP) and functional magnetic resonance imaging (fMRI) corroborates these theoretical frameworks by revealing distinct neural activation patterns in L2 learners compared to native speakers. These studies show delayed or reduced engagement in brain areas associated with syntactic processing and grammatical integration in L2, reflecting increased cognitive load and the gradual nature of proceduralization.

In conclusion, second language acquisition is a multifaceted process shaped by the interaction of lexical organization, syntactic parsing, memory systems, and brain function. Effective L2 instruction should mirror authentic language use by providing frequent, meaningful input; encouraging extensive practice; and employing cognitively informed strategies that facilitate lexical activation and syntactic comprehension. This theoretical foundation guides the pedagogical applications elaborated in subsequent chapters.

# 4 Application of Psycholinguistic Theories

Building on the theoretical framework established in Chapter 3, this chapter systematically explores how core psycholinguistic principles can be operationalized in second language (L2) classrooms. It highlights critical concepts such as spreading activation, semantic priming, contrastive form processing, and structured input, demonstrating their relevance to both vocabulary acquisition and syntactic development. The focus lies in translating insights on mental lexicon organization, lexical retrieval, and sentence processing into actionable teaching strategies that reflect learners' cognitive realities during language use.

**Psycholinguistic Insights into Vocabulary Instruction**

The mental lexicon is not a static repository of isolated words; rather, it functions as a dynamic, interconnected network where lexical items are organized based on semantic, phonological, morphological, and frequency-based relationships. Aitchison's (2021) theory of spreading activation posits that activating one lexical item automatically primes related words within the network, facilitating faster retrieval and richer associations. This natural mode of lexical access challenges traditional vocabulary teaching practices that often rely on rote memorization of random or alphabetical word lists.

Semantic priming experiments exemplify this phenomenon. For instance, when participants are presented with a prime word such as *"butter,"* they respond more rapidly to a target word like *"bread"* than to an unrelated word such as *"nurse."* This semantic priming effect evidences the brain's associative pathways and supports the pedagogical use of semantically clustered vocabulary teaching. Organizing vocabulary around thematic groups—such as *"kitchenware," "emotions,"* or *"transportation"*—aligns with the brain's lexical architecture, making retention and retrieval more efficient.

Consider a practical classroom example: teaching vocabulary related to *"cleaning"* with a set including *"sponge," "mop," "bucket," "brush," "detergent,"* and *"vacuum cleaner."* Presenting these words as a semantic field, accompanied by visual aids or word maps, and involving students in categorization or matching tasks, strengthens the mental links between them. This approach leverages the brain's natural tendency to associate words contextually, thereby enhancing fluency and recall during productive use.

In addition to semantic associations, lexical access is influenced by orthographic and phonological similarities. Second language learners are particularly prone to confusion when faced with words that look or sound alike (e.g., *"bare"* vs. *"bore," "quiet"* vs. *"quite," "accept"* vs. *"except"*). While form similarity may sometimes hinder vocabulary acquisition, deliberate contrastive instruction can help learners discern subtle differences. Tasks such as sentence completion, error correction, and form-meaning matching enable learners to sharpen their orthographic awareness and reduce confusion, which in turn improves both comprehension and written accuracy.

Furthermore, psycholinguistic research emphasizes the importance of collocations and lexical chunks—multiword units stored holistically in the mental lexicon (e.g., *"make a decision," "strong coffee," "take a break"*). Teaching these fixed expressions encourages learners to process language in larger meaningful units rather than word-by-word decoding, which enhances fluency and the naturalness of production.

Visual tools such as word maps, semantic trees, and charts help learners visualize lexical networks, illustrating relationships including synonymy, antonymy, hypernymy, and collocational patterns. Such representations scaffold learners' understanding of lexical organization and assist in deeper encoding.

Depth of processing studies reveal that learners remember words better when engaged in tasks requiring meaningful use, such as giving opinions, narrating stories, or solving

problems. These activities prompt active mental engagement and semantic elaboration, which solidify lexical representations and facilitate their integration into broader language use.

**Psycholinguistic Approaches to Syntactic Development**

While vocabulary acquisition is foundational, syntactic competence is essential for fluent and accurate language use. Psycholinguistic theories shed light on the cognitive demands involved in processing sentence structure, parsing grammatical relationships, and constructing meaning in real time. For L2 learners, these processes are effortful and often less automatized compared to native speakers.

The Garden Path Theory (Frazier & Rayner, 1982) models sentence processing as incremental and heuristic-driven, where the parser initially adopts the simplest syntactic interpretation. When encountering ambiguous or complex structures—e.g., *"The man the woman loved left"*—learners must revise their initial parsing, a cognitively costly reanalysis often more challenging for L2 learners due to limited working memory and reduced syntactic sensitivity.

Complementing this, the Shallow Structure Hypothesis (Clahsen & Felser, 2006) argues that L2 learners rely heavily on lexical-semantic cues rather than building fully detailed syntactic trees. Consequently, their mental representations of grammar are often incomplete or underspecified, leading to reliance on word order and meaning over grammatical rules, especially in complex structures such as relative clauses or passive constructions.

Slobin's (1986) operating principles further explicate learners' syntactic preferences and difficulties by identifying cognitive habits underpinning language acquisition. These include:

1.Allocating one form per meaning unit;

2.Paying particular attention to word endings (morphological markers);

3.Maintaining canonical word order;

4.Avoiding syntactic interruptions or discontinuities.

These principles help explain why learners struggle with noncanonical or discontinuous structures, such as passives, embedded clauses, and progressive verb phrases, which violate smooth, continuous parsing.

For example, English progressive forms like *"Polly is snoring"* represent syntactic discontinuities when interrupted (*"Polly is snore—ing"*), posing processing challenges as they conflict with the "avoid interruptions" principle. Similarly, sentence processing research shows that subject-verb proximity facilitates comprehension and reduces working memory load. Consider the pair:

*Word came that the missing man had been found.* (easier to process)

*Word that the missing man had been found came.* (harder to process due to delayed verb and embedded clause)

Pedagogically, these insights support teaching grammar not as isolated rules but as

structures embedded in meaning and processing constraints. Structured input—exposing learners to meaning-rich examples that contrast grammatical forms (e.g., *"The apple was eaten by the boy"* vs. *"The boy was eaten by the apple"*)—enables learners to notice form-meaning connections without explicit grammar drills.

Supporting activities include sentence reordering, diagramming, and highlighting grammatical forms visually, which aid learners in internalizing syntactic patterns aligned with real-time comprehension demands.

**Classroom Integration: Examples and Applications**

Three teaching cases exemplify how psycholinguistic research can inform effective classroom practice:

1. **Semantic Clustering and Priming:** In a lesson on *"kitchen and cleaning,"* students engaged in semantic matching with words like *"sponge"* and *"bucket,"* followed by primed lexical retrieval exercises that required rapid recall of semantically related items. The final sorting task reinforced semantic networks, improving lexical access speed and fluency.
2. **Contrastive Form Processing:** Learners addressed confusion between form-similar pairs (*"bare"/"bore," "quiet"/"quite"*) through sentence completion, error identification, and correction tasks, heightening orthographic awareness and reducing common mistakes in writing.
3. **Structured Input for Passive Sentences:** Activities included sentence judgment between logically correct and incorrect passives, agent-patient mapping, and sentence transformation. These tasks encouraged learners to focus on syntactic form in context, countering the overreliance on semantic cues predicted by the Shallow Structure Hypothesis, resulting in improved comprehension and accuracy.

**Reflections and Pedagogical Implications**

The ultimate goal of L2 teaching is to enable learners to use the language fluently and intuitively, akin to native speakers. Achieving this requires that instruction supports not only linguistic competence but also the development of cognitive processing patterns characteristic of native-like language use.

Psycholinguistic insights affirm that vocabulary instruction benefits significantly from semantic clustering, form contrast, and contextualized, meaningful practice, facilitating robust lexical network formation and automatic retrieval. Grammar teaching should prioritize structured input that aligns form and meaning, accommodates cognitive constraints like working memory, and promotes real-time syntactic sensitivity.

Incorporating these approaches leads to more learner-centered, cognitively congruent teaching methodologies that reduce overload, enhance processing efficiency, and foster automaticity. Consequently, learners develop stronger, more accessible lexical and syntactic representations, which underpin fluent and accurate L2 use.

In conclusion, grounding second language pedagogy in psycholinguistic research bridges the gap between theory and practice, offering empirically supported strategies that

reflect the mental processes underlying language learning. Teachers who integrate these principles can better facilitate meaningful language acquisition and equip learners with effective tools for real-world communication.

# 5 Conclusion

This chapter concludes the study by summarizing its major findings, exploring pedagogical implications, recognizing limitations, and proposing future research directions. Grounded in psycholinguistic theory, this study has examined how insights into cognitive processes such as spreading activation, semantic priming, syntactic parsing, and memory systems can inform more effective second language (L2) instruction, particularly in vocabulary and grammar teaching.

**Major Findings and Insights**

The study highlights three key findings. First, psycholinguistic mechanisms—especially the organization of the mental lexicon and sentence processing strategies—play a central role in L2 acquisition. Vocabulary is accessed through networks of meaning and form, validating the use of semantic clustering and priming techniques in the classroom. Grammar acquisition, on the other hand, is shaped by processing limitations and the tendency for shallow structure parsing, as described by the Shallow Structure Hypothesis (Clahsen & Felser, 2006).

Second, effective teaching should align with cognitive principles. Instruction that emphasizes semantic associations, meaningful repetition, and contextualized use of language is more compatible with how learners mentally store and retrieve information. Structured input, form-focused contrast, and visual scaffolding support grammar acquisition by reducing cognitive load and enhancing form-meaning connections.

Third, theoretical constructs can be translated into practical classroom strategies. Case-based activities in Chapter 4 demonstrate how tasks such as semantic grouping, priming exercises, and contrastive word form training can enhance retention, accuracy, and fluency. These approaches foster brain-compatible learning environments that support the development of lexical and syntactic competence.

**Pedagogical Implications**

The findings suggest that language instruction should prioritize cognitive realism. Vocabulary should be taught through meaning-based clusters, frequent exposure, and usage in authentic contexts. Grammar instruction should move beyond rule memorization, incorporating structured input and syntactic awareness tasks that reflect how learners actually process language. Teachers can scaffold complex structures using sentence diagrams, input enhancement, and reordering tasks to facilitate real-time comprehension and production.

Memory and attentional capacity also matter. Learners benefit when instruction begins simply and builds gradually in complexity. Teaching materials should accommodate cognitive constraints through visual aids, sentence frames, and meaningful tasks that

promote deeper processing.

**Limitations of the Study**

This study remains theoretical in nature and relies on secondary data. While the proposed strategies are grounded in established research, their classroom effectiveness has not yet been empirically tested. Moreover, individual learner variables—such as working memory capacity, proficiency level, or affective factors—were not systematically addressed. The focus was also limited to vocabulary and syntax, leaving areas such as phonological processing, discourse-level comprehension, and emotional engagement unexplored. Lastly, the context is limited to Chinese EFL learners, which may limit generalizability.

**Suggestions for Future Research**

Future studies should empirically test the instructional techniques proposed in this study through classroom experiments, learner interviews, and longitudinal assessments. More attention should be given to individual cognitive differences and their interaction with instructional input. Neurolinguistic tools such as ERP and fMRI could offer additional insights into how L2 learners process language over time. Expanding research across different linguistic backgrounds and classroom contexts would help validate and refine the application of psycholinguistic theory in L2 pedagogy.