

First–Language Acquisition and Second– Language Acquisition

A Comparative Analysis

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Summary

This paper offers a comparative analysis of first–language acquisition and second–language acquisition, focusing on their distinct processes, challenges, and influencing factors. Grounded in the works of Piaget, Chomsky, and Vygotsky, this study examines the cognitive and social dimensions of language learning. First–language acquisition, as highlighted by Chomsky’s theory of a universal grammar, is an innate and subconscious process occurring during early childhood within the critical period. Piaget and Vygotsky emphasize the role of cognitive development and social interaction in shaping language acquisition, both of which are foundational to understanding second–language acquisition. In second–language acquisition, factors such as age, motivation, and prior linguistic knowledge play significant roles, alongside challenges such as transfer effects and fossilization. Drawing on interdisciplinary research in linguistics, psychology, and philosophy, this paper identifies parallels and divergences between first–language acquisition and second–language acquisition. It further explores the implications of these insights for educational strategies, based on data taken from Chomsky’s generative grammar framework and Vygotsky’s social constructivist perspective. By bridging philosophical theories and empirical findings, this study contributes to a deeper understanding of language acquisition and informs of methods for optimizing language learning across different age groups and contexts.

Keywords: *First–Language Acquisition; Second–Language Acquisition; Universal Grammar; Critical Period; Social Constructivism*

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Introduction

Language is not merely a communication tool but a core aspect of human cognition and social interaction, shaped by and shaping individual and cultural contexts. The contrast between first-language acquisition (FLA) and second-language acquisition (SLA) offers rich insights into how humans learn and use language across life stages. FLA, occurring in infancy, is driven by biological predispositions, while SLA often occurs later and is influenced by cognitive, social, and motivational factors. This paper explores central theories and challenges in both fields, focusing on foundational contributions from Piaget, Chomsky, and Vygotsky.

Language acquisition is a key to understanding cognition and human development. As Chomsky (1965, 27) argues, language is species-specific, governed by an innate universal grammar. In contrast, Vygotsky (1978, 88) emphasizes the social and cultural context of language learning. The comparison between FLA and SLA helps reveal the balance between biological predispositions and environmental influences.

FLA typically occurs before age five, during the “critical period” when neuroplasticity is highest (Lenneberg, 1967, 176). Children acquire language effortlessly through immersion and interaction. Chomsky (1986, 33) explains this through universal grammar, which enables children to infer rules from limited input.

SLA, by contrast, usually happens after the critical period and involves conscious effort. It is shaped by factors such as fossilization (Selinker, 1972, 215), language transfer (Odlin, 1989, 36) and motivation (Gardner & Lambert, 1972, 45). These factors highlight the complex interplay between biological and external variables in SLA.

Chomsky’s generative grammar revolutionized the understanding of FLA by emphasizing innate linguistic capacity (Chomsky, 1965, 58). Piaget (1959, 42), however, links language learning to cognitive development, emphasizing stages of interaction with the environment. Vygotsky (1978, 102) enriches this view with his concept of the zone of proximal development, where learning occurs through guided interaction especially relevant in SLA contexts.

SLA is less automatic than FLA, often hampered by persistent errors or fossilization (Selinker, 1972, 216). Language transfer can aid or hinder learning, depending on linguistic similarities (Odlin, 1989, 38). Motivation also plays a vital role; learners with integrative motivation tend to perform better (Gardner & Lambert, 1972, 47).

Despite differences, both FLA and SLA involve acquiring complex grammar and communicative competence. Both depend on the quality and quantity of input. As Krashen (1982, 20) notes, comprehensible input just beyond the learner’s level is critical for progress in both FLA and SLA.

Recent studies also show that early bilingualism can enhance cognitive flexibility and delay cognitive decline (Bialystok, 2009). These findings support integrating insights from both FLA and SLA into educational policy and practice. For

example, the critical period highlights the need for rich language environments in early education, while SLA research informs strategies like task–based learning and immersion (Long, 1985, 92).

A multidisciplinary approach, as advocated by Tomasello (2003, 124), is essential for a full understanding of language acquisition. Comparing FLA and SLA reveals the complex interaction of biological, cognitive, and social factors. Grounded in Chomsky, Piaget, and Vygotsky, this paper aims to contribute to a nuanced account of how humans acquire and use language, with implications for both theory and practice.

This study adopts a comparative conceptual approach that integrates insights from linguistic theory, cognitive psychology, and sociocultural studies. While grounded in established theories such as Universal Grammar, Input Hypothesis, and Sociocultural Theory, it seeks to advance a novel integrative framework that synthesizes these dimensions into a coherent model of language acquisition across the lifespan. In doing so, it addresses the following research questions: (1) How do biological and cognitive factors interact in first and second language acquisition? (2) What role does sociocultural identity play in shaping SLA outcomes? (3) Can a unified theoretical model better account for the complexity of language learning across age groups and contexts?

To advance the comparative analysis of first— and second—language acquisition, this paper proposes a novel integrative framework that synthesizes biological, cognitive, and sociocultural dimensions of language learning. Drawing from Chomsky’s theory of Universal Grammar (Chomsky, 1965); from the cognitive models of attention and memory of Ellis (2005), Jung, Zhang, & Lee (2025), and Vygotsky’s sociocultural theory (1978), gives us a triadic approach which emphasizes how innate mechanisms, cognitive capacities, and social context interact differently across FLA and SLA. This framework aims to move beyond traditional dichotomies by offering a unified perspective on language acquisition across developmental stages and educational contexts.

This paper adopts a comparative conceptual analysis methodology, drawing on interdisciplinary sources from linguistics, cognitive science, and philosophy to synthesize existing models of language acquisition. The aim is not empirical verification but theoretical integration and hypothesis generation.

1. Theoretical frameworks

1.1. First–language acquisition

FLA has been a central topic of inquiry in linguistics and psychology, with scholars proposing diverse theoretical frameworks to explain how humans acquire their native language. This section explores three dominant perspectives: the Nativist Perspective, the Interactionist Approach, and the Behaviourist View.

The Nativist Perspective, supported by Chomsky, posits that humans possess an innate biological mechanism, often referred to as the Language Acquisition

Device (LAD), which facilitates language learning. Chomsky argued that language acquisition is not solely dependent on environmental stimuli but rather on an inherent linguistic capacity. The concept of universal grammar, a set of grammatical principles shared across languages, underpins this theory (Chomsky, 1965, 25). Evidence for this theory includes children's ability to generate novel sentences and the observation that they acquire linguistic structures not explicitly taught by caregivers.

One key strength of the Nativist Perspective is its explanatory power regarding rapid language development and uniformity across cultures. For example, children worldwide follow a similar trajectory in acquiring their first language, progressing from babbling to complex sentences within a few years (Chomsky, 1986, 34). However, critics argue that the theory underestimates the role of social and environmental factors in shaping linguistic competence. Empirical research suggests that interaction with caregivers and peers significantly influences language acquisition, challenging the universality of Chomsky's claims.

Vygotsky's Interactionist Approach emphasizes the role of social interaction and environmental input in language development. According to this perspective, language acquisition occurs through dynamic interactions between the child and its caregivers, who provide scaffolding to support linguistic growth. Vygotsky introduced the concept of the Zone of Proximal Development (ZPD), which delineates the gap between a child's current linguistic capabilities and its potential development with assistance (Vygotsky, 1978, 86).

A hallmark of the Interactionist Approach is its focus on the contextual and collaborative nature of language learning. Studies have demonstrated that responsive caregiving, such as joint attention and turn-taking, fosters vocabulary acquisition and syntactic development (Tomasello, 2003, 112). Unlike the Nativist Perspective, this theory underscores the variability in linguistic outcomes based on cultural and social differences. However, critics contend that the theory may overemphasize the role of interaction, neglecting the cognitive mechanisms underlying language learning.

The Behaviourist View, proposed by Skinner, focuses on the role of reinforcement and imitation in language learning. According to this perspective, children acquire language through operant conditioning, where desirable linguistic behaviours are reinforced by caregivers. For instance, a child's correct utterance of a word is often rewarded with praise or attention, encouraging repetition and refinement (Skinner, 1957, 89). While the Behaviourist View has been influential in highlighting the importance of environmental input, it faces criticism for its limitations in explaining complex linguistic phenomena. For example, children frequently produce novel sentences they have never heard before, challenging the notion that language learning relies solely on imitation and reinforcement (Chomsky, 1965). Nevertheless, the theory's emphasis on observable behaviour has paved the way for empirical research and practical applications, such as language intervention programs.

1.2. *Second–language acquisition*

SLA involves learning a language beyond one's native tongue and encompasses cognitive, social, and cultural dimensions. This section examines key theories, including Krashen's Input Hypothesis, Cognitive Theories, and the Sociocultural Theory.

Krashen's Input Hypothesis is a cornerstone of SLA theory, asserting that language acquisition occurs when learners are exposed to comprehensible input slightly beyond their current proficiency level ($i+1$). According to Krashen (1985), understanding input that includes new linguistic elements facilitates subconscious acquisition, as opposed to explicit learning. This hypothesis also emphasizes the importance of a low affective filter, wherein reduced anxiety and motivation barriers enhance receptivity to input (Krashen, 1982, 31). Support for the Input Hypothesis comes from studies demonstrating that exposure to contextually rich language fosters vocabulary growth and grammatical competence. For instance, immersion programs and extensive reading have been shown to improve learners' proficiency (Lightbown & Spada, 2013, 62). However, critics argue that the theory underestimates the role of output as active language use and cognitive processes, such as attention and memory, in SLA.

Cognitive Theories of SLA, advanced by scholars like Rod Ellis, focus on the mental processes underlying language learning. These theories highlight the role of working memory, attention, and procedural learning in processing linguistic input. For instance, learners must allocate cognitive resources to notice and encode new grammatical structures, which are later automatized through practice (Ellis, 2005). A key contribution of Cognitive Theories is their emphasis on the interplay between explicit and implicit learning mechanisms. Research suggests that metalinguistic awareness, or the ability to reflect on language forms, facilitates the acquisition of complex structures (DeKeyser, 2007, 91). However, critics argue that these theories may oversimplify the social and cultural dimensions of language learning, which play a significant role in shaping learners' motivations and opportunities.

Socio–Cultural Theory, influenced by Vygotsky's work, extends the principles of the Interactionist Approach to SLA. This theory posits that language learning is inherently social and mediated by cultural tools, such as language itself. Collaborative activities, such as peer interaction and teacher scaffolding, are seen as crucial for developing linguistic competence (Lantolf & Thorne, 2006, 35). One strength of Socio–Cultural Theory is its focus on the dynamic and situated nature of SLA. For example, studies have shown that learners benefit from collaborative dialogue, which allows them to negotiate meaning and internalize new language forms (Swain, 2000, 97). However, critics point out that the theory's reliance on social interaction may not fully account for individual differences in cognitive aptitude and learning strategies.

In winding up, both FLA and SLA are complex processes influenced by diverse theoretical perspectives. The Nativist, Interactionist, and Behaviourist approaches provide valuable insights into FLA, while Krashen's Input Hypothe-

sis, Cognitive Theories, and Socio— Cultural Theory illuminate the multifaceted nature of second–language learning. These frameworks collectively underscore the interplay between biological, cognitive, and social factors in shaping linguistic development.

1.3. Critical evaluation of FLA and SLA theories

While Chomsky’s nativist theory compellingly accounts for the rapidity and universality of FLA, its assumption of an innate Language Acquisition Device (LAD) has been critiqued for lacking neurobiological evidence (Tomasello, 2003, 113). Empirical studies suggest that environmental input and interactional scaffolding are more crucial than previously assumed. For example, Vygotsky’s concept of the Zone of Proximal Development (ZPD) offers a dynamic model of how social mediation fosters language growth, especially relevant in SLA contexts where peer collaboration and teacher feedback are central. However, the interactionist model may underestimate the internal cognitive constraints faced by learners with limited working memory or attention control (Jung et al., 2025, 53). Similarly, Krashen’s *Input Hypothesis* is valuable for emphasizing the need for comprehensible input, yet its minimal focus on output and corrective feedback limits its explanatory scope in classroom settings where productive language use is critical. More recent cognitive models e.g., DeKeyser (2007); Ellis (2005) offer a nuanced synthesis by integrating attention, memory, and practice–based learning. Nevertheless, these cognitive theories have been criticized for underplaying sociocultural dimensions, especially the role of identity and motivation in multilingual environments (Norton, 1995; Lantolf & Thorne, 2006). Thus, a more integrative approach is needed, namely, one that critically synthesizes biological, cognitive, and sociocultural perspectives to account for the complex nature of FLA and SLA across contexts and learner profiles.

2. Developmental processes

2.1. First–language acquisition

FLA is a natural and largely unconscious process that unfolds in predictable stages during early childhood. These stages reflect the systematic development of linguistic abilities as infants progress from simple vocalizations to complex speech patterns. This section explores the key stages of FLA and their connection to the Critical Period Hypothesis.

Babbling (0–12 months). The earliest stage of FLA is characterized by babbling, which typically begins around 4 to 6 months and continues until the child’s first birthday. During this stage, infants produce repetitive consonant–vowel combinations, such as “ba–ba” and “da–da.” Babbling is not random; research suggests that it is influenced by the linguistic environment, as the sounds produced often mirror those present in the caregiver’s language (Oller, 1980,

78). Babbling serves as a foundation for later linguistic development, helping infants practise the motor skills necessary for speech production.

One-Word Stage (12–18 months). Between 12 and 18 months, children enter the one-word stage, during which they use single words, or holophrases, to convey complex meanings. For example, a child may say “milk” to indicate a desire for milk or to point out its presence. This stage marks the beginning of symbolic language use, as words start to represent objects, actions, or concepts. Vocabulary growth accelerates during this period, with children acquiring an average of one new word every few days (Clark, 1993, 45).

Two-Word Stage (18–24 months). By 18 to 24 months, children begin combining words into simple two-word sentences, such as “want cookie” or “go park.” This stage reflects the emergence of syntax, as children start to organize words in meaningful sequences. Despite their brevity, these sentences often convey a wealth of information, relying on context and intonation for clarity (Bloom, 1970, 99). The two-word stage also highlights the universality of FLA, as similar patterns are observed across languages and cultures.

Complex Sentences (2–3 years). Between the ages of 2 and 3, children’s linguistic abilities expand dramatically. They begin to produce more complex sentences, incorporating grammatical elements such as plurals, prepositions, and verb tenses. This period is marked by rapid vocabulary growth, often referred to as the “vocabulary explosion,” with children learning up to 10 new words per day (Carey, 1978). By the end of this stage, most children can construct grammatically correct sentences and engage in meaningful conversations.

Critical Period Hypothesis. FLA is closely linked to the Critical Period Hypothesis which posits that there is a biologically determined window during which language acquisition occurs most efficiently (Lenneberg, 1967, 115–127). This critical period extends from infancy to puberty, after which the brain’s plasticity diminishes, making native-like language acquisition more challenging. Evidence supporting this hypothesis includes studies of feral children and late language learners, who often fail to achieve full linguistic competence despite extensive exposure (Lenneberg, 1967, 115). However, the hypothesis remains a subject of debate, with some researchers arguing that language learning is possible beyond the critical period, albeit with greater difficulty.

2.2. *Second-language acquisition*

SLA differs significantly from FLA, as it typically involves conscious effort and is influenced by various factors, including age, motivation, and exposure. While the stages of SLA are less rigid than those of FLA, they provide a useful framework for understanding the developmental trajectory of second-language learners.

Pre-Production Stage. The pre-production stage, also known as the silent period, occurs when learners focus on comprehension rather than speaking. During this stage, learners rely on listening and observation to familiarize themselves with the target language. Although they may produce minimal output, such as

single words or phrases, their receptive vocabulary grows steadily (Krashen, 1985, 32). This stage underscores the importance of providing comprehensible input, as exposure to meaningful language facilitates acquisition.

Early Production Stage. In the early production stage, learners begin to produce basic phrases and short sentences. These utterances often include grammatical errors and limited vocabulary, reflecting the learners' developing linguistic competence. For example, a learner might say "I go school" instead of "I am going to school." Despite these limitations, this stage marks a significant step forward in active language use and communicative ability (Lightbown & Spada, 2013, 54).

Speech Emergence Stage. The speech emergence stage is characterized by increased fluency and the use of longer, more complex sentences. Learners begin to experiment with language and engage in meaningful interactions, though errors in grammar and vocabulary persist. For instance, they may use phrases like "He goes to the park" instead of "He went to the park." This stage highlights the interplay between input and output, as learners refine their linguistic skills through practice and feedback (Ellis, 1994, 67).

Intermediate Fluency Stage. During the intermediate fluency stage, learners achieve greater linguistic competence, enabling them to express more complex ideas and participate in extended conversations. Their vocabulary expands significantly, and they develop a better understanding of idiomatic expressions and cultural nuances. However, they may still struggle with subtle grammatical structures and stylistic variations (Swain, 2000). This stage often requires sustained effort and motivation, as learners work to overcome the plateau effect that can hinder further progress.

Advanced Fluency Stage. The advanced fluency stage represents near-native proficiency, a level achieved by relatively few learners. At this stage, learners can use the target language with ease and accuracy in a variety of contexts, including academic and professional settings. While they may still exhibit minor errors or an accent, their overall communicative ability is indistinguishable from that of native speakers (Dörnyei, 2009, 111). Achieving advanced fluency often depends on extensive exposure, immersive experiences, and a strong intrinsic motivation to master the language.

Transfer and Interference. Unlike FLA, SLA is influenced by the learner's existing linguistic framework, leading to phenomena such as transfer and interference. Positive transfer occurs when similarities between the native language and the target language facilitate learning, while negative transfer, or interference, arises when differences lead to errors. For example, a Spanish speaker learning English might say "He has 12 years" instead of "He is 12 years old," reflecting the influence of Spanish grammar (Odlin, 1989, 73).

Factors Influencing SLA. SLA outcomes vary widely based on individual and contextual factors. Age is a critical determinant, with younger learners often achieving better pronunciation and grammatical accuracy, while older learners excel in metalinguistic awareness and explicit learning strategies (Singleton &

Ryan, 2004, 89). Motivation also plays a pivotal role, as learners with integrative or instrumental goals tend to exhibit higher levels of engagement and persistence. Additionally, the quality and quantity of exposure to the target language, whether through formal instruction or naturalistic settings, significantly impact acquisition (Gardner, 1985, 56).

In summary, the developmental processes of FLA and SLA reveal both similarities and differences in the pathways to linguistic competence. While FLA follows a universal and biologically driven trajectory, SLA is shaped by a complex interplay of cognitive, social, and environmental factors. Understanding these processes provides valuable insights into the mechanisms of language learning and informs effective teaching practices.

3. Key Differences and Similarities

While both FLA and SLA involve the process of learning and internalizing a language, they differ in important ways that reflect distinct cognitive, developmental, and environmental factors. Understanding these similarities and differences helps illuminate how language is processed and acquired at different stages of life. The following comparison highlights key distinctions and commonalities across several core dimensions.

Table 1. Comparison of key aspects of first–language and second–language acquisition

Tablica 1. Usporedba ključnih aspekata usvajanja prvog i drugog jezika

<i>Aspect</i>	<i>First–Language Acquisition</i>	<i>Second–Language Acquisition</i>
<i>Age of Onset</i>	Early childhood	Varies (adolescence or adulthood)
<i>Learning Context</i>	Natural, immersive	Often explicit, classroom–based
<i>Cognitive Mechanisms</i>	Subconscious, intuitive	Conscious, effortful
<i>Critical Period</i>	Strongly applies	Weak or absent (depends on theory)
<i>Influence of L1</i>	Not applicable	Significant (transfer effects)
<i>Proficiency Outcomes</i>	Near–universal native competence	Variable, rarely native–like

FLA, as articulated through Chomsky’s Universal Grammar (UG) theory, suggests that humans are biologically predisposed to acquire language, an innate ability that unfolds naturally through exposure to linguistic stimuli (Chomsky, 1957, 20). This process typically occurs during a critical period in early childhood

when the brain is most receptive to linguistic input, underscoring the role of innate structures in shaping language acquisition (Lenneberg, 1967, 80). In contrast, SLA, while also reliant on cognitive processes, operates outside this optimal timeframe and is influenced more significantly by external factors such as social interaction, motivation, and explicit learning strategies. SLA often demonstrates variability in proficiency, with learners struggling to achieve native-like competence, particularly in areas like pronunciation and fluency (Birdsong, 1999, 95). Krashen's Input Hypothesis further highlights the necessity of comprehensible input ($i+1$) for effective SLA, where learners progress best when they are exposed to language just beyond their current level of competence (Krashen, 1985). Research in SLA has also identified the role of the "interlanguage," a transitional stage that reflects learners' evolving understanding of the target language and reveals how prior linguistic knowledge influences new language learning (Selinker, 1972, 214).

While both FLA and SLA involve stages of development and the impact of social and environmental factors, their cognitive mechanisms differ. FLA tends to be a largely automatic, innate process, while SLA is often mediated by conscious learning strategies and cognitive effort (Lightbown & Spada, 2006, 52). Consequently, the process of SLA, even with optimal conditions, is marked by variability and a tendency toward fossilization, where certain language skills do not progress despite continued practice (Dulay et al., 1982, 105). By examining these processes, researchers can better understand how age, motivation, and input interact to shape language acquisition and proficiency, revealing the complexity of linguistic development across different contexts. These distinctions highlight the diverse paths through which humans acquire language, whether first or second, and underscore the complexity of cognitive and environmental influences that shape these processes.

Despite numerous parallels between FLA and SLA, key conflicts emerge when their respective mechanisms and outcomes are directly compared. One central tension lies in the *critical period hypothesis*, which grants FLA a biologically privileged window for acquisition, whereas SLA often occurs beyond this period, leading to reduced plasticity and limited native-like proficiency (Lenneberg, 1967, 80; Johnson & Newport, 1989, 78). This discrepancy challenges educational assumptions that second-language learners can mirror first-language fluency under similar instructional conditions. Additionally, the *interlanguage* phenomenon in SLA, characterized by persistent fossilization has no parallel in FLA, where language acquisition is largely complete and stable by early childhood (Selinker, 1972, 216). Furthermore, while FLA operates independently of any prior linguistic system, SLA is shaped by cross-linguistic transfer, often leading to interference rather than facilitation (Odlin, 1989, 73). These conflicts underscore that SLA is not merely a delayed version of FLA but a qualitatively different process, demanding distinct pedagogical strategies and theoretical models.

4. Implications

4.1. Education

Understanding both FLA and SLA has profound implications for educational practices. In language instruction, SLA research highlights the importance of immersive environments, wherein learners are surrounded by the target language through activities that mimic natural language exposure. For example, Krashen’s input hypothesis emphasizes the necessity of providing comprehensible input just beyond the learner’s current proficiency level, often referred to as “i+1” (Krashen, 1985). This approach ensures that learners are continuously challenged while maintaining engagement.

Additionally, task–based learning has emerged as an effective strategy in SLA. This method prioritizes meaningful communication over rote memorization of grammatical rules, allowing students to acquire language in context (Long, 1985, 93). For example, role–playing exercises, collaborative projects, and interactive discussions simulate real–life language use and build learners’ confidence.

For FLA, understanding developmental milestones equips educators and caregivers to better support children’s linguistic growth. Research indicates that children typically acquire basic phonological and syntactic structures by the age of five (Lenneberg, 1967, 50). Delays in reaching these milestones can signal underlying issues such as hearing impairments or neuro developmental disorders, prompting early intervention. Early literacy programs that integrate phonemic awareness and vocabulary building have proven successful in fostering language skills in young children (Snow et al., 1998, 25).

The implications extend beyond linguistic competence to include cognitive and social development. Educators who integrate language learning with cultural knowledge enhance students’ global awareness and empathy. For instance, dual–language programs not only promote bilingualism but also improve executive functions like attention control and cognitive flexibility (Bialystok, 2009, 6). These findings underscore the value of adapting teaching methodologies to the cognitive and social contexts of learners.

Parmaxi (2020) reviews 26 studies on virtual reality (VR) in language learning, highlighting its benefits for speaking skills, cultural awareness, and engagement. While VR enhances communicative competence and 21st–century skills, limitations include technical challenges and limited use of immersive systems. The study urges future research on writing, reading, and fully immersive, pedagogically grounded VR applications.

Early childhood education has increasingly emphasized play–based and story–driven methods in promoting first–language acquisition and early literacy. Egert et al. (2021) note that narrative–based play activities contribute to phonological awareness and vocabulary growth in preschool settings. These methods align with Vygotskian scaffolding principles, bridging classic theory with contemporary pedagogy.

Recent research continues to support the effectiveness of task-based language teaching (TBLT) and immersive approaches in SLA classrooms. Sudharshana and Mukhopadhyay (2023, 205) highlight interdisciplinary research showing how task complexity and assessment design can be aligned across diverse educational contexts. It highlights that integrating technology-enhanced tasks such as simulations and virtual exchanges can significantly improve learners' interactional competence, and language production.

4.2. *Cognitive Science*

Research on FLA and SLA offers crucial insights into the brain's neuroplasticity, critical periods, and capacity for linguistic multitasking. FLA studies have confirmed the existence of a critical period for language learning, with Lenneberg's seminal work positing that this window closes around puberty (Lenneberg, 1967, 135). This theory has been supported by subsequent research demonstrating that individuals who acquire a language during this period are more likely to achieve native-like proficiency, particularly in phonology (Johnson & Newport, 1989, 78).

In SLA, the role of neuroplasticity; the brain's ability to reorganize itself is particularly significant. Studies using functional Magnetic Resonance imaging (fMRI) have shown that adult language learners engage distinct neural networks compared to children, often involving greater reliance on declarative memory systems for vocabulary acquisition (Ullman, 2001, 115). Despite these differences, the brain's adaptability allows for remarkable progress in SLA, even in adulthood.

Bilingualism further illustrates the brain's capacity for linguistic multitasking. Research reveals that bilingual individuals exhibit enhanced executive functions, such as task-switching and conflict resolution, attributed to the constant management of two linguistic systems (Bialystok et al., 2004, 300). Additionally, lifelong bilingualism has been associated with delayed onset of neurodegenerative diseases like Alzheimer's Craik et al. (2010) highlighting the cognitive benefits of maintaining active language use.

Furthermore, cognitive science bridges the gap between language acquisition and artificial intelligence (AI). Understanding human language learning informs the development of natural language processing (NLP) systems, enabling AI to mimic human-like comprehension and production. This interdisciplinary synergy underscores the far-reaching implications of language acquisition research.

Research on multilingualism and neuroprotection has also been deepened. Antoniou and Wright (2017) find that bilingualism continues to correlate with delayed onset of dementia and enhanced executive functions, a benefit that persists across socio-economic strata.

The role of working memory and executive control in SLA is further evidenced by recent neurocognitive studies. Jung et al. (2025) argue that individual differences in attentional control directly impact second-language grammar le-

arning. This extends earlier theories by Ellis and DeKeyser, underscoring the importance of cognitive aptitude in adult SLA.

4.3. *Sociocultural Relevance*

The processes of FLA and SLA are deeply intertwined with identity, culture, and societal integration. Language serves as a cornerstone of cultural identity, with FLA anchoring individuals in their native linguistic and cultural frameworks. From a sociolinguistic perspective, children learn not only grammar and vocabulary but also cultural norms, values, and interpersonal dynamics through their first language (Fishman, 1991, 45). This cultural grounding fosters a sense of belonging and shapes social behaviours.

SLA, on the other hand, often represents a bridge to new opportunities, both social and professional. For immigrants and international students, acquiring the dominant language of their new environment is essential for integration and upward mobility. Studies have shown that proficiency in the host country's language correlates strongly with economic success and social inclusion (Chiswick & Miller, 2002, 30). Language learning also facilitates cross-cultural understanding, reducing biases and promoting global citizenship.

However, SLA is not without challenges. Learners may experience identity conflict, as adopting a new language can involve a renegotiation of their cultural self-perception (Norton, 1995, 17). For instance, immigrants often face the dilemma of balancing assimilation with the preservation of their native language and culture. Educational institutions play a pivotal role in addressing these challenges by promoting additive bilingualism, where learners maintain their first language while acquiring a second (Cummins, 2000, 37).

Moreover, language acquisition has implications for minority and endangered languages. Globalization and the dominance of major languages like English threaten linguistic diversity, with many languages facing extinction. Efforts to document and revitalize these languages often initiated by bilingual and multilingual individuals underscore the sociocultural importance of language preservation (Crystal, 2000, 93). SLA research contributes to these efforts by informing strategies for teaching and maintaining endangered languages.

Finally, the intersection of language acquisition and technology has reshaped sociocultural dynamics. Language learning apps and on-line platforms have democratized access to language education, breaking down geographic and economic barriers. These tools leverage SLA principles, such as spaced repetition and gamification, to enhance engagement and retention (Godwin–Jones, 2018, 5). They also foster global connectivity, enabling users to communicate across cultural boundaries and participate in multilingual communities.

From a sociocultural lens, language and identity remain a central concern in SLA research. Geeslin & Long (2014, 66) explore how learners negotiate cultural identity in multilingual spaces, emphasizing the fluidity of their linguistic selves in transnational contexts. Additionally, digital tools and mobile applicati-

ons are increasingly used for social inclusion and language maintenance among migrants (Godwin–Jones, 2018).

Research on endangered languages has also evolved. Hinton et al. (2022, 140) present community–driven language revitalization practices, stressing intergenerational transmission through digital storytelling and collaborative learning. These efforts mirror broader concerns in SLA regarding equity and cultural sustainability.

In conclusion, the implications of FLA and SLA extend beyond linguistic competence to encompass education, cognitive science, and sociocultural relevance. These processes not only shape individual identity and development but also contribute to societal cohesion and innovation. By understanding the complexities of language acquisition, researchers, educators, and policymakers can better support linguistic and cultural diversity in an increasingly interconnected world.

Conclusion

FLA and SLA are distinct yet intricately connected processes that illuminate the multifaceted nature of human language learning. FLA emphasizes the innate, universal mechanisms underpinning language development, revealing the interplay between biological predispositions and environmental exposure. This process unfolds almost seamlessly during the critical early years, largely driven by the brain’s neuroplasticity and its capacity to internalize linguistic input. In contrast, SLA highlights the adaptive and effortful aspects of language learning, as it often occurs outside the critical period and involves additional cognitive resources such as explicit memory and metalinguistic awareness.

One key insight derived from these fields is the understanding of the critical period hypothesis. This framework posits that FLA benefits from a biologically optimal window during early childhood when language learning occurs more naturally and with greater fluency. SLA, in contrast, may face limitations due to diminished plasticity in adulthood, but it also demonstrates the human capacity for lifelong learning. Research has revealed that even in the absence of early exposure, adult learners can achieve high levels of proficiency, particularly with sufficient motivation, immersive environments, and tailored instruction (Kraschen, 1985, 120).

From a sociocultural perspective, FLA anchors individuals in their native linguistic and cultural frameworks, playing a critical role in shaping identity and fostering a sense of belonging. Conversely, SLA acts as a bridge to broader horizons, providing opportunities for cross–cultural communication, professional growth, and global engagement. The intersection of these processes highlights not only the diversity of linguistic pathways but also the shared human capacity for language as a medium of connection and identity.

From a philosophical standpoint, the comparison between FLA and SLA underscores a fundamental tension between nature and nurture in human deve-

lopment. While FLA appears as a biological unfolding akin to maturation, SLA reveals the human capacity for resilience, adaptation, and intentional learning. In my view, the most profound insight lies in understanding language not merely as a tool for communication but as a scaffold for thought and identity. The ability to acquire a second language even under non–optimal conditions demonstrates that linguistic development is not just a passive imprint of exposure but an active construction of meaning shaped by personal, cultural, and cognitive dimensions. This suggests that language learning, especially SLA, is a deeply human activity wherein the boundaries of one’s self can expand through linguistic engagement with the world.

Therefore, any theory of language acquisition must accommodate both the innate and the experiential; both as natural and the sociocultural, as co–constitutive of the linguistic mind.

In conclusion, FLA and SLA offer complementary insights into the mechanisms of human language acquisition, from the effortless assimilation of a native language to the deliberate learning of additional tongues. Bridging the gaps between these domains through interdisciplinary research will not only deepen our understanding of cognition, communication, and culture but also inform practical applications in education, technology, and societal integration. By embracing these challenges and opportunities, we stand to gain a richer appreciation of the linguistic diversity that defines and unites humanity.

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Usvajanje prvoga jezika i usvajanje drugoga jezika

Komparativna analiza

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Sažetak

Ovaj rad donosi komparativnu analizu usvajanja prvoga jezika i usvajanja drugoga jezika s naglaskom na njihove procese, izazove i čimbenike. Članak proučava kognitivne i društvene dimenzije učenja jezika temeljem Piagetovih, Chomskyevih i Vygotskyevih radova. Usvajanje prvoga jezika, kako ističe Chomskyeva teorija univerzalne gramatike, urođen je podsvjestan proces koji se odvija u ranom djetinjstvu unutar kritičnoga razdoblja. Piaget i Vygotsky naglašavaju ulogu kognitivnoga razvoja i društvene interakcije u oblikovanju usvajanja jezika, dva čimbenika koja su temeljna i za razumijevanje usvajanja drugoga jezika. Kod usvajanja drugoga jezika čimbenici poput dobi, motivacije i prethodnoga jezičnoga znanja imaju važnu ulogu, zajedno s izazovima poput učinka transfera i fosilizacije. Pozivajući se na interdisciplinarna istraživanja na području lingvistike, psihologije i filozofije, ovaj rad utvrđuje paralele, kao i odstupanja između usvajanja prvoga i usvajanja drugoga jezika. Nadalje, istražuju se implikacije navedenih spoznaja za obrazovne strategije temeljem uvida iz Chomskyeve generativne gramatike te iz perspektive Vygotskyeva socijalnoga konstruktivizma. Ovo istraživanje premošćuje filozofske teorije i empirijska otkrića te doprinosi dubljemu razumijevanju procesa usvajanja jezika. Također prenosi metode optimiziranja učenja jezika kod različitih dobnih skupina i u različitim kontekstima.

Ključne riječi: usvajanje prvoga jezika; usvajanje drugoga jezika; univerzalna gramatika; kritično razdoblje; socijalni konstruktivizam

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