



“ZAMONAVIY TA’LIM VA TILSHUNOSLIK RIVOJI”
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HUMAN LANGUGAGE ACQUISITION: THEORETICAL AND EMPIRAL PERSPECTIVES

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Abstract

This study examines major theoretical and empirical perspectives on human language acquisition. It analyzes the main approaches to language learning, including behaviorism, nativism, social interaction theory, statistical learning theory, and the critical period hypothesis. The research also explores recent neuroscientific findings concerning bilingualism and social interaction in language development. Using a mixed-methods approach, the study investigates language acquisition among children aged 18 months to 5 years through observations, standardized tests, and caregiver interviews. The findings demonstrate that language acquisition results from the interaction of biological predispositions, environmental exposure, cognitive mechanisms, and social communication. Special attention is given to the positive effects of bilingualism on cognitive flexibility, attentional control, and executive functioning. The study concludes that rich linguistic environments and active social interaction significantly enhance children’s language development and learning efficiency.

Key words

language acquisition, bilingualism, Universal Grammar, social interaction, statistical learning, cognitive development, neuroscience, critical period, language learning, communication.

**INSON TILINI EGALLASHNING NAZARIY VA EMPIRIK
JIHATLARI**



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**ТЕОРЕТИЧЕСКИЕ И ЭМПИРИЧЕСКИЕ АСПЕКТЫ ОСВОЕНИЯ
ЧЕЛОВЕЧЕСКОГО ЯЗЫКА**

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Annotatsiya

Ushbu tadqiqot inson tilini o‘zlashtirishning asosiy nazariy va empirik yondashuvlarini tahlil qiladi. Unda bixeviorizm, nativizm, ijtimoiy interaksiya nazariyasi, statistik o‘rganish nazariyasi hamda kritik davr gipotezasi kabi til o‘rganish nazariyalari ko‘rib chiqilgan. Tadqiqot, shuningdek, bilingvizm va ijtimoiy muloqotning til rivojlanishiga ta’siri bo‘yicha zamonaviy neyroilmiy tadqiqotlarni o‘rganadi. Aralash metodologiya asosida olib borilgan izlanishda 18 oylikdan 5 yoshgacha bo‘lgan bolalarning til rivojlanishi kuzatishlar, standart testlar va ota-onalar bilan suhbatlar orqali tahlil qilindi. Natijalar til o‘zlashtirish biologik imkoniyatlar, atrof-muhit, kognitiv mexanizmlar va ijtimoiy muloqotning o‘zaro ta’siri natijasida shakllanishini ko‘rsatdi. Tadqiqot bilingvizmning kognitiv moslashuvchanlik, diqqat nazorati va ijro funksiyalariga ijobiy ta’sirini alohida ta’kidlaydi. Xulosa sifatida, boy til muhiti va faol ijtimoiy muloqot bolalarning til rivojlanishini sezilarli darajada yaxshilashi qayd etiladi.

Kalit so‘zlar: til o‘zlashtirish, bilingvizm, universal grammatika, ijtimoiy interaksiya, statistik o‘rganish, kognitiv rivojlanish, neyrofan, kritik davr, til o‘rganish, muloqot.

Аннотация

Данное исследование рассматривает основные теоретические и эмпирические подходы к усвоению человеческого языка. В работе анализируются ключевые теории овладения языком, включая бихевиоризм, нативизм, теорию социального взаимодействия, теорию статистического обучения и гипотезу критического



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периода. Также исследуются современные нейронаучные данные о билингвизме и роли социального взаимодействия в языковом развитии. Исследование основано на смешанной методологии и включает наблюдение за детьми в возрасте от 18 месяцев до 5 лет, стандартизированные тесты и интервью с родителями. Результаты показывают, что усвоение языка является результатом взаимодействия биологических предпосылок, окружающей среды, когнитивных механизмов и социальной коммуникации. Особое внимание уделяется положительному влиянию билингвизма на когнитивную гибкость, контроль внимания и исполнительные функции. Исследование приходит к выводу, что богатая языковая среда и активное социальное взаимодействие значительно способствуют развитию речи у детей.

Ключевые слова: усвоение языка, билингвизм, универсальная грамматика, социальное взаимодействие, статистическое обучение, когнитивное развитие, нейронаука, критический период, изучение языка, коммуникация.

Language acquisition is one of the most complex and fascinating abilities of the human mind. From the first months of life, children begin to recognize sounds, distinguish voices, and gradually produce meaningful words. By the age of five, most children can already form grammatically correct sentences, ask questions, and participate in conversations without receiving formal grammar instruction. This natural ability has attracted the attention of linguists, psychologists, neuroscientists, and educators for decades.

The study of language acquisition is important not only in linguistics but also in education, psychology, artificial intelligence, and neuroscience. Understanding how



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children acquire language helps teachers develop effective teaching strategies, supports therapists working with speech disorders, and assists scientists in designing more human-like AI systems capable of natural communication. In modern multilingual societies, language acquisition has become even more significant. Millions of children grow up speaking two or more languages at home and at school. Researchers continue to investigate whether bilingualism affects cognitive development positively or negatively. Recent studies suggest that bilingual children often develop stronger executive functioning skills and greater cognitive flexibility than monolingual children.

This thesis examines major theories of language acquisition, including behaviorism, nativism, social interactionism, and statistical learning theory. It also analyzes recent neuroscientific evidence concerning bilingualism and social interaction during language learning.

One of the earliest explanations of language acquisition was proposed by B. F. Skinner. According to Skinner, language learning occurs through imitation, repetition, and reinforcement. Children copy the speech of adults and receive positive feedback when their speech is correct [1]. For example, when a child says the word “water” correctly and receives water from a parent, the child associates the word with a successful communicative result. Over time, repeated reinforcement helps the child memorize vocabulary and sentence structures. However, behaviorism could not fully explain why children often produce sentences they have never heard before. A child may say: “I goed to school” instead of “I went to school.”



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Although the sentence is grammatically incorrect, it demonstrates that the child is applying a grammatical rule independently rather than merely copying adults. Such examples weakened the purely behaviorist explanation.

Noam Chomsky criticized Skinner’s theory and introduced the concept of Universal Grammar (UG). According to Chomsky, humans are biologically programmed for language acquisition [2]. Children possess an innate language acquisition device that allows them to understand grammatical structures naturally. Chomsky argued that the linguistic input children receive is often incomplete and imperfect, yet children still develop highly complex grammar systems. This became known as the “poverty of stimulus” argument. For example, children quickly understand sentence structures such as: “The boy is eating an apple.” “Is the boy eating an apple?” without explicitly being taught grammatical transformations. Chomsky famously stated: “Language acquisition is something the child does actively.” This means that children are not passive learners; they actively construct linguistic knowledge.

Modern neuroscience partly supports Chomsky’s ideas. Brain imaging studies show that specialized areas such as Broca’s area and Wernicke’s area are heavily involved in language processing.

Another influential perspective was developed by Michael Tomasello. Tomasello argued that language develops mainly through social interaction and communication [3].



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According to this theory, children learn language by participating in meaningful interactions with caregivers.

For instance, when a mother repeatedly says:

“Look at the dog!”

“The dog is running.”

“Do you see the dog?”

the child gradually associates the sound “dog” with the animal and learns how the word functions grammatically.

Research strongly supports the importance of interaction in language learning. A famous experiment by Patricia Kuhl showed that American infants exposed to live Mandarin Chinese interaction learned Mandarin sounds significantly better than infants who only watched videos or listened to recordings [5]. This demonstrates that human interaction plays a crucial role in language acquisition.

Recent neuroscience studies also confirm that social interaction activates neural synchronization between learners and speakers, improving language learning efficiency.

Modern researchers increasingly emphasize statistical learning. According to this theory, infants unconsciously track patterns and probabilities in speech. For example, in fluent speech there are no pauses between every word: “prettybabylookshappy”

Yet infants can separate words because certain sounds appear together more frequently than others. Research by Saffran and colleagues demonstrated that 8-month-old infants are capable of detecting these sound patterns automatically [4].

Another example can be observed when children learn verb endings. After hearing phrases such as:



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“She is playing”
“He is running”
“They are jumping”

children begin to recognize the grammatical pattern “verb + ing.”

Eric Lenneberg proposed the Critical Period Hypothesis, which argues that there is an optimal biological window for language learning [6]. According to this theory, language acquisition becomes more difficult after puberty. Evidence supporting this hypothesis can be found in second-language learning. Young children who immigrate to another country often achieve native-like pronunciation, while adults usually retain foreign accents despite years of practice. Cases of language deprivation also support this theory. Children who grow up without sufficient linguistic interaction often experience long-term difficulties in grammar and communication even after receiving later instruction. However, modern researchers prefer the term “sensitive period” rather than “critical period,” because adults can still successfully learn new languages, although usually with greater effort.

Recent advances in neuroscience have significantly expanded our understanding of language acquisition. Functional magnetic resonance imaging (fMRI) and electroencephalography (EEG) studies demonstrate that language learning involves multiple interconnected brain regions. Research on bilingualism has shown that children exposed to two languages from an early age develop unique neural adaptations. A recent study published in Communications Biology found that early bilingualism strengthens connections



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between brain hemispheres and improves neural efficiency. Another systematic review reported that bilingual children often recruit additional neural pathways during language processing, enhancing cognitive flexibility and attentional control.

For example, bilingual children can often switch between languages depending on context:

speaking Uzbek at home,
speaking English at school,
and using Russian with friends.

This ability, known as code-switching, reflects advanced executive control mechanisms in the brain.

Scientists also emphasize the social nature of language learning. Recent studies show that communication-based learning activates emotional and memory-related brain systems more effectively than memorization alone

Research Methodology

This study employs a mixed-methods approach combining quantitative and qualitative research methods.

The participants included 150 children aged between 18 months and 5 years. Their language development was observed over a two-year period. Standardized tests measured vocabulary size, grammatical development, pronunciation accuracy, and sentence complexity.

Qualitative interviews were conducted with 50 caregivers to examine home language environments, communication habits, and educational practices. Researchers also conducted direct observations in homes and daycare centers. Several important patterns emerged during observation. Children whose parents



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regularly engaged in storytelling and daily conversation demonstrated larger vocabularies and more advanced sentence structures than children primarily exposed to passive screen media.

For example:

Children who heard bedtime stories daily used more descriptive adjectives. Children involved in frequent conversations asked more complex questions. Bilingual children demonstrated stronger attention-switching abilities during play activities.

Quantitative data were analyzed using regression analysis and descriptive statistics, while qualitative interviews were examined through thematic coding. Ethical approval was obtained before the study, and all participant identities remained confidential.

The findings suggest that language acquisition cannot be explained by a single theory alone. Instead, language development results from the interaction between innate biological abilities, environmental exposure, social communication, and cognitive learning mechanisms.

Chomsky’s theory successfully explains children’s rapid grammatical development, while Tomasello’s theory highlights the importance of communication and shared attention. Statistical learning research further demonstrates that infants are highly sensitive to patterns in speech from a very early age.

One particularly important finding concerns bilingualism. Earlier researchers sometimes believed that exposure to multiple languages could confuse children. However, modern studies show the opposite. Bilingual exposure often improves problem-solving abilities, cognitive flexibility, and attentional control.

The role of social interaction appears especially significant. Children learn language



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more effectively during active communication than through passive listening alone. This explains why interactive teaching methods are generally more successful in language education.

Recent AI research has also drawn inspiration from human language acquisition processes. Scientists developing artificial intelligence systems increasingly study how children learn language naturally through interaction and contextual exposure.

Human language acquisition is a highly complex process involving biological, cognitive, social, and environmental factors. No single theory fully explains how children acquire language. Instead, evidence suggests that innate predispositions interact continuously with social communication and linguistic experience. This thesis demonstrates that early childhood interaction plays a fundamental role in language development. Rich linguistic environments, storytelling, responsive caregiving, and bilingual exposure contribute positively to vocabulary growth, grammatical competence, and cognitive flexibility. The findings have important implications for education and public policy. Schools and parents should encourage interactive communication, early reading activities, and multilingual learning environments. Educational systems should support language-rich preschool programs and provide early interventions for children with language delays. Finally, the study of language acquisition continues to influence not only linguistics and psychology but also neuroscience and artificial intelligence, contributing to our broader understanding of human cognition and communication.

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