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How People Learn Languages: The Role Of Genetics, Environment, and Age

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Abstract

The article presents the considerations and features of different approaches to teaching foreign languages as a means of language learning for various audiences. The study presents a comparative description of work in children's and adult audiences during English classes to increase the cognitive abilities of students and the effectiveness of their learning, including a work system developed specifically for university students (taking into account their age), which helps to optimize the educational process in higher educational institutions. The aim of this paper is to develop a scientifically grounded system of work based on methodological approaches aimed at increasing students' positive motivation for learning foreign languages in higher education institutions in Uzbekistan.

The work also reveals aspects of the use of an individual approach in teaching English, which contribute to the creation of pedagogical and psychological conditions for each student, taking into account his level of preparation (environment), rate of perception of information (genetic predisposition), motivation (age), specifics of the future profession (medicine).

Keywords: Language acquisition, Genetics, Environment, Critical period, Cognitive processes.

Introduction

Language acquisition has been one of the most studied and fascinating topics in human development. This paper explores the complex interaction between genetics, environment, and age in the language learning process. While some people seem to have a natural talent for learning new languages, others struggle. Despite extensive exposure and effort, this discrepancy highlights the importance of studying the underlying factors influencing language learning, which range from genetic predisposition to the quality of language skills, the environment, and the age at which a person begins acquiring a new language.

The object of the study is the process of teaching Medical English at TashPMI (Tashkent Pediatric Medical Institute), taking into account the age factor and environmental influences. The genetic factor is supported by the research theory.

Moreover, the research aims to study scientific and methodological literature on the topic and identify various approaches to teaching foreign languages.

The subject of the study includes the selection of educational materials, students with different language abilities, and the choice of technologies for studying the curriculum at TashPMI, taking into account the specifics of the medical field.

Research has shown that the human brain has unique capabilities for language learning, and brain regions are influenced by both genetic factors and external stimuli. Additionally, the concept of a 'critical period' in language learning has been extensively studied, with results indicating that age significantly affects the ability to achieve a native-like level of proficiency.

Language learning involves a combination of cognitive processes, neurological pathways, and environmental factors. Research shows that early exposure to multiple languages enhances brain plasticity and cognitive flexibility. This phenomenon continues to be studied through interdisciplinary research, integrating insights from linguistics, psychology, and computer science. Such approaches provide a deeper understanding and practical solutions.

Methods

- Comparative study of teaching approaches for different age groups.
- Analysis of the impact of genetics, environment, and critical periods on language acquisition.
- Review of scientific and methodological literature.

The Role of Genetics in Language Acquisition.

Genetic factors, such as the FOXP2 gene, are associated with speech development. Studies show that people with variations of this gene may have different language abilities (Fisher & Scharff, 2009).

In 2010, more than 1,000 scientists conducted a genome-wide association study. In such studies, a large number of people are genotyped at 10,000 or more specific DNA sites. The genotypes of individuals who differ more or less in the desired trait (in this case, the level of education) are compared. It was found that many genetic differences between people associated with education are also linked to differences in cognitive functions (Davies et al., 2011).

The study examined only individual differences in age and education. Nevertheless, many researchers argue that this confirms that people's genetic background contributes to their cognitive abilities. The goal of recent studies is to examine the role of parental speech-related genes (FOXP2 and CNTNAP2) in predicting children's speech and language skills, the development of these skills, and reading predictors (Newbury & Monaco, 2010). The relationship between these two genes (FOXP2 and CNTNAP2) and the development of unified speech and language, speech and language growth, as well as reading performance, were the main components of the study. The long-term goal is to identify children at risk for communication and language difficulties, as well as those who may benefit from targeted interventions. These studies are important because they are among the first in the scientific literature to examine the influence of parent-child genetic factors on verbal speech and literacy.

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The Influence of Environment on Learning

The quality and quantity of language input significantly impact language acquisition. An interactive environment, such as that provided by immersive language learning platforms, enhances knowledge retention. Speech development begins at a very young age, and evolution has ensured a period of rapid brain growth that allows for language acquisition. However, the ability to understand and use language changes and becomes more complex throughout the developmental process.

Language Acquisition is the process through which people develop the ability to perceive, produce, and use words for comprehension and communication. This ability involves acquiring various skills, including syntax and morphology, as well as a large vocabulary.

The environment plays a crucial role in children's language development, as well as in learning languages later in life. A study conducted in 1988 by Jacques Mehler and his colleagues found that newborn babies (just four days old) perceive the language spoken by their mothers as familiar (Kennison, 2005). A more compelling discovery, made by DeCasper and Spence in 1986, reported a case where Dr. Seuss had a group of pregnant women read a book aloud, while another control group never read the book. After birth, it was found that babies whose mothers had read the book preferred listening to familiar stories compared to other infants (Kennison, 2005).

A child's speech development is influenced by many environmental factors, including sounds, the language spoken by the mother and those around them, as well as instructions from the mother, teachers, and peers (Kennison, 2005). Research has shown that nature is shaped by nurture.

There is a difference between young children learning a new language in an immersive environment—such as when they move to a new country at an early age and are surrounded by the words and structures of the new language every day—and children who are introduced to a foreign language in a classroom for a limited period, perhaps just one or two hours per week at best, which is typically the case in most of our primary schools today.

In the case of immigrant children, research has shown that teenagers and young adults learn faster than young children. However, younger learners eventually catch up—and often surpass—older learners, typically becoming indistinguishable from L1 speakers. This is usually not the case for adult learners. Thus, in this context, an earlier start seems better, but it comes with conditions: children need plenty of time and opportunities for full immersion in the new language to achieve the best results.

As children develop their vocabulary, they learn words related to their surrounding environment. This explains why children have more nouns than verbs and adjectives (Kennison, 2005). They acquire these words with the help of their parents and other adults around them. Adults play a crucial role in children's language learning process. They teach children that a word refers to the entire object rather than just a part of it and how to use different words correctly in various contexts. The research by Edward Klima and Ursula Bellugi showed that children learn word order in sentences and the use of negative sentences gradually and step by step under the influence of adults (Kennison, 2005).

Confirming the claim that language acquisition depends on a child's exposure, Mason reported a case in which a child was locked away for 6.5 years with a deaf mother and was deprived of speech (Lebrun, 1980). However, after two years of education and training, she was able to express her thoughts verbally, sing, and recite poetry. She learned the language more slowly because she began

learning at the age of 6.5. This indicates the crucial role of environment, socialization, and age in children's speech development.

This section demonstrates that the environment in which a child lives and the exposure they receive play a significant role in their language development.

Older children learn faster with limited input and exposure. In this context, children are exposed to the language for a very short period, possibly an hour or two per week.

At what age should children start learning a foreign language in school?

This question is important for curriculum models, curriculum policy, pedagogy, and teachers' experience.

The Role of Age in Foreign Language Learning

The Critical Period Hypothesis suggests that there is an optimal window for language learning. This window typically closes after puberty, making it more difficult for adult learners to achieve native-like fluency (Lenneberg, 1967).

When working with an adult audience, it is important to understand that they represent a special category of learners with both positive characteristics and certain challenges in the learning process. In the field of pedagogy, there is a specific branch known as the theory and practice of adult education, called "Andragogy". Its foundation lies in considering the individual psychological characteristics of adult learners, as well as the context of their learning (Knowles, 1980). Thus, andragogy, in its broadest sense, can be described as the science of ways to achieve personal self-realization throughout life.

The final formation of the foundations of andragogy abroad was completed in 1970 when M. S. Knowles published the fundamental work "The Modern Practice of Adult Education: Andragogy vs. Pedagogy". In this book, he formulated the main principles of the new science based on an analysis of the specific characteristics of the educational process in adults compared to children. According to his findings, the learner plays a leading role in the learning process. Based on this principle, the priorities in teaching methods change accordingly.

When working with an adult audience in a foreign language learning center, the focus is on the individual, their motivations, goals, and unique psychological makeup. The organization of learning materials and the use of various methods and exercises should be adapted to the learner's individual psychological characteristics—their needs, motivations, abilities, engagement, and intelligence.

In teaching a foreign language to an adult audience, the subject-subject, equal-partnership cooperation between the teacher and the learner also plays an important role. This means giving the learner the freedom to choose their learning goals, content, sources, methods, timeframes, schedule, location, and assessment of learning outcomes (Rogers, 2002).

A modern teacher must support students' motivation, help them overcome limiting beliefs, and offer new approaches in their work so that their motivated thinking finds ways to be expressed. Properly selected, age-appropriate, engaging, and educational activities lead to the desired positive results (Illeris, 2018).

The proper selection of learning materials is not just important—it is essential to understand why the student needs this knowledge. For information to be valuable, a person must know where they will apply it: at work, while traveling, in studies, or in daily life. When students see its relevance,

they will approach learning English more responsibly, and their brain will retain the information instead of discarding it (Schmidt, 1990). Before starting a course, it is crucial to create a detailed list of students' needs and goals. The more specific the list, the faster these goals will be achieved. Carefully selected learning materials tailored to achieving one's goals are the cornerstone of our work. Yes, learning a language is easier at a young age, but this is not an absolute rule. Even at 50+, one can successfully master a new language.

Conclusion

Language acquisition is influenced by a combination of genetics, environment, and age. Genetic predisposition plays a role in cognitive abilities related to language learning, while the environment significantly shapes language skills through exposure and interaction. Age is also a critical factor, with younger learners having advantages in long-term fluency but older learners benefiting from structured learning approaches. Understanding these factors provides insight into language acquisition and informs effective teaching strategies. The theoretical significance of the study lies in defining the concepts of gene, environment, and age and their role in language learning. It includes their description, characteristics, potential, and implementation in university classrooms to develop students' practical skills, as well as in the development of scientific foundations for applying new teaching methodologies. The study emphasizes the creation of a positive learning environment. Establishing a safe and supportive atmosphere in the classroom is essential for students to feel comfortable, express themselves freely, and, as a result, effectively learn a foreign language.

References

1. Davies, G., Tenesa, A., Payton, A., Yang, J., Harris, S. E., Liewald, D., Ke, X., Le Hellard, S., Christoforou, A., Luciano, M., McGhee, K., Lopez, L., Gow, A. J., Corley, J., Redmond, P., Fox, H. C., Haggarty, P., Whalley, L. J., McNeill, G., … Deary, I. J. (2011). Genome-wide association studies establish that human intelligence is highly heritable and polygenic. Molecular Psychiatry, 16(10), 996–1005. https://doi.org/10.1038/mp.2011.85
2. Fisher, S. and Scharff, C. (2009) FOXP2 as a Molecular Window into Speech and Language. Trends in Genetics, 25, 166-177.https://doi.org/10.1016/j.tig.2009.03.002
3. Illeris, K. (2018). Contemporary theories of learning: Learning theorists in their own words (2nd ed.). Routledge.
4. Kennison, S. M. (2005). Psychology of Language: A Cognitive Approach. Pearson.
5. Knowles, M. S. (1980). The adult learner: A neglected species (3rd ed.). Gulf Publishing.
6. Lebrun, Y. (1980). Recovery in a case of delayed speech development: A case study. Journal of Child Language, 7(2), 275–288. https://doi.org/10.1017/S0305000900002655
7. Lenneberg, E. (1967). Biological foundations of language. New York: John Wiley
8. Newbury, D. F., & Monaco, A. P. (2010). Genetic advances in the study of speech and Language Disorders. Neuron, 68(2), 309–320. https://doi.org/10.1016/j.neuron.2010.10.001
9. Rogers, A. (2002). Teaching adults (3rd ed.). Open University Press.
10. Schmidt, R. (1990). The role of consciousness in second language learning. Applied Linguistics, 11(2), 129-158.