

## **Neuroplasticity and Adult L2 Acquisition during Intensive Short Term Language Training Programs**

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**Abstract:** The present paper addresses the issue of neuroplasticity in adults during second language acquisition and emphasizes the impact of intensive short term language training courses. Neuroplasticity, which means the ability of the brain to reorganize its structure and create new neuron connections, stays active throughout life and facilitates the ability of people to learn languages after the critical period. For conducting research, the study employs the qualitative method that presupposes the analysis of current literature on the issue. Intensive language courses, which involve frequent and intensive exposure and interaction, cause changes in the structure of the brain in terms of creating new connections in language processing centers, such as Broca's and Wernicke's areas. Consequently, the process contributes to improved outcomes for adult language learning. Age, motivation, cognitive skills, and prior experience in other languages have been identified as the factors affecting neuroplasticity in adults; however, it should be pointed out that aging affects the process of language learning but does not preclude people from acquiring languages. Additionally, the research highlights the contrast between various designs of intensive language courses and proves that the way a program is structured has a considerable influence on how effectively learners acquire the second language. It is evident that if the training program is well-thought-out, the process of learning a new language can be facilitated due to the enhanced neuroplastic capabilities of adults.

**Key Words:** neuroplasticity, adult language learning, second language acquisition, intensive language training, cognitive adaptation, language education

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### **Introduction**

Neuroplasticity is also known as brain plasticity or neural plasticity and refers to the ability of the brain to change and create new neural connections during one's lifetime (Mechelli et al., 2004; Zhang & Wang, 2007; Köpke, 2021). It is an important property of the brain that helps it adapt to injuries, learning, and environmental changes. Neuroplasticity plays an essential role in various brain functions, including the development of memories and skills, and recovery from brain injuries (Nilsson et al., 2021). With regard to language acquisition, neuroplasticity allows people to acquire new languages through the remodeling of neural circuits (Giannakopoulou et al., 2013).

Learning a second language (L2) at an adult age is a complicated, yet highly relevant task in today's highly globalized society (Barbeau et al., 2017). Although children generally have a distinct advantage in terms of acquiring a language because of their greater neuroplasticity during early years of development, adults are also known to have a great ability to learn new languages (Rogowsky et al., 2013; Gkintoni et al., 2025). Recent studies indicate that, despite having a different set of difficulties associated with cognition in comparison to other age groups, adult learners may become highly skilled in learning their

second language, particularly with regard to utilizing their neuroplasticity while going through intensive language acquisition training (Bubbico et al., 2019; White et al., 2013; Constantinescu et al., 2025).

Short-term language courses for intensive training are set up in a way that allows the learners to experience immersion in the foreign language for many hours during a short period of time. Such programs are usually concentrated on the use of various teaching techniques that emphasize learning languages through immersion and usage. Programs of this kind are designed to run between a few weeks and several months. These are quite useful for adults who want to learn the L2 language in an accelerated way (Osterhout et al., 2008). The present paper seeks to explore the role of neuroplasticity in acquiring an L2 language among adults because of the intensive process that is involved.

The paper will be structured as follows: Section I will discuss the concepts of neuroplasticity, adult second-language acquisition, and intensive language courses. Section II will address the impact of neuroplasticity on adult second-language acquisition. Section III will analyze the factors that affect neuroplasticity, such as age and motivation. Section IV will discuss intensive language learning programs. Section V will conclude the discussion.

## **Neuroplasticity and Adult L2 Acquisition**

Neuroplasticity can be described as the brain's ability to alter itself by generating fresh neurons due to the input of information and experiences. In this case, regarding the learning of a second language at an adult age, neuroplasticity provides the brain with the potential to change and reorganize itself to accommodate the language (Isel, 2021). While children naturally possess the ability to learn languages, adults have to depend on neuroplasticity. This entails strengthening existing neural circuits while forming new ones in the brain's language regions, such as Broca's area and Wernicke's area, located in the left hemisphere.

Intensive language training courses that span a short duration are known to increase neuroplasticity rapidly due to the prolonged exposure of the learner to a particular language setting. The frequent stimulation of the brain causes it to keep restructuring its structure, thus reinforcing neurological structures while learning new phonological, syntactic, and semantic rules. These intensive language courses have proven to be more effective than traditional methods in promoting neuroplasticity through increased exposure and practical application. Furthermore, such intensive language courses make the most of the brain's potential to form new neural pathways, allowing one to learn new languages at an accelerated pace. Another benefit of these intensive language training courses is that can counteract the effects of reduced plasticity caused by aging (Ware et al., 2021).

A number of studies have been carried out on the topic of neuroplasticity in relation to second language acquisition in adults. It was found in some studies that when adults engage in an immersion program involving second language learning, there is a change observed in their grey matter, which is associated with language processing and memory (Kaiser et al., 2015). It has also been reported by other research work that bilingual people have dense grey matter in their brains, because of which language acquisition in adulthood is possible. Some other studies reveal that intensive language learning causes a change in the size and shape of the hippocampus, an area of the brain associated. with memory, indicating the presence of neuroplasticity during language acquisition.

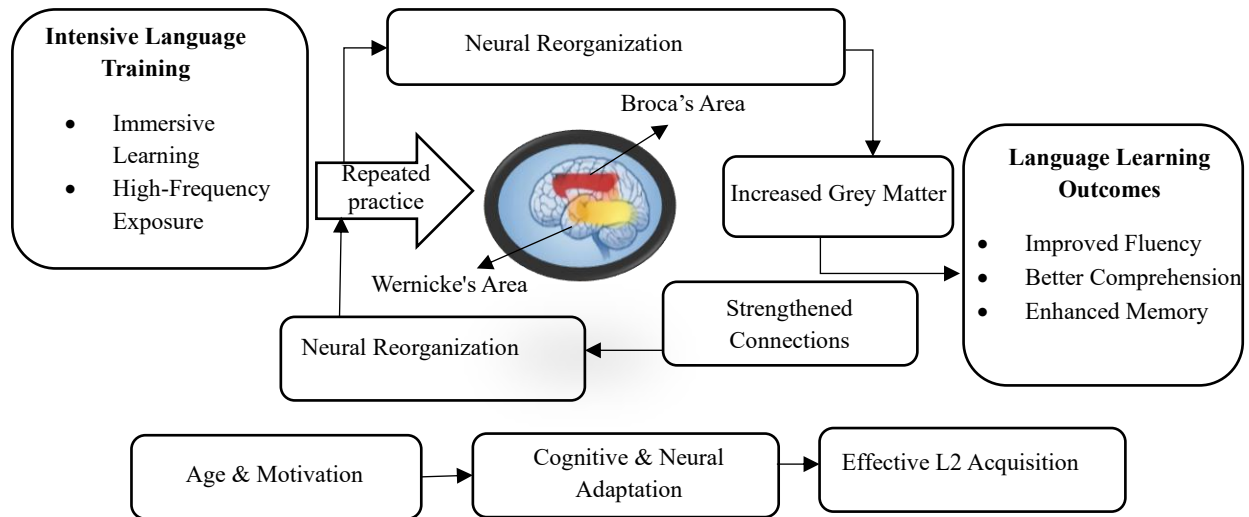


Figure 1: Conceptual Framework of Neuroplasticity in Adult L2 Acquisition during Intensive Language Training

The relationship between intensive language training and neuroplasticity that is responsible for L2 learning in adults has been presented in Figure 1. Intensive training and practice of language skills cause neuroplastic adaptations in areas involved in language functioning. The brain reorganizes by increasing the volume of grey matter and creating new neural connections. Personal traits, including age, motivation, and cognition, may also influence neuroplastic changes, which will then be linked to enhanced language abilities, such as fluency, comprehension, and retention.

## Factors Influencing Neuroplasticity in Adult L2 Acquisition

### Age as a Factor in Neuroplasticity and Language Learning

Age becomes very important concerning the extent to which neuroplasticity influences language acquisition. Although neuroplasticity is greater in children during early childhood years, studies have revealed that even though there might be some differences regarding the rate of developing neurons, adults can still acquire them if subjected to the necessary conditions. It is common to find that young people possess the capability to become more flexible in terms of learning an L2 as compared to adults, who do not enjoy the same advantages due to their more stable neural structure. Nevertheless, it does not necessarily mean that adults cannot acquire new knowledge, as the brain retains its capability to undergo neuroplasticity even when an individual grows older.

Table 1: Factors Influencing Neuroplasticity in Adult Language Learning

| Factor               | Description                                   | Effect on Language Learning        |
|----------------------|-----------------------------------------------|------------------------------------|
| Age                  | Gradual decline in brain plasticity over time | Slower but still possible learning |
| Motivation           | Learner's internal or external drive          | Enhances engagement and retention  |
| Cognitive Ability    | Includes memory and processing skills         | Affects the speed of acquisition   |
| Prior Experience     | Knowledge of other languages                  | Facilitates easier learning        |
| Learning Environment | Level of exposure to the target language      | Immersion leads to faster progress |

Table 1 outlines some of the key determinants of neuroplasticity that affect second-language learning in adulthood. The age, motivation level, cognitive functioning, previous experience with language, and learning environment all matter. Neuroplasticity may decrease with age, but it is still present during adulthood. The environment and motivation can greatly contribute to better learning results.

### **Motivation and Neuroplasticity**

In terms of adult L2 acquisition, motivation is another aspect that significantly affects neuroplasticity. Highly motivated individuals are able to increase the efficiency of their brains to get engaged in the learning process and to form new connections between neurons. For example, extrinsic motivation, such as learning a second language due to professional requirements, is likely to induce some changes in neuroplasticity; however, intrinsic motivation, such as a person's personal wish to be able to speak another language, usually induces greater neuroplastic changes. Motivated people are highly likely to exert the effort needed to promote neuroplasticity and thus make the second language learning easier. Besides, motivational factors may affect the intensity of language practice, which also plays an important role in inducing neuroplasticity.

### **Individual Differences in Language Learning**

Another factor that can affect neuroplasticity in the context of language learning is the influence of individual characteristics. These may include cognitive attributes, such as working memory and speed of processing. For example, people with higher levels of working memory and greater processing speed can probably retain linguistic information in their minds easily, which means that can learn foreign languages more quickly and efficiently. Another personal trait that could influence language learning includes previous language acquisition, since individuals who have already been exposed to different languages would definitely have the upper hand in this situation, because their brains have already been trained to pick up different languages.

## **Intensive Short-Term Language Training Programs**

### **Description of Common Features of Intensive Language Programs**

Programs that are intense and of short duration have been known to adopt an immersive and repetitive method of language instruction. Such programs involve long hours of teaching sessions where students receive extensive knowledge about the language. Language programs such as these have lessons and activities based on using the language in its spoken, listening, reading, and writing forms. Moreover, such language programs also place emphasis on active learning, incorporating exercises such as conversations and discussions, among other things, to expedite the process of learning the language.

### **Comparison of Different Types of Intensive Language Programs**

Language courses differ from one another in terms of their delivery and structure. For instance, some courses are purely immersive because the learner is exposed to the language throughout the entire day. In an immersive course, the destination of choice should have native speakers of the target language. Classroom courses are those that require the learner to spend a lot of time studying in class; however, do not immerse the learner in the environment. Task-oriented programs are another example of a language course that is aimed at developing certain language skills through task completion.

Table 2 shows the different kinds of intensive language courses and their characteristics. Immersive classes provide the highest amount of exposure and language proficiency within the shortest time frame.

Regular classes provide more structured lessons and foster improved grammatical knowledge. Task-based courses help to build communicative competence, while hybrid courses combine all methods.

Table 2: Types of Intensive Language Training Programs

| Program Type    | Key Features                         | Benefits                         |
|-----------------|--------------------------------------|----------------------------------|
| Immersion       | Full exposure to the target language | Rapid improvement in fluency     |
| Classroom-Based | Structured lessons and instruction   | Strong grammatical foundation    |
| Task-Based      | Focus on practical communication     | Development of real-world skills |
| Hybrid          | Combination of methods               | Balanced learning experience     |

### Examination of the Effectiveness of Intensive Short-Term Language Training Programs

Intensive short-term programs for learning languages have proven to lead to considerable advancements in language abilities in a shorter period. The results of research have shown that students participating in intensive courses often show faster growth in speech and comprehension due to constant practice, which leads to strengthening connections in the brain responsible for language abilities. Nonetheless, the efficacy of these courses depends on different aspects, such as the structure of the course itself, prior experience in other languages, and motivation. According to some scholars, learners often make fast progress during intensive courses but need further practice to retain language skills. Regardless, intensive courses are highly efficient in learning languages quickly.

### Conclusion

To sum up, the current paper provides some insights into the concept of neuroplasticity in relation to intensive short-term L2 language learning programs for adults. The analysis shows that neuroplasticity plays an extremely important part in the process of language learning among adults, as the process of neurogenesis slows down considerably with age. Nevertheless, intensive training programs, which are based on high frequency of exposure to the language of interest, are effective as increase the speed of changes and help learners acquire skills much faster. The effectiveness of this training depends on different factors: age, the motivation level of participants, and their cognitive abilities. Moreover, it has been discovered that motivation increases neuroplasticity, thus enhancing the process of L2 learning. As far as future studies are concerned, it would be interesting to understand in which way different approaches to intensive language learning (e.g., immersion programs, task-based programs, etc.) accelerate this process. It is also necessary to conduct long-term studies devoted to the analysis of different approaches to intensive language training and neuroplastic changes caused thereby. The results of this research highlight the importance of neuroplasticity in adult second language acquisition and imply that, given proper instructional techniques and learner participation, adults can attain excellent second language fluency. The realization and utilization of neuroplasticity can bring about a new era in language instruction, where second language acquisition becomes much easier for adults.

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