



PART 3

Read the text below and answer questions 27–40.

NEUROPLASTICITY AND LANGUAGE: BEYOND THE CRITICAL PERIOD

Neuroplasticity is often described as the brain’s ability to change with experience, yet the term can be misleading if it implies a single capacity that fades uniformly after childhood. In reality, different neural systems remain modifiable across the lifespan, while the kinds of change they permit—and the conditions required to trigger them—vary with age, task, and biological state. For language learning, this means age matters, but not as an isolated cause: training intensity, feedback quality, sleep, stress, motivation, and prior knowledge all interact with adult learning. The question becomes less about whether plasticity “ends” and more about which forms of adaptation are most available, and how learning environments can be engineered to exploit them.

A useful starting distinction is between structural plasticity and functional plasticity. Structural plasticity refers to measurable alterations in neural tissue or connectivity, such as changes in grey matter density, white matter integrity, or the strength of long-range pathways that support efficient communication between regions. Functional plasticity refers to shifts in how networks are recruited for a task—how the brain allocates attention, integrates cues, and automates routines. Adult learners may show functional reorganisation relatively quickly, for example by relying less on effortful control systems and more on specialised circuits as skills become procedural. Structural change can occur too, but it may emerge slowly, require substantial practice, or be harder to detect over short training windows. This difference helps explain why adults can show clear behavioural gains even when imaging findings appear modest.

Research on language learning increasingly frames “connectivity” as dynamic rather than fixed. Functional connectivity can strengthen when regions co-activate during demanding tasks, while structural connectivity depends on longer-term adaptation in pathways that support fast signal transmission. In the adult brain, improvement may also involve inhibitory control: the ability to suppress dominant first-language predictions long enough for new mappings to stabilise. This is not purely a matter of effort; it reflects training-driven changes in how competing representations are managed. In some cases, adult plasticity can be maladaptive, particularly when repeated errors become automatised or when avoidance reduces exposure to corrective input. Such patterns can be stabilised by habit, not by inability, which is why the design of practice and feedback matters.

Pronunciation and perception have become a key test case because they depend on fine-grained auditory discrimination, precise motor control, and tight perception–production



coupling. Adult learners often perceive unfamiliar sounds through phonemic categorization built in early life, collapsing distinctions that are meaningful in the new language. Intensive training can improve these capacities, especially when practice is spaced and feedback is immediate, allowing learners to notice discrepancies and adjust articulatory routines. However, improvement can remain tied to the specific contrasts trained unless learners receive varied input and opportunities to generalise. Laboratory gains therefore translate most reliably when training includes multiple speakers, contexts, and listening conditions that push learners beyond narrow drills.

Sleep and consolidation are increasingly treated as central mechanisms rather than peripheral “lifestyle factors”. Newly learned words, sound patterns, and grammatical regularities can become more stable after sleep, as memory traces are reorganised and integrated with existing knowledge. The hippocampus is often implicated in early encoding and in the subsequent redistribution of information toward long-term cortical storage, though the precise balance can vary by task. Sleep does not create learning from nothing, but it can protect fragile representations from interference and strengthen the retrieval of newly formed associations. Chronic stress, by contrast, can impair attention during learning and reduce the efficiency of consolidation afterwards, partly by disrupting sleep and partly by altering neurochemical conditions that support memory updating.

Neuroimaging studies also suggest that expertise changes cognitive effort. Beginners frequently recruit broad control systems associated with attention and working memory, reflecting the burden of monitoring performance and holding forms in mind. With practice, processing can shift toward more specialised language networks, reducing reliance on effortful control and freeing resources for meaning. This pattern does not demonstrate a single “critical period”; rather, it indicates that the adult brain can automate components of language under suitable conditions, though the timeline may be longer and more dependent on deliberate practice than in early childhood. In this view, apparent age limits are often limits on the speed and efficiency of adaptation, not on the existence of adaptation.

Cross-linguistic influence remains a powerful constraint and a potential resource. The first language shapes what the brain predicts from incoming input, which can accelerate comprehension when structures align but can also produce persistent errors when they do not. Training that makes contrasts explicit—through minimal pairs, corrective feedback, and noticing activities—can reduce these errors by changing what learners attend to and by weakening overconfident predictions. This process resembles recalibration: learners learn not only new forms but also new expectations about which cues are reliable. Where



instruction is absent or input is sparse, incorrect predictions can become entrenched, creating the appearance of fossilization even when the system is still capable of change.

Plasticity is also constrained by life context. Adults usually have fewer hours of exposure than children, less tolerance for ambiguity in real-time interaction, and a stronger fear of social error that discourages risk-taking. These factors reduce the volume and diversity of input that the brain can learn from. Yet adults can compensate through strategy: they can plan deliberate practice, seek targeted exposure, and use metacognition to monitor weaknesses and revise methods. In other words, “beyond the critical period” is partly a story about designing conditions that the adult brain can use effectively, and about preventing maladaptive routines from becoming stable through repetition without correction.

Insights from plasticity research are applied not only to education but also to rehabilitation. After stroke or injury, language therapy often uses repetition, feedback, and progressively increasing difficulty to drive improvement. Recovery is not identical to second-language learning, yet both depend on structured input and on the reorganisation of functional systems under constraint. Clinical evidence reinforces the broader claim that plasticity persists, even later in life, and that measurable gains can follow when training is intensive, feedback is timely, and consolidation is supported. Overall, this research shifts the debate from an age-based verdict to a design problem: how to combine input, practice, feedback, and recovery cycles so that adult learners can adapt efficiently.

Questions 27–31

Complete the summary below. Choose **NO MORE THAN TWO WORDS** from the text for each answer.

Adult neuroplasticity and language learning

Neuroplasticity does not end in adulthood; many neural systems remain **27** Researchers distinguish structural change from **28**, which concerns how networks are recruited during tasks. In perception training, adults benefit when practice is **29** and feedback is immediate. Sleep supports memory **30** of newly learned forms. Adults can partly compensate for limited exposure by using **31** to monitor weaknesses.

Questions 32–36

Complete the sentences below. Choose **ONE WORD ONLY** from the text for each answer.

32 Structural change may occur but can be harder to over short training periods.



33 Without diverse training conditions, improvements may remain specific to trained

34 Beginners often rely on working and broader control systems.

35 Noticing activities can reduce errors by altering what learners to in new input.

36 Adult adaptation is partly constrained by life

Questions 37–40

Complete the notes below. Choose **ONE WORD ONLY** from the text for each answer.

Factors shaping continued adaptation

- To move beyond item-specific gains, learners need varied input and chances to **37**
- After sleep, newly learned language patterns may become more **38**
- Compared with children, adults may have lower tolerance for **39** in interaction.
- In rehabilitation, therapy often increases **40** gradually over time.

Answer Key

27. modifiable

28. functional plasticity

29. spaced

30. consolidation

31. metacognition

32. detect

33. contrasts

34. memory

35. attend

36. context

37. generalise

38. stable



39. ambiguity

40. difficulty