

## 認知神經科學對外語教學的啟示：從習得年齡與學習風格談起

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### 摘要

神經教學法近年在教育界再度掀起討論熱潮，將認知神經科學研究融入教學實務成了外語教學者的首要任務。本文首先從習得年齡及學習風格等學習者因子，介紹認知神經科學在外語習得研究的重要實證發現。研究文獻說明，外語接觸年齡的早晚，的確反映在外語和母語處理神經迴路差異，但是語言學習是動態的，精熟程度也對腦神經機制有所影響。討論學習風格議題時，一般認為必須從學習者特性出發，教學者應該適性教學，提供學習者偏好的資訊處理管道。然而，從學習的神經迴路看來，完全配合學習者偏好，反而限制了大腦學習的可能性，多元的學習管道才是促進穩固學習神經迴路較優的方法。本文最後將舉例討論認知神經科學應用於大學的外語教學實務(以德語教學為例)的可能性。

**關鍵詞：**認知神經科學、外語教學、德語教學、習得年齡、學習風格

# **When cognitive neuroscience meets foreign language didactics: applications from research on age of acquisition and learning styles**

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## **Abstract**

Recently, neurodidactics and brain-based learning have opened up an intense debate in foreign language pedagogy. Findings from the cognitive neuroscience have inspired foreign language didactics and integration of these findings becomes a must for foreign language instructors. The present paper aims to provide a brief review of the important neurocognitive studies that explore two learner factors: age of acquisition and learning styles. Numerous studies have shown that the age of acquisition has an influence on the cortical organization of first and second language processing. Early bilinguals and late bilinguals show different neural correlates while processing L1 and L2. However, language learning is a dynamic process so that language proficiency must be taken into consideration. With regard to learning styles, it is generally believed that matching learning styles of the learner will facilitate learning effects. However, empirical studies do not provide any direct evidence that matching learning styles can improve learning effects. In the neurocognitive point of view, multimodal learning leads to best learning results. Finally, the application of research findings for evidence-based foreign language instructions will be demonstrated.

**Keywords:** Cognitive neuroscience, foreign language didactics, age of acquisition, learning styles, Teaching German as foreign language