基于脑神经认知研究的“二语社交学习”理论对中文线上、线下教学的启示

Incorporating Neurocognitive-based Social L2 Learning in CFL Online & Offline Instruction

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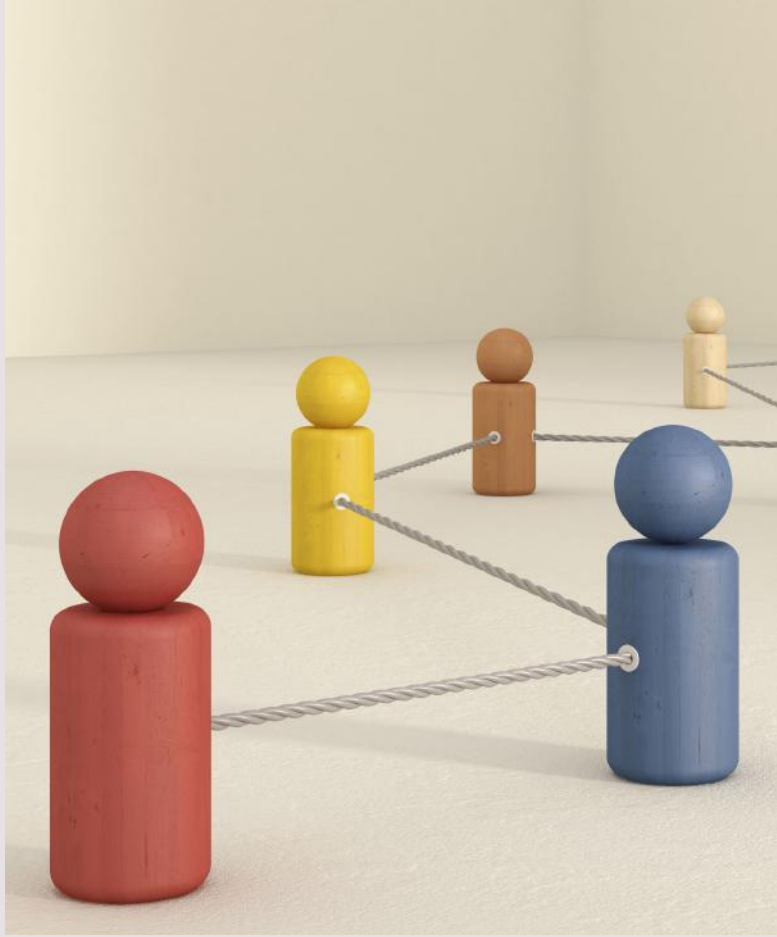
要点 KEY POINTS

1. 二语社交学习模型的基本概念、理论框架及脑神经认知基础
The core concept, framework and neurocognitive base of the social L2 learning（SL2）model

2. 二语社交学习的脑神经认知实证研究证据 **The neuro-cognitive evidence of SL2 (3 recent studies)**

3. 中文线上、线下教学应采用的三个教学策略 **Three SL2-based pedagogical strategies for CFL online and offline instruction**

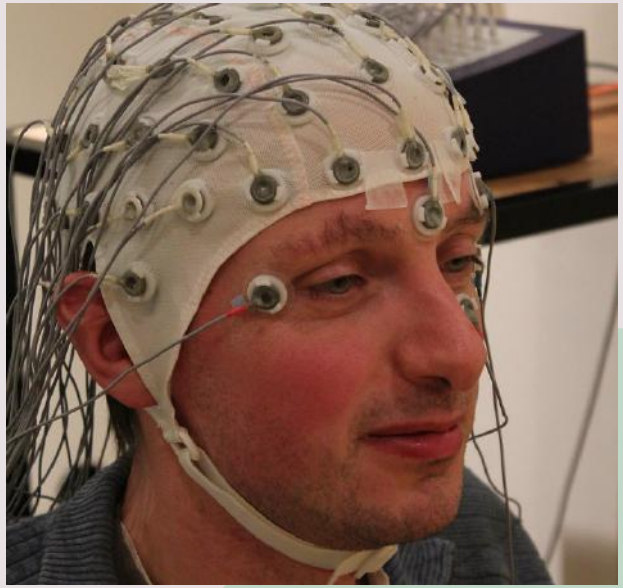


I. 二语社交学习模型理论框架

A social L2 learning (SL2) model: its theoretical framework and neuro-cognitive base

1、二语社交学习模型 The social second language learning model (SL2)

二语社交学习理论是"新型学习理论"在语言领域的应用，近期得到许多脑电波及核磁共振等实证研究的实锤印证 SL2 is part of the new science of learning. Recently the SL2 learning model has received strong support from neuro-imaging and ERP studies in SLA for its efficacy and significance.



研究显示，二语加工是左右脑同时参与并证实右侧社交学习可以改变脑结构及学习行为，同时促进二语学习效果 These studies revealed two important processes in both left and right brain regions working together and demonstrated positive brain changes along with enhanced behavioral outcome as a result of SL2 learning

Jeong et al., 2010; Jeong & Li, 2020; Hosoda et al., 2013; Legault, Fang, Lan, & Li, 2019; Li & Jeong, 2020; Mayer, Yildiz, Macedonia, & von Kriegstein, 2015; Verga & Kotz, 2019, among others.

2、二语社交学习的理论框架
The SL2 framework

社交学习注重调动更多的大脑（左右）区域参与二语加工、习得， 其中包括多模态感知、以行动、社交、情感为主的互动，以便促进语义加工 **(Li & Jeong, 2020)** Learners recruit broader brain regions to process multiple perceptual, action-related, social, and emotional cues to add meaning during social interactions

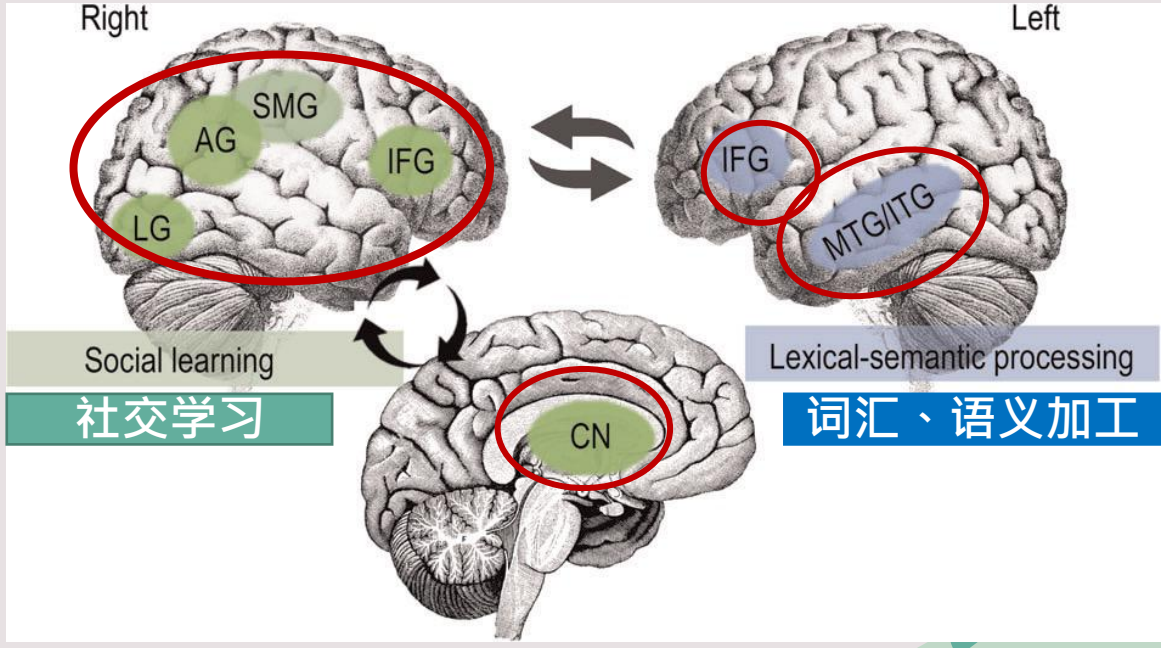
社交学习的优势是全脑启动的学习，强调利用大脑右侧对二语语言深度、扩展性加工、建立直接的二语语义表征联系，抑制、减少一语的干扰，建立二语的具象认知体系 These processes involve the whole-brain and have advantages of strengthening elabrative & direct associations between the new L2 words and embodied semantic representations as well as a L2 cognitive processing system in the brain

交互注意（**joint attention**）与共享意图（**shared intentionality**）（**Tomasello, 2000**）

3、二语社交互动的大脑双侧的脑神经认知基础 The neural correlates of L2 social interaction in bilateral brain regions

在大脑的右侧区域 (SMG, AG, IFG) 协同视空间区（LG）及脑皮层（CN） 形成活跃的社交学习神经通路，是我们了解大脑如何启动二语社交学习的窗口 The strong engagement of the right brain regions along with the visual (LG) and subcortical regions (CN), form an important neural network for understanding SL2.

左右两侧加工不同信息：1、右侧IFG启动社交学习，左侧 IFG 启动词汇语义加工、记忆；2、两侧缺一不可。左侧重点加工语言，右侧社交神经通路负责辅助语言学习 The bilateral IFG has long been implicated in lexical-semantic processing and its integration with memory. This network highlights the stronger role of the right-hemisphere brain regions as compared with the typical left-lateralized language networks.



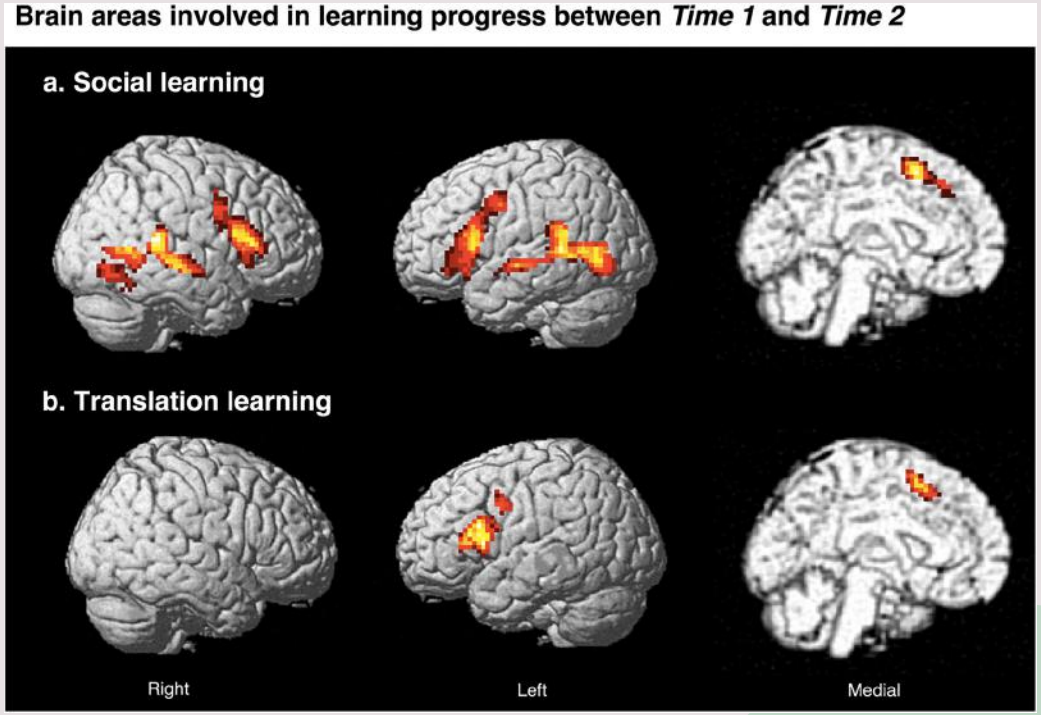
II. 实证研究证据：社交学习与不同类型学习的比较研究 *Implirical findings: Social learning & different traditional learning*

研究一：社交互动与翻译法比较：社交互动下的二语词汇习得与一语相同，但翻译法则不同于一语 L2 words are processed in a similar fashion as L1 words learned via social interaction, but not via L1 translation

Jeong et al. (2010) 采用两种方法教日语学生学习韩语词汇：1、L1-L2翻译法 ；2、社交模拟互动（观看录像中真实社交互动）。之后进行核磁扫描时测试词汇 Researchers trained Japanese speakers to learn Korean vocab under two conditions: 1. L1 translation, or 2. simulated social interaction Participants were then asked to retrieve the target L2 words in a (fMRI) session.

结果显示通过模拟社交法学习的词汇在右脑SMG一区较左脑为主的翻译法有更多的大脑激活（MFG， SMG） The results indicated that the words learned through videos with social interactions produced more activation in the right SMG whereas the words learned from translation produced more activity in the left middle frontal gyrus (MFG).

结果还显示社交学习条件下二语词汇习得所激活的模式与区域与一语儿时习得的词汇激活模式及区域相同 It is found that retrieval of L1 words (acquired by these participants in childhood through daily life) also produced greater activation in the right SMG.

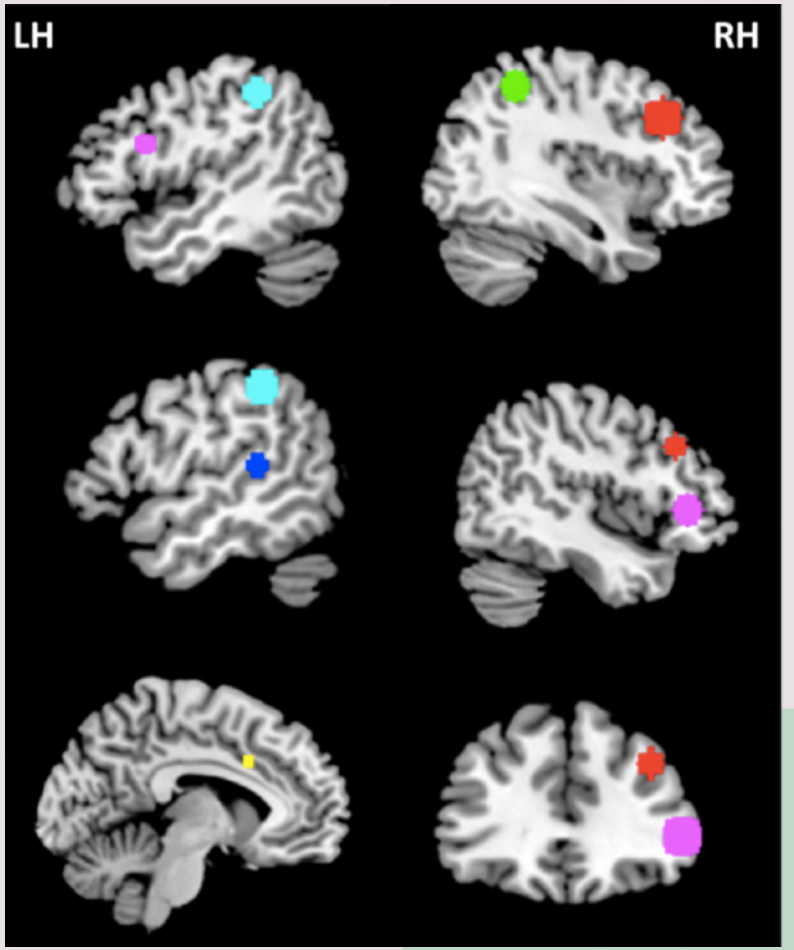


研究二：虚拟现实互动与非虚拟现实互动比较：在右脑顶叶区皮层的SMG及AG区，虚拟现实互动较非虚拟现实的脑激活度更高 *The right inferior parietal cortex (IPL, including both SMG and AG) has been implicated more strongly in VR* interactive learning as compared with non-VR learning*

Legault 及同仁 (2019) 让二语学习者参与**2-3**周的密集词汇训练。训练包括七次课，两种条件：**1**、虚拟现实互动 **VE**；**2**、词汇-图片联系 **PW** Researchers engaged L2 learners in 2–3 weeks of intensive L2 vocabulary training across seven sessions under 2 conditions: the VR-based and non-VR (word to picture association).

虚拟组的**CT**与**GMV**区域显示，随着二语训练时间，语言控制网络不断形成并增加，与语言训练结果及认知能力有正相关性，同时脑结构（脑灰质）也在增厚 CT and GMV in regions implicated in a language control network increased over time and correlated with L2 training performance and cognitive ability. The structural changes happen quickly

学习效应结果还显示**PW**组学习者多数激活**IFG**区域，而**VE**组则大量使用 **IPL**区域进行二语学习 The context of learning effects are show in that the PW learners recruit resources more from the IFG while the VE learners predominantly rely on the IPL for L2 learning

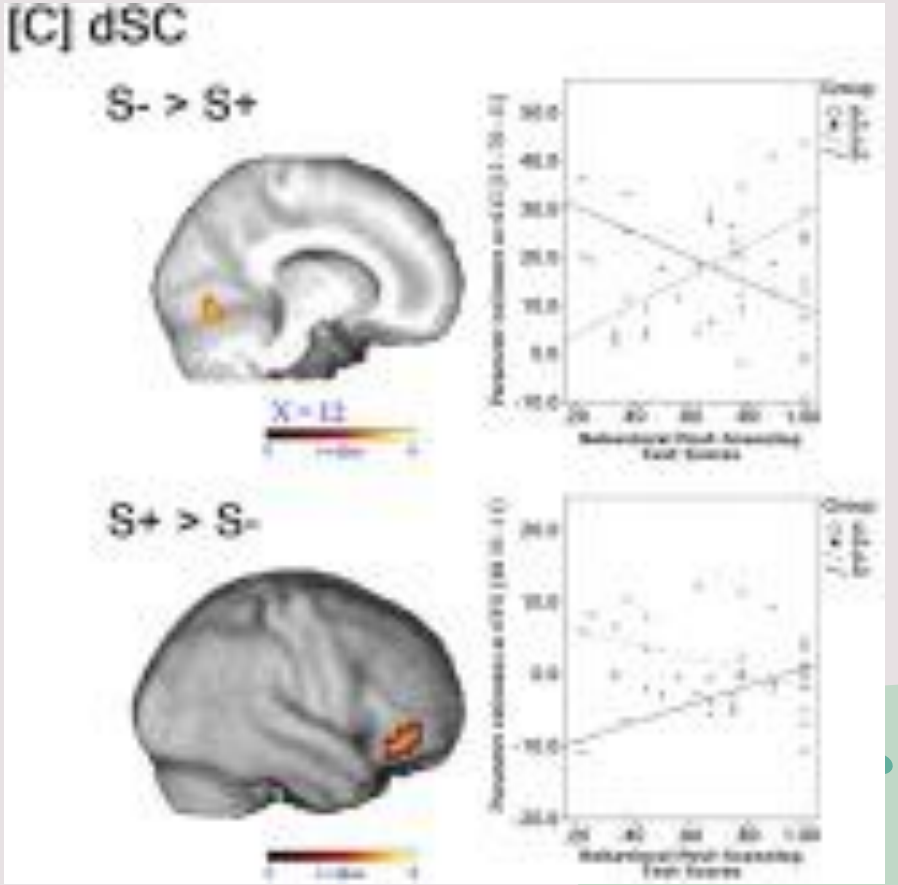


研究三：同伴互动学习与个人学习比较：同伴学习较个人学习的右脑在SMG区激活率更高 The right SMG is shown to be more activated in simulated partner-based learning than individual-based learning of word meanings

Verga and Kotz et al., (2019) 比较了两个条件下（同伴 **vs.** 个人）的脑成像结果，发现同伴互动学习，有较多的右脑**IFG**区的激活并学习成绩较高，个人学习则没有以上效应 Researchers found that participants with higher learning outcomes showed higher activity in the right IFG during an interactive learning condition but not during an individualized non-interactive learning condition.

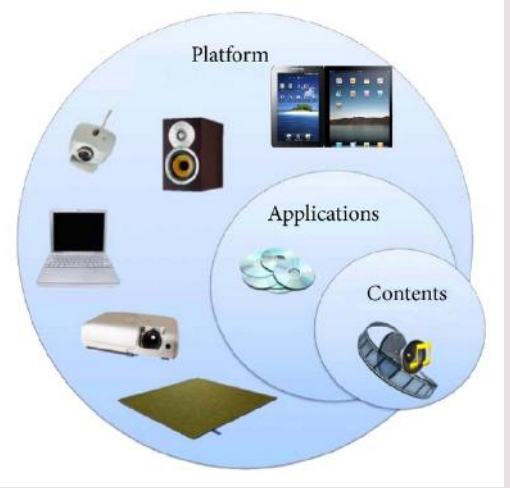
在模拟互动中，有同伴的学习者的颞叶协调区域的激活与右脑视觉检测及视空间学习的两个区域：**LG**（lingual gyrus）及**CN**（caudate nucleus）的激活有正相关性 Levels of activity in the right lingual gyrus (LG) and right caudate nucleus (CN), previously implicated in visual search process and visuospatial learning, also correlated with temporal coordination between a learner and a partner during simulated interactive learning.

这一结果揭示只要有互动社交伙伴就能辅助二语词汇学习，主要是反映在编码匹配时的扩展性语义加工，可以导致更多的成功提取，而不是浅层表面加工 This suggests that the mere presence of a social partner would facilitate L2 word learning, with more elaborative semantic processing during encoding and lead to more successful retrieval than surface-level processing of the same items.



III. 二语社交学习在中文教学中的应用：三个策略 *SL2-based Pedagogical strategies in CFL instruction*

策略 1：采用启动双侧加工的多模态社交互动输入 Multimodal interactive input



举例 Examples:

- 提供丰富的多模态、多媒体、具有互动特色的输入：如视频、录像互动真人互动、模拟现实动画短片等 Provide enriched multimodal & multimedia input with interactive features (videos & VR)
- 为学习者提供多种感官刺激，与肢体、感知相关的练习，以便建立直接的二语概念的联系（形义匹配），尽量避免一语翻译 Create multimedia and motor-sensory exercises & actions that enable direct L2 concept link (form-meaning mapping) instead of L1 translation

策略2：充分利用语言、视空间感知、虚拟等各种情感智力学习语言 Use of linguistic, visual, and emotional intelligence (perceive, reason & understand) for SL2 learning

举例 Examples:

- **使用丰富的视空间辅助材料，如动画、视频、有大量体例的输入，以便保证深度加工基础上的形义匹配（Quizlet, Lyrics training ）**Use rich visual & special aids, sound, and animated input with ample examples to ensure elaborated form-meaning mapping (Quizlet, Lyrics training)
- **提供有社交因素、可以体演的、有真实情景的各种活动** Use tasks that allow affect display, gestures, and physical surrounding to be part of it

策略3：鼓励有真实意义的、有交际同伴的、具象参与的社交互动语言学习 Authentic & embodied participatory learning with partners

举例 Examples:

- **使用有技术支撑的真实情景以及有同伴参与的活动 (Pear-deck, Padlet)** Use authentic tasks and technology-enhanced with sensory-motor engagement.
- **使用以行动为主的、目标清楚的、有真人真物的任务教学、如：有真实感的虚拟现实互动，有真人的远程会议、网上讨论等：(Google Tour Creator)** Create action-based & goal-oriented tasks using VR, Second Life, virtue meetings, long distance discussions
- **提供有对话伙伴的互动，为学习者提供母语语伴、笔友等进行互动 (Flipgrid, #LangChat, #MFLTwitterati, or #FLTeach)** Match up students with native conversation partners and pen pals

我们需要不断设计新的学习方法极大促进二语学习者使用语言的经验 **We need to constantly design new experiences to empower our students to use the languages they're learning.**

谢谢！Thank you！

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