**Procedural Learning Ability Predicts Artificial L2 Learning and Language Awareness in 9-Year-Old Children**

In the last ten years a number of behavioral and electroencephalogram studies have examined the relationship between declarative and procedural long-term memory and adult L2 learning (e.g., Faretta-Stutenberg & Morgan-Short, 2017; Morgan-Short et al., 2014). Such a relationship has not been examined in children, although more general research has focused on differences in the two memory systems in typically developing children vs. children with specific language impairment (e.g., Lum et al., 2010).

The present laboratory study addressed two main research questions: (1) how declarative and procedural learning ability contribute to child L2 learning in its initial stages, and (2) how they modulate the children's ability to notice and report formal aspects of the learned L2 (language awareness).

In the context of a computer board game in implicit instruction conditions, 43 L1 Italian 8-9 year olds were individually auditorily exposed to the artificial language BrocantoJ (a version of Brocanto2, Morgan-Short, 2007) over three sessions on consecutive days (264 sentences in total). Behavioral standardized memory tasks and an alternating serial reaction time task provided measures of visual/verbal declarative and procedural learning ability respectively. Language learning was assessed via an online measure of comprehension and a grammaticality judgment task testing morphosyntactic development. Finally, knowledge of the formal characteristics of the artificial language was elicited in a debriefing interview administered after testing.

A regression analysis revealed that procedural learning ability was a statistically significant predictor of child L2 learning overall and specifically later in training, as well as of language awareness. However, declarative learning ability was not statistically significantly related to L2 learning or to language awareness. The latter result is in contrast with the findings of most adult studies where similar artificial language paradigms have been used and points towards a cognitive developmental difference in L2 learning in the two age groups.

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(50-word summary)

The study investigated the contributions of declarative and procedural memory to L2 learning, and examined how they modulate the ability to notice and report formal aspects of an artificial L2 in primary school children. It found that, unlike declarative memory, procedural memory predicted both child L2 learning and language awareness.