# Why is conversation not easy for older adults? An experimental study on production/comprehension asymmetry in Chinese older adults

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**Abstract:**

Objective: The success of conversations depends considerably on the integration of production and comprehension (Pickering & Garrod, 2013). During aging, the asymmetrical decline in production and comprehension in lexical processing causes difficulty in conversation for older adults (Burke & College, 1997). This study examined whether similar production/comprehension asymmetry (PCAsym) also occurred at the sentence level of semantic and syntactic processing. In addition, we further investigated the role of declarative and procedural memory in semantic and/or syntactic PCAsym.

Methods: 21 younger (mean age = 24.4 ± 2.7; 13 males) and 19 cognitively healthy older Chinese adults (mean age = 68.1 ± 2.6; 9 males) were recruited. Constrained production tasks and semantic/syntactic correctness judgment tasks, as well as declarative and procedural memory assessments, were executed. Electroencephalogram (EEG) data were collected during comprehension tasks.

Results: Based on Wilcoxon signed rank tests, older adults displayed significant differences in semantic production and comprehension (expressive semantic complexity: Mdn = .20; N400 amplitude: Mdn = .49; V = 158, p = .009). Regarding the role of memory in the semantic PCAsym, semantic performance was correlated with declarative memory (production: r (38) = .48, p = .002; comprehension: r (38) = .45, p = .003). Additionally, it was correlated with procedural memory, but only on the comprehension side (r (38) = .36, p = .024).

Summary: This study examined and extended the PCAsym model from the lexical to the sentence level in which older adults showed superior comprehension and inferior production in semantic processing. This may hinder older adults from participating in successful conversations. Furthermore, we revised the original declarative and procedural model (Ullman, 2004) and mosaic model (Wang, 1982), and proposed the language mosaic plasticity model. It posits that memory reuse in supporting language processing is not static, rather it can be plastically reorganized throughout a lifetime.

**Reference**

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