THE DISAMBIGUATION AND LINGERING MISINTERPRETATION IN L1 AND L2 GARDEN-PATH SENTENCE COMPREHENSION: THE EFFECT OF INHIBITORY CONTROL

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People sometimes misinterpret temporarily ambiguous garden-path sentences (e.g., When Mary dressed the baby laughed happily.), and this misinterpretation may linger. Recent evidence shows that inhibitory control (IC) plays an important role in disambiguation. Yet, with insufficient evidence, the role of IC in the processing of garden-path sentences is still unclear. Moreover, most previous studies measured IC through a single task, ignoring the subtle differences among various tasks. Hence, this study aimed to investigate how IC ability affects L1 and L2 garden-path sentence processing, using L1 Stroop, L2 Stroop and Number Stroop tasks to increase the validity of the instruments. Garden-path sentence processing was examined using a self-paced reading task (i.e., 30 garden-path sentences, 30 non-garden-path sentences, 40 filler sentences) from two perspectives: disambiguation efficiency (as manifested by the reaction times of the critical word for correctly responded trials) and lingering misinterpretation (as manifested by the error rate of comprehension).

Forty-two Chinese learners of English were recruited, and their L2 proficiency was assessed by the Oxford Quick Placement test. Linear (or generalized linear) mixed-effects model was adopted for data analyses. The results showed longer RTs and lower accuracy for garden-path sentences compared to non-garden-path ones in both L1 and L2, echoing previous findings of the reading difficulty in the ambiguous structure and the lingering misinterpretation. Moreover, the results showed the disambiguation and lingering misinterpretation of L1 garden-path sentence processing were barely influenced by IC. However, for L2 garden-path processing, the results showed a significant three-way interaction of L2 Proficiency×Number Stroop×Sentence Type (garden-path vs. non-garden-path) in RTs analysis and a significant interaction of L2 Proficiency×L1 Stroop×Sentence Type in ACC analysis. Simple effect analyses showed that $Proficiency_{low}$-IC_{low} and $Proficiency_{high}$-IC_{high} participants showed longer RTs in the garden-path than non-garden-path condition, while $Proficiency_{low}$-IC_{high} and $Proficiency_{high}$-IC_{low} participants showed comparable RTs between the two sentence types, indicating that either high IC ability or high L2 proficiency may be the main contributor to a high efficiency in disambiguating L2 garden-path sentences. Also, simple effect analyses of ACC showed that $Proficiency_{low}$-IC_{high} participants had a larger rate of lingering misinterpretations while $Proficiency_{low}$-IC_{low} participants didn't, indicating that those with low L2 proficiency but high IC may retain misinterpretations after reading due to low L2 proficiency but possibly suppress an interfering alternative interpretation instead with high IC. Besides, this study revealed that, though all being "Stroop", the three Stroop tasks were not related to each other statistically, so they may measure different constructs, and have different predictive powers for garden-path sentence processing. Future studies should be careful when choosing a certain cognitive task.