Where Does the Filler Go? Investigating Filler-Gap Dependencies in Native and Second Language Speakers with a Self-Paced Reading Task

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The study of Second Language Acquisition (SLA) has long focused on understanding how learners process sentences in real-time and whether their parsing mechanisms fundamentally align with or differ from those of native speakers. Despite extensive research, no consensus has been reached, with two main theories in the literature: 1) native-like processing is possible (Sabourin & Stowe, 2008); 2) L2 processing is fundamentally distinct (e.g., Pakulak & Neville, 2011; Hawkins & Chan, 1997).

In Mandarin Chinese, *wh*-in-situ constructions, unlike their English counterparts that front the *wh*-phrases to the beginning of the clause, keep the same work order as standard non-*wh* declaratives. Limited research compares sentence processing between native English speakers and Mandarin Chinese speakers who learned English as their second language (L2) (Dallas, 2013; Jessen, 2017; Dong, 2022). This study used self-paced reading to investigate the processing of filler-gap dependencies by native English speakers and Mandarin Chinese speakers with English as their L2. It examined how the semantic plausibility of the filler and the length of the dependency influence the integration of the filler into the gap.

During ongoing data collection, 8 participants (5 native English speakers, 3 Mandarin Chinese speakers learning English as L2) were included in a preliminary analysis.In the L1 group, while participants are anticipated to have an L2 such as French, we only included those who learned L2 after L1 was fully acquired to avoid L2 interference as much as possible, and none of the L1 speaker reported proficiency in a second language. L2 participants' first language had to be Mandarin, with English as their only second language. They completed a self-paced reading task on Gorilla, reading sentences and pressing the space bar to reveal the next word while reaction times were recorded. A sample stimulus is provided.

Length	Plausibility	Sample sentence
long	plausible	The manager knew which **customer** the receptionist with a large cloth bag called __ about the problem.
long	Implausible	The manager knew which **spoon** the receptionist with a large cloth bag called __ about the problem.
short	plausible	After the last table left, the manager knew which **customer** the receptionist called ___ about the problem.
short	implausible	After the last table left, the manager knew which **spoon** the receptionist called ___ about the problem.

Reaction times at the gap location in sentences were analyzed using Linear Mixed Models. The results indicated that there were no significant main effects or interactions for the factors of filler plausibility, dependency length, or language group on reaction times. Specifically, filler plausibility ($F(1, 8.35) = 2.32$, $p = 0.14$), dependency length ($F(1, 0.65) = 0.002$, $p = 0.97$), and language group ($F(1, 1.49) = 0.69$, $p = 0.52$) did not significantly influence reaction times. In addition, no significant interaction effects were observed between the two way and three-way interactions. Interestingly, from the mean values in our descriptive statistics, we observed that both the L1 and L2 groups dedicated more time to reading plausible sentences than to implausible ones, for both long and short dependencies. This observation contrasts with previous research suggesting that parsers slow down their reading time at gaps that cannot be plausibly filled (Wagers & Phillips, 2014). However, this could be due to the parsers' sensitivity implausible fillers, leading them give up on integrating it into the gap. If so, this sensitivity to the semantic anomaly is consistent with the N400 observed at the gap location when the filler cannot be integrated plausibly (Dallas et al., 2013).

We aim to recruit more participants and perform further analysis before the conference.

References

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