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An ERP study of the processing of epistemic modality adverbs *yexu* and *yiding* in Mandarin Chinese

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Highlights:

- Examined frequently used epistemic modality adverbs *yexu* (possibly) and *yiding* (surely) in Mandarin Chinese using ERP
- Two types of conditional sentences constructed in the processing of modal certainty. P600 elicited by epistemic adverb *yexu* (possibly) in modal uncertain sentences by absence of N400
- P600 and N400 not elicited by epistemic adverb *yiding* (surely) in modal certain and/or uncertain sentences

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Abstract

Numerous studies have demonstrated that word frequency influences sentence processing. However, the impact of frequently used epistemic modality adverbs on sentence processing is less clear. The aim of the present study is to investigate the processing of Chinese epistemic modality adverbs by means of ERPs (event-related potentials) based on degrees of modal certainty encoded by different orthographic forms of two epistemic adverbs *yexu* (possibly) and *yiding* (surely) co-occurred with two psychological verbs *guji* (estimate) and *quexin* (convince) in Mandarin Chinese sentences as *Wo guji Xiaolin yexu hui jingxuan banzhang* (I estimate Xiaolin possibly future compete monitor). Two conditions (i.e. agreed and disagreed conditions) are constructed through manipulating the agreement of the certainty degree between the psychological verbs and the epistemic adverbs. Twenty-four enrolled Chinese college students took part in the ERP experiment. The results showed that the epistemic adverb *yexu* (possibly) in disagreed sentences (*quexin* & *yexu*) relative to agreed sentences (*guji* & *yexu*), elicited a monophasic P600 effect with a centro-parietal distribution, indicating extra syntactic costs in processing the epistemic adverb in sentences with modal uncertainty. The absence of N400 was observed for processing *yexu* (possibly) in the agreed and disagreed sentences, suggesting that little semantic processing difficulty of the epistemic adverb happens in sentences with modal certainty and/or uncertainty. While for the epistemic adverb *yiding* (surely) in the agreed and disagreed sentences, the absence of P600 and N400 indicates that little difficulty in syntactic and/or semantic processing of the epistemic adverb happens in sentences with modal certainty and/or uncertainty.

Keywords: epistemic adverbs; modal certainty; P600; N400; ERP

1. Introduction

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