

ABSTRACT

Lexical tone has a significant role in differentiating words that share the same syllable in tonal languages. However, the time course and mechanism of lexical tone processing compared to segmental information in speech perception is unclear.

Behavioral studies were inconclusive on whether tonal information was processed slower and retrieved later, or perceptually less salient and hard to differentiate when compared to segmental information. Therefore this study utilized a mismatch negativity (MMN) enhancement paradigm that demonstrated activation of memory traces related to words and syllables at the pre-attentive stage of processing of speech sound. Three ERP experiments were conducted and the MMN enhancement patterns triggered by segmental and suprasegmental information were investigated. Overall, enhancement effects were found for both segmental change and tonal change, which the enhancement effect for tonal change was significantly stronger than that of segmental change. No time course differences were observed between segmental change and tonal change. This indicated that tonal information is not processed at a later time course and less salient when compared to segmental information at the early pre-attentive stage of speech perception. The stronger enhancement found in tonal change than segmental change supported the argument that tone processing is more beneficial from top-down information in speech perception than segment.

摘要

在聲調語言中，當音節相同的時候，聲調是用來分別不同文字的重要依據。然而，在語音知覺加工中，音段和聲調在處理時間和機制上的異同，現在並未有一致的答案。雖然聲調可能比音段的處理為慢，或是沒那麼顯著，但過去的行為研究結果其實並不一致。所以這次研究採用了不匹配負向波增幅的研究範式，以研究在前注意過程中，和字詞相關的記憶路徑被聲音激活時的情況。這次研究包括了三個事件相關電位實驗，以研究音段和聲調變化產生的不匹配負向波增幅。總的來說，音段和聲調變化都觀察到增幅，而聲調變化時的增幅明顯較強。時間上的明顯差異則沒有觀察到。這說明了在前注意過程中，聲調的加工並不一定比音段慢，或是比音段不顯著。聲調的增幅比較強這點則說明了，聲調加工比較受惠於由上而下的資訊。這支持了過去的一些觀點。