The Role of Onsets in Cantonese Spoken Word Production

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A Thesis Submitted in Partial Fulfilment

of the Requirements for the Degree of

Doctor of Philosophy

in

Psychology

The Chinese University of Hong Kong

July 2012

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Abstract of thesis entitled:

The Role of Onsets in Cantonese Spoken Word Production

Submitted by NING, Ning

for the degree of Doctor of Philosophy in Psychology

at the Chinese University of Hong Kong in July 2012

Three studies were conducted to investigate whether the onset can be a basic planning unit in Cantonese spoken word production. In Study 1, the onset- and syllable-preparation effects were tested through three frequently used paradigms: the picture-naming implicit form-preparation (picIP) paradigm, the word-associative naming implicit form-preparation (waIP) paradigm and the picture-word interference (PWI) paradigm. The onset-preparation effect was weak in Cantonese and could be obtained only through the picIP paradigm, while the syllable preparation effects were much robust and could be obtained using all of the paradigms. Study 2 was aimed at exploring the time course of onset preparation. The behavioral data showed that the onset-preparation effect was significant only when the foreperiod was 500 ms. The event-related potential (ERP) data echoed this finding; different neural activities between the homogeneous and heterogeneous conditions were found 400–650 ms after the time cue. Study 3 showed that the syllable frequency could moderate the onset-preparation effect, which was significant for low-frequency syllables but not for high-frequency syllables. These results indicate that 1) the onset can be a basic planning unit in Cantonese, but its function and effect size are moderated by some

higher-level factors, such as preparation time and syllable frequency, and 2) sub-syllable units could directly initiate articulation without waiting for the remaining parts within a syllable. A language-universal position is suggested to reconcile the debates between the language-specific and language-general hypotheses regarding the basic planning units in spoken word production.

论文摘要: 声母在粤语口语产出中的作用

作者：宁宁

目的：心理学博士学位

机构：香港中文大学　　二零一二年七月

本论文报告了三个研究，旨在探讨声母是否为广东话口语产出过程中的基本加工单元。研究一通过三个不同的实验范式（即，图片命名内隐准备范式、词汇联想内隐准备范式和词图干扰范式）对比了声母和音节的准备效应。结果显示，广东话的声母准备效应比较微弱，只能通过图片命名内隐范式得到；相比而言，广东话音节的准备效应非常稳定，在三个实验范式中都非常明显。研究二旨在探索声母准备效应的时间进程。行为结果显示，只有当准备间隔等于 500 毫秒时，才能得到稳定的声母准备效应。脑电结果也与此呼应，同质条件和异质条件的神经电活动的差异出现于 400–650 毫秒之间。具体表现为：同质条件下的关联负变化（contingent negative variation, CNV）波幅在 400–450 和 600–650 毫秒间比异质条件下的 CNV 波幅更大；在异质条件下，CNV 电波在 700–750 毫秒时就从早成分转向了晚成分；而在同质条件下，CNV 早成分到晚成分的转换时间提前到了 600–650 毫秒。研究三旨在考察音节频率是否能够调节声母准备效应。结果显示，声母准备效应只能在低频音节中得到，而无法在高频音节中得到。综合所有的研究结果，在广东话语音编码过程中，1）声母是可以作为基本加工单元的，但其效应受到更高层因素的调节（如：准备时间和音节频率）；2）音节下加工单元（sub-syllable units）能够直接启动发音运动准备过程，而无需等待音节中的其它加工单元。最后，根据本论文的结果，我们建议能够用一种普适词汇产出的观点来调和关于基本加工单元是否为语言特异性的争议。

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