

從幼兒大腦動態變化探討英語學習互動模式之影響

Exploring the Influences of Interactive English Learning Mode from the Dynamic Changes of Children's Brain

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Purpose: Having their children learn English at a young age is a primary concern for Taiwanese parents, because English is viewed as an international language related to academic and career success. Due to this trend, many kindergartens in Taiwan offer English language lessons, but the effectiveness of these needs to be explored. Thus, this study aimed to compare English phonetic awareness of Taiwanese monolingual children with that of Mandarin-English bilingual children.

Method: The participants included 16 bilingual (BI) and 15 monolingual (MO) preschool children, aged five or six. Two vowel sets and three consonant sets were selected based on the common errors in English pronunciation in Taiwan. The five sets included: bet [e] and bat [æ]; bought [ɔ] and boat [O]; right [r] and light [l] (first syllable); dear [r] and deal [l] (last syllable); tease [s] and teethe [th] (last syllable). All auditory stimuli were recored by a professional English teacher at a slow speed, and Audacity software was used to control the stimuli onset and loudness (30 dB). Neural measures of automatic change detection (Mismatch Negativity, i.e., MMN) were measured by verifying whether participants tracked the stimulus stream.

Findings: The findings are as follows. Regarding bet [e] and bat [æ], the MMN wave of the bilingual group (average amplitude: $-2.21\mu\text{V}$; SD: $2.47\mu\text{V}$) was more evident than that of the monolingual group (average amplitude: $0.99\mu\text{V}$; SD: $4.16\mu\text{V}$), close to significant difference ($t(15)=-1.954$, $p=0.070$). Regarding bought [ɔ] and boat [o], the two groups did not present obvious changes in the MMN waves, or a significant difference. Concerning right [r] and light [l], the two groups are able to distinguish the difference between [r] and [l] in the first syllable. However, the two groups were not able to distinguish the difference between [r] and [l] in the last syllable. Regarding the last set, the two groups showed significant differences in terms of distinguishing [s] and [th] in the last syllable ($t(29)=2.26$, $p<0.05$). It is noted that the monolingual children displayed a larger MMN wave than the bilingual group, which means that the monolingual group could still distinguish the [s] and [th] sounds in the last syllable.

Conclusions: The above findings imply that bilingual children have good phonetic awareness of certain English vowels and consonants, and can effectively distinguish the differences between the two; however, for the advanced comparisons, the two groups have not shown the ability to distinguish the other phonemes (Datta, et al, 2019; Yu, et al., 2019), like [r] and [l] as well as [ɔ] and boat [O], indicating that since these types of English vowels and consonants are not in the Chinese phonetic system, more training is required for them. Future research directions and English language education for young children are suggested.

References

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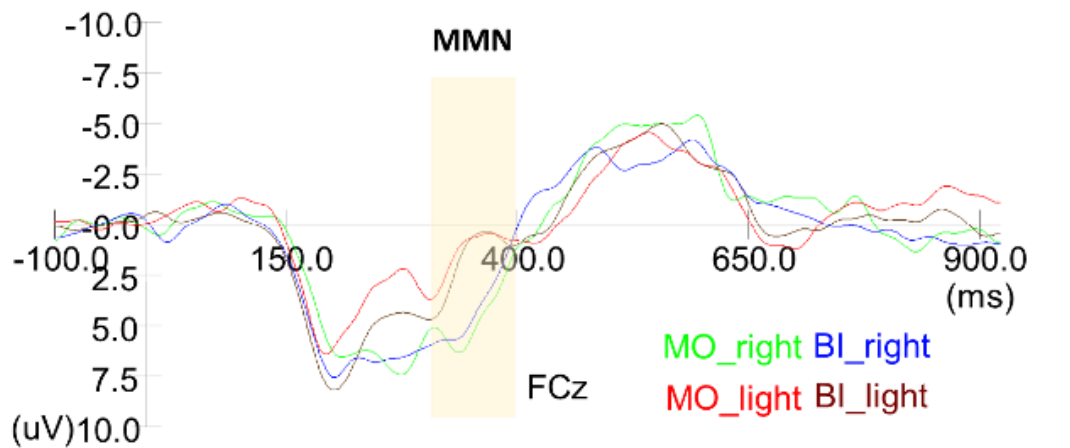


Figure 1. The averaged potentials of different conditions between BI and MO when the consonant (right vs light) in the first syllable. ←

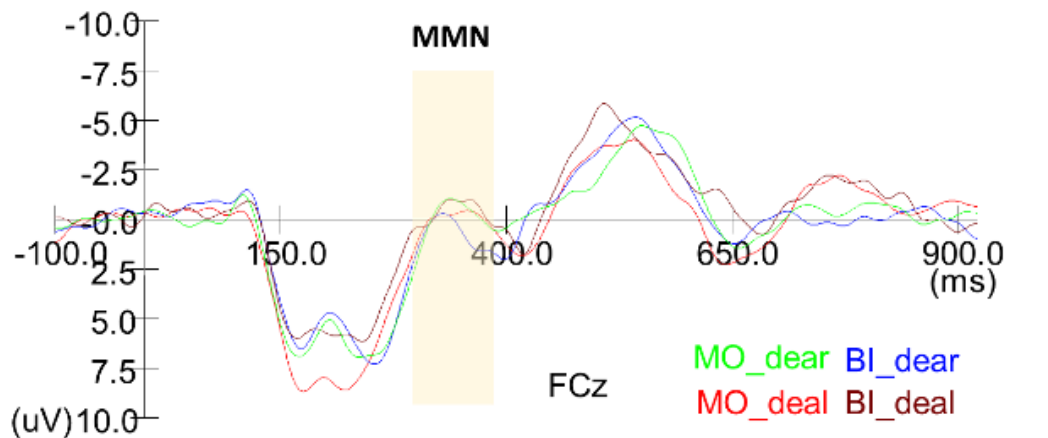


Figure 2. The averaged potentials of different conditions between BI and MO when the consonant (dear vs deal) in the last syllable. ←