# Degree of bilingualism and cognitive neural processing in adults

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**Abstract**

Effects of bilingualism on cognitive control remain highly debated. Such debates partly stem from reliance on behavioral measures alone, which may obscure subtle individual differences. Even studies that leverage brain electrophysiology report mixed results, often due to categorizing individuals as monolingual or bilingual. Here, we examined whether the degree of bilingualism was related to the P3b effect—an established electrophysiological measure of cognitive control. Young adults with heterogeneous language experiences completed the Language Social Background Questionnaire (Anderson et al., 2018). Electroencephalography data were recorded from 70 participants who completed the Active Visual Oddball paradigm (Kappenman et al., 2021), a task optimized to isolate the P3b response. We found that more bilingual language experience was associated with larger P3b effects, even in the absence of behavioral differences. These results highlight the importance of characterizing bilingualism along a continuum when investigating bilingual effects on cognitive processing.



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