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Using a dimensional measure of bilingualism to investigate cognitive effects in Montréal adolescents with typical or atypical development

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Abstract

Bilingualism influences executive functioning (EF), though findings remain mixed partly due to variability in how bilingualism and EF are operationalized. Bialystok (2024) proposed that bilingualism enhances attention through adaptation, improving global attentional efficiency. We tested this proposal using the Wisconsin Card Sorting Test (WCST), examining categories completed, perseverative errors, and rule application reaction times (RTs) as indices of executive functioning and attentional control. Participants from Montréal were neurotypical ($n = 37$) or neurodivergent ($n = 27$) adolescents (14–19 years old). Diversity of language use across contexts, derived from Anderson et al. (2018) and Gullifer and Titone (2020), was used as a dimensional measure of bilingualism. Correlation analyses indicated no relationship between bilingualism and WCST performance in neurotypicals, but greater diversity of language use was associated with poorer WCST performance in the neurodivergent group. Regression analyses showed marginal group $\times$ bilingualism interactions for categories completed and RTs.