

ADHD, Bilingualism, and Executive Functions

THIS MONTH'S RESEARCH UPDATE focuses on the joint effects of ADHD and bilingualism on executive functions.

What are the joint effects of ADHD and bilingualism?

Executive functions (EF) are mental processes that enable us to control thoughts and actions towards a goal. Previous studies have documented lower levels of EF among those with ADHD. On the other hand, higher levels of EF have been found for bilingual speakers. What, then, are the joint effects of ADHD and bilingualism? Could the bilingual experience serve as a protective factor against deficits associated with ADHD? This first study examined this question in a sample of 80 Hebrew monolingual and Russian/Hebrew bilingual university students, with and without ADHD.

Surprisingly, researchers found that decreases in EF associated with ADHD might be *more* prominent among bilingual than monolingual speakers. The bilingual ADHD group scored the lowest on EF tasks, especially on measures of interference suppression. In other words, bilingual speakers with ADHD had the most difficulty in situations that demanded ignoring nonrelevant or competing information. The bilingual experience did not buffer the negative effects of ADHD on EF.

Researchers offered two explanations. First, the bilingual participants in the study were from immigrant populations, who may underutilize resources for evaluations and treatments for ADHD, thereby experiencing more severe symptoms. Second, the larger deficits observed in bilinguals with ADHD may be due to the ongoing burden of managing two language systems. That is, bilingual speakers are continuously needing to overcome interferences from their non-target language, which may further reduce the ability for interference suppression among those with an already weakened attentional system.

Mor, B., Yitzhaki-Amsalem, S., & Prior, A. (2015). The joint effect of bilingualism and ADHD on executive functions. *Journal of Attention Disorders*, 19(6), 527-541. <https://doi.org/10.1177/1087054714527790>

How do ADHD and bilingualism affect executive functions and language proficiency?

In the second study, researchers asked an additional question: what are the joint effects of ADHD and bilingualism on EF *and* language proficiency? A larger sample of 208 university students were examined, including bilingualism across 29 languages. A more rigorous criteria for language status (proficiency, use, age and context of language acquisition), as well as ADHD (history of diagnosis, current symptoms) were applied.

The effect of ADHD differed for monolingual and bilingual speakers on measures of EF. Similar to the first study, the bilingual ADHD group had the lowest scores. Unlike the first study, the differences were found on measures of response inhibition (how quickly one can stop or withhold a response after it has been initiated). With respect to language proficiency, no differences were found across groups on self-reported questionnaires. Those with ADHD scored higher in vocabulary

comprehension in a standardized measure of English vocabulary than those without ADHD.

Researchers concluded that the combination of bilingualism and ADHD compromised EF performance. Not only did bilingualism fail to compensate for EF deficits associated with ADHD, but ADHD also appeared to be a more serious condition for bilingual speakers. On the other hand, no evidence for associations between poor vocabulary and ADHD, or further burden of bilingualism, were found in this study. One possibility is that those with ADHD in this sample were relatively high-functioning, given their status as university students.

Bialystok, E., Lewicz, K. H., Wiseheart, M., & Toplak, M. (2017). Interaction of bilingualism and Attention-Deficit/Hyperactivity Disorder in young adults. *Bilingualism: Language and Cognition*, 20(3), 588-601. <https://doi.org/10.1017/S1366728915000887>



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WHILE PRELIMINARY, the two studies together raise important implications for research and clinical communities. For instance, assessment of language experiences is critical in determining the relations between ADHD and EF. Moreover, a patient's bilingual status may be a risk factor for ADHD diagnosis. Finally, a possibility of different ADHD symptomatology for monolingual and bilingual speakers remain open for future research. **A**

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