Bilingual preschoolers show stronger inhibitory control

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For students in preschool, speaking two languages may be better than one, especially for developing inhibitory control—the ability to stop a hasty reflexive response and instead select a more adaptive response.

That idea isn't new, but a University of Oregon study took a longitudinal approach to examine the bilingual advantage hypothesis, which suggests that the demands associated with managing two languages confer cognitive advantages that extend beyond the language domain.

The study appeared in the journal *Developmental Science*.

Researchers looked at a national sample of 1,146 Head Start children who were assessed for their inhibitory control at age 4, and then followed over an 18-month period. The children were divided into three groups based on their language proficiency: Those who spoke only English; those who spoke both Spanish and English; and those who spoke only Spanish at the start of the study but were fluent in both English and Spanish at the follow up assessment.

"At the beginning of the study, the group that entered as already bilingual scored higher on a test of inhibitory control compared to the other two groups," said the study's lead author Jimena Santillán, a UO doctoral student in psychology at the time of the study.

Follow-up assessments came at six and 18 months. Inhibitory control was assessed using a common pencil-tapping task, in which the participant is instructed to tap a pencil on a desk twice when the experimenter taps once, and vice-versa, requiring the student to inhibit the impulse to imitate what the experimenter does and but do the opposite instead.

Over the follow-up period, both the bilingual group and the monolingual-to-bilingual transition group showed more rapid inhibitory control development than the group of English-only speakers.

"Inhibitory control and executive function are important skills for academic success and positive health outcomes and well-being later in

life," said study co-author, Atika Khurana, a professor in the Department of Counseling Psychology and Human Services and scientist at the UO's Prevention Science Institute.

"The development of inhibitory control occurs rapidly during the preschool years," she said. "Children with strong inhibitory control are better able to pay attention, follow instructions and take turns. This study shows one way in which environmental influences can impact the development of inhibitory control during younger years."

Students in this study came from low socioeconomic status families, as is typical of Head start samples. Such children are in a group known to be at-risk for poorer outcomes related to executive function skills. This population allowed the researchers to compare students from similar socioeconomic backgrounds but who had different language experiences.

Researchers also were able to control for other variables that could be associated with inhibitory control development, such as a child's age and parenting practices. The study's design allowed researchers to focus on the effects of bilingual experience on inhibitory-control development during preschool years.

Previous studies have examined the effects of bilingualism on inhibitory control, but have done so with a focus on one point in time or development and have focused on smaller samples from mostly middle class backgrounds, said Santillán, who now is a senior research manager at Harvard University's Center on the Developing Child.

"Many studies have addressed the bilingual advantage hypothesis," she said. "However, the findings have been inconsistent. Part of the reason is the difficulty of randomly assigning participants to be bilingual or monolingual, which would be the ideal research design."

The longitudinal approach allowed researchers to see how inhibitory control changed over time for children who were developing bilingualism during the same time period, as well as for those who were already bilingual with those who remained monolingual.

"This allowed us to get closer to capturing the dynamic nature of the development of bilingualism and inhibitory control, both of which change over time, and rule out other potential explanations for the differences observed between groups," she said.

It was important, she said, to focus on a sample of children who tend to be at risk for not developing inhibitory abilities at the same rate as their peers from higher socioeconomic backgrounds because of the motivation to find factors that could help buffer such children from these negative outcomes.

"We were able to obtain evidence that bilingualism can be a protective factor that helps children develop these cognitive abilities," Santillán said. "Provided that more research studies support our results, the findings we've obtained could have implications for policies related to bilingual education and could help encourage families to raise their children as bilingual."

More information: Jimena Santillán et al, Developmental associations between bilingual experience and inhibitory control trajectories in Head Start children, *Developmental Science* (2017). DOI: 10.1111/desc.12624

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