



REL Pacific Ask A REL Response

Other; English Learners

November 2019

Question:

What research exists on the value/benefits of bilingualism in intellectual development?

Response:

Following an established REL Pacific research protocol, we conducted a web-based search for resources related to the cognitive benefits of bilingualism (see Methods section for search terms and resource selection criteria). We focused our search on studies in the Pacific and other indigenous contexts for greater relevancy to our partners in the Pacific region; however, we included studies with more generalizable findings due to the limited amount of research available in these contexts. We also searched for studies that were longitudinal in nature in order to capture long-term benefits of bilingualism.

References are listed in alphabetical order, not necessarily in order of relevance. Descriptions of the resources are quoted directly from the publication abstracts. We have not evaluated the quality of references and the resources provided in this response. We offer them only for your reference. Also, our search included the most commonly used research resources, but they are not comprehensive and other relevant references and resources may exist.

Research References

Adesope, O. O., Lavin, T., Thompson, T., & Ungerleider, C. (2010). A systematic review and meta-analysis of the cognitive correlates of bilingualism. *Review of Educational Research, 80*(2), 207–245. Retrieved from <https://eric.ed.gov/?id=EJ889125>.

From the abstract: “A number of studies have documented the cognitive outcomes associated with bilingualism. To gain a clear understanding of the extent and diversity of these cognitive outcomes, the authors conducted a meta-analysis of studies that examined the cognitive correlates of bilingualism. Data from 63 studies (involving 6,022 participants) were extracted and analyzed following established protocols and procedures for conducting systematic reviews and guidelines for meta-analysis. Results indicate that bilingualism is reliably associated with several cognitive outcomes, including increased attentional control, working memory, metalinguistic awareness, and abstract and symbolic representation skills. Overall mean effect sizes varied from small to large, depending on the cognitive outcomes measured, and were moderated by methodological features of the studies.”

Hartanto, A., Toh, W. X., & Yang, H. (2019). Bilingualism narrows socioeconomic disparities in executive functions and self-regulatory behaviors during early childhood: Evidence from the early childhood longitudinal study. *Child Development, 90*(4), 1215–1235. Retrieved from <https://eric.ed.gov/?id=EJ1222032>.

From the abstract: “Socioeconomic status (SES) and bilingualism have been shown to influence executive functioning during early childhood. Less is known, however, about how the two factors interact within an individual. By analyzing a nationally representative sample of approximately 18,200 children who were tracked from ages 5 to 7 across four waves, both higher SES and bilingualism were found to account for greater performance on the inhibition and shifting aspects of executive functions (EF) and self-regulatory behaviors in classroom. However, only SES reliably predicted verbal working memory. Furthermore, bilingualism moderated the effects of SES by ameliorating the detrimental consequences of low-SES on EF and self-regulatory behaviors. These findings underscore bilingualism's power to enrich executive functioning and self-regulatory behaviors, especially among underprivileged children.”

Park, J., Ellis Weismer, S., & Kaushanskaya, M. (2018). Changes in executive function over time in bilingual and monolingual school-aged children. *Developmental Psychology, 54*(10), 1842–1853. Retrieved from <https://eric.ed.gov/?id=EJ1191876>.

From the abstract: “We examined the development of 3 executive function (EF) components—inhibition, updating, and task shifting—over time in monolingual and bilingual school-age children. We tested 41 monolingual and 41 simultaneous bilingual typically developing children (ages 8–12) on nonverbal tasks measuring inhibition (the Flanker task), updating (the Corsi blocks task), and task shifting (the Dimensional Change Card Sort task;

DCCS) at 2 time points, 1 year apart. Three indexes of task shifting (shifting, switching, and mixing costs) were derived from the DCCS task. The 2 groups did not differ in their development of updating, but did demonstrate distinct patterns of development for inhibition. Specifically, while the bilingual group demonstrated a steep improvement in inhibition from Year 1 to Year 2, the monolingual group was characterized by stable inhibition performance over this time period. The 2 groups did not differ in their developmental patterns for shifting and switching costs, but for mixing costs, the bilingual children outperformed the monolingual children in both years. Together, the findings indicate that bilingual experience may modulate the developmental rates of some components of EF but not others, resulting in specific EF performance differences between bilinguals and monolinguals only at certain developmental time points.”

Pelham, S. D. & Abrams, L. (2014). Cognitive advantages and disadvantages in early and late bilinguals. *Journal of Experimental Psychology*, 40(2), 313–325. Retrieved from <https://eric.ed.gov/?id=EJ1056535>.

From the abstract: “Previous research has documented advantages and disadvantages of early bilinguals, defined as learning a 2nd language by school age and using both languages since that time. Relative to monolinguals, early bilinguals manifest deficits in lexical access but benefits in executive function. We investigated whether becoming bilingual ‘after’ childhood (late bilinguals) can produce the cognitive advantages and disadvantages typical of early bilinguals. Participants were 30 monolingual English speakers, 30 late English-Spanish bilinguals, and 30 early Spanish-English bilinguals who completed a picture naming task (lexical access) and an attentional network task (executive function). Late and early bilinguals manifested equivalent cognitive effects in both tasks, demonstrating lexical access deficits and executive function benefits. These findings provide support for the hypothesis that cognitive effects associated with bilingualism arise as the result of proficient, habitual use of 2 languages and not of developmental changes associated with becoming bilingual during childhood.”

Shoghi Javan, S. & Ghonsooly, B. (2018). Learning a foreign language: A new path to enhancement of cognitive functions. *Journal of Psycholinguistic Research*, 47(1), 125–138. Retrieved from <https://eric.ed.gov/?id=EJ1168366>.

From the abstract: “The complicated cognitive processes involved in natural (primary) bilingualism lead to significant cognitive development. Executive functions as a fundamental component of human cognition are deemed to be affected by language learning. To date, a large number of studies have investigated how natural (primary) bilingualism influences executive functions; however, the way acquired (secondary) bilingualism manipulates executive functions is poorly understood. To fill this gap, controlling for age, gender, IQ, and socio-economic status, the researchers compared 60 advanced learners of English as a foreign language (EFL) to 60 beginners on measures of executive functions involving Stroop,

Wisconsin Card Sorting Task (WCST) and Wechsler's digit span tasks. The results suggested that mastering English as a foreign language causes considerable enhancement in two components of executive functions, namely cognitive flexibility and working memory. However, no significant difference was observed in inhibitory control between the advanced EFL learners and beginners.”

Soleimani, H., Rahmanian, M. (2018). The effect of bilingualism and trilingualism on metacognitive processing: Detrimental or beneficial? *Journal of Psycholinguistic Research*, 47(4), 803–815. Retrieved from <https://eric.ed.gov/?id=EJ1184724>.

From the abstract: “Research in multilingualism has shown that bilinguals have enhanced executive function (e.g., Donnelly et al. in ‘Proceedings of the 37th annual conference of the cognitive science society’ 2015; Green in *Bilingualism Lang Cognit* 1(02):67-81, 1998. <https://doi.org/10.1017/S1366728998000133>); however, this with many other areas in multilingualism have been questioned like their non-verbal reasoning or their metacognitive ability. This study attempts to explore learning more than one languages in the field of metacognitive abilities. Three groups of monolinguals, bilinguals, and trilinguals were explored to examine the effect of language learning on enhancing or weakening accuracy and response time in metacognitive processing. Conducting dot discrimination task, we found that multilingualism might have some advantages in this field. As cognition and metacognitive abilities demonstrated no positive correlation in this study, we might conclude that executive functioning can not bring about higher order functioning for the individuals. Nevertheless, monolinguals did the task in the least period of time with the least accuracy. Trilinguals, on the contrary, could respond more accurately with an average speed. Accuracy, difficulty, and response time choice in metacognitive processing were discussed for each group. It is concluded that multilingualism might have different effects on higher-order decision making abilities.”

Woumans, E., Surmont, J., Struys, E., Duyck, W. (2016). The longitudinal effect of bilingual immersion schooling on cognitive control and intelligence. *Language Learning*, 66, 76–91. Retrieved from <https://eric.ed.gov/?id=EJ1120512>.

From the abstract: “Throughout the past century, the effects of bilingualism on general cognition have been extensively explored. Studies evolved from a negative to a more positive perspective, but longitudinal assessments of effects of bilingualism are scarce. This study investigated the long-term effect of becoming a bilingual on the development of general intelligence and cognitive control. We followed 27 five-year-old children initiating bilingual kindergarten and 27 age-matched controls enrolled in monolingual kindergarten. The two groups were similar with regard to socioeconomic status. At baseline, both groups spoke only French and performed equally on measures of intelligence, cognitive control, and verbal fluency. One year later, all children were tested again. Results revealed that, after 1 year, both groups improved similarly on verbal fluency and cognitive control. However, only

children attending bilingual kindergarten improved significantly on intelligence, indicating that cognitive practice gained from acquiring a second language may improve general cognitive abilities assessed by intelligence tests, outside the verbal domain.”

Additional Organizations to Consult

Center for Applied Linguistics. <http://www.cal.org/>

From the website: “The Center for Applied Linguistics (CAL) is a non-profit organization founded in 1959. Headquartered in Washington DC, CAL has earned an international reputation for its contributions to the fields of bilingual and dual language education, English as a second language, world languages education, language policy, assessment, immigrant and refugee integration, literacy, dialect studies, and the education of linguistically and culturally diverse adults and children. CAL's mission is to promote language learning and cultural understanding by serving as a trusted source for research, resources, and policy analysis. Through its work, CAL seeks solutions to issues involving language and culture as they relate to access and equity in education and society around the globe.”

Methods

Keywords and Search Strings

The following keywords and search strings were used to search the reference databases and other sources:

- “development” and “bilingualism”
- “bilingualism” and “cognition” and “benefits”
- “cognitive benefits of bilingualism”
- “cognitive benefits of bilingualism” and “Pacific”
- "cognition" and "bilingualism" and "longitudinal"

Databases and Resources

We searched ERIC, a free online library of over 1.6 million citations of education research sponsored by the Institute of Education Sciences, for relevant resources. Additionally, we searched the academic databases JSTOR and Google Scholar.

Reference Search and Selection Criteria

REL Pacific searched ERIC and other academic journal databases for studies that were published in English-language peer-reviewed research journals within the last 10 years. REL Pacific prioritized documents that are accessible online and publicly available, and prioritized references that provide practical information based on peer-reviewed research for the higher education leader who requested this Ask A REL.¹ Sources included in this document were last accessed in October 2019. Methodological priorities and considerations given to the following in the review and selection of the references:

- Study types: randomized control trials, quasi experiments, surveys, descriptive data analyses, and literature reviews.
- Target population, sample size, and study duration.
- Limitations and generalizability of the findings and conclusions.

¹ This memorandum is one in a series of quick-turnaround responses to specific questions posed by educational stakeholders in the Pacific Region (American Samoa, the Commonwealth of the Northern Mariana Islands, the Federated States of Micronesia, Guam, Hawai'i, the Republic of the Marshall Islands, and the Republic of Palau), which is served by the Regional Educational Laboratory (REL Pacific) at McREL International. This memorandum was prepared by REL Pacific under a contract with the U.S. Department of Education's Institute of Education Sciences (IES), Contract ED-IES-17-C-0010, administered by McREL International. Its content does not necessarily reflect the views or policies of IES or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.