The New York Times printed an article this month entitled, “Why Bilinguals are Smarter”. This short piece reviews some of the mounting evidence that knowing more than one language has deep cognitive benefits that, on the surface, seem to have little to do with language. Infants and children who are fluent in two languages have been shown to outperform monolinguals (who speak only one language) on a number of tasks that measure Executive Functioning ability.

Executive Functioning (EF) is a term that covers a wide array of cognitive skills, all of which are heavily depend on the prefrontal cortex of the brain. EF includes the ability to focus attention, to keep important information in mind while working on a demanding task, and ignore or inhibit thoughts that aren’t relevant to the task at hand. It also includes to the ability to plan or work towards a long-term goal, or to predict the outcome of an action. The prefrontal cortex is especially well-developed in humans, although much of its development occurs after birth: young children have very immature EF skills that improve over the first decades of life.

The article gives the example a task in which children must first sort shapes on the basis of color, then must switch to sorting by shape. This type of task is very difficult for preschoolers, as it requires them to ignore the pattern they’ve just taught themselves, for example, that blue shapes should go on the left. Bilingual children do better than monolingual children on this task, and on many other similar tasks that measure EF ability. The higher EF ability of bilingual children is not just a nice party trick: children who succeed on tasks just like this are more likely to be successful in school and less likely to have behavior problems. Indeed, preschool programs that emphasize EF abilities have had success at improving school outcomes for at-risk children.

Having good EF abilities may be especially important for young children, as it sets them on a path to success in the early school years, but EF abilities vary widely amongst adults as well. People differ considerably in their ability to focus, to keep important information in mind, and to problem solve. The research so far suggests that on average, bilinguals of every age outperform their peers on executive functioning tasks. As the article points out, bilinguals appear have later ages of onset for dementia or Alzheimer’s disease in old age.

These findings are fascinating because they’re unexpected: while there are obvious benefits of speaking multiple languages, the idea that knowing two languages affects your ability to think in such a deep way is not intuitive. They’re also exciting because executive EF are so important, and this research suggests a concrete way to improve them. The research has reached the point where it makes sense to recommend that parents who have the option the option raise their children bilingual.

From my perspective as a developmental psychologist, the real reason why this research is so exciting is because it shows that experience can have large, meaningful effects on EF ability. Exploring how speaking two languages can improve these skills is likely to lead to a much better understanding of how they develop, and how they can be supported in both bilingual and monolingual children.

One of the major questions of developmental psychology is the question of how much our experience affects the way our minds develop. The fact that bilingual children are better at EF tasks than monolinguals suggests rather than having some pre-determined level of ability to attend, reason, and plan, a person’s specific life experiences (such as the languages they’re exposed to) play an important role in determining these abilities.[[1]](#endnote-1) While many cognitive abilities are sensitive to experience in the sense that the ability to perform a specific task can be improved with extensive practice, these effects often fail to carry over to other EF tasks that weren’t explicitly trained in the laboratory. What makes this research so exciting is that bilingualism has been found to have an effect on so many different EF tasks: it appears to really improve EF abilities generally.

The next step, now that it’s been established that bilinguals have better EF skills on average, is to figure out why. As the article mentions, it is commonly believed among researchers that the benefits result from the practice that bilinguals get at selecting relevant information (the correct language) and ignoring irrelevant information (the ‘interfering’ language), and/or in monitoring the environment for contextual cues to figure out the language abilities and preferences of their speaking partners. Right now, though, most of this is speculation.

There are important and exciting studies that are probably underway that will help disentangle which aspects of bilingualism are helpful for learning languages. I’ve heard speculation that people who live in entirely bilingual communities (such as parts of Miami) might not show the bilingual advantage, since they can assume that their speaking partners speak both languages, and can speak a mixture of the two instead of carefully monitoring their listeners and inhibiting the language they’re not using. Showing that there are cases where bilingualism does not affect EF would help narrow down which characteristics of bilingualism are responsible for the effect. Another way to test these specific hypotheses about what bilingualism is doing is to attempt to replicate the effect in a different group that is not bilingual, but might be exposed to the same mechanism. For example, it would be telling to see if people who speak one language but who spend time in two different cultures show similar effects. If it’s true that monitoring the environment is the kind of practice that matters, perhaps people raised in societies with very firm class boundaries (where appropriate behavior depends a lot on who is around) would show similar benefits.

In the next few years, researchers will be testing these hypotheses, and the results will do more than simply sate our curiosity about why bilingualism affects EF. The more we understand about why bilingualism is helpful, the more we will be able to extend these findings beyond the case of bilingualism. If we know what kinds of thinking are good practice for building executive function, we can work to make these benefits available to children and adults who don’t have the resources available to learn a second language. We can also make realistic predictions about when 2nd language exposure will be useful for children (watching Dora the Explorer might have any effect if the key variable is about inhibition, or practice monitoring your environment). At this point, scientists have uncovered a phenomenon: bilinguals perform better on specific tasks. But they have not yet worked out the mechanism for this difference. Understanding the mechanism will allow us to understand the general principles that govern executive functioning, and allow us to generalize to a variety of other situations.

1. Ideally, to really nail down that this is about experience, we would want to see a study where children were randomly assigned to learn one language or two. Without that, we can’t rule out the possibility that children whose parents expose them to two languages are different for some other reason (for example, perhaps their parents have high executive functioning abilities that allowed them to learn more languages themselves). In this case, such explanations seem a bit unlikely, since different groups of bilinguals have very different reasons for being bilingual, and very different cultures and values. The fact that these executive functioning effects have been found across different pairs of languages helps support the idea that some aspect of the bilingual experience leads to differences in outcomes. [↑](#endnote-ref-1)