

Bilingualism as a Lifestyle Factor:

The protective effect of speaking two languages

For many years the generosity of alumnus and former trustee Sin-Ming Shaw '64 has permitted the faculty to identify and reward a student each year who has produced an important piece of scholarship. From among the many significant research projects from a variety of disciplines, one in particular stood out this year. The jury was impressed by the depth and quality of the research, the clarity of expression, and the authoritative use of a disciplinary voice. The research, erudition, and the clear and cogent written expression of "Bilingualism as a Lifestyle Factor: the Protective Effect of Speaking Two Languages", written by Julie Leitz, distinguished this paper above the rest. Below is an excerpt from her research.



Do you think that the brain of a bilingual is the same as that of a monolingual? When you know that bilingualism requires the constant activation of entire systems of meanings, you realize that it can only have some important cognitive consequences: it is reasonable to say that bilingual minds cannot resemble the more uniform mental organization of a monolingual.

Bilingualism has consequences on the way in which we represent and utilize knowledge. The use of knowledge in intellectual functioning depends on specific cognitive processes that enable access to representational and procedural aspects in a relevant manner for a given task. More specifically, the way you use knowledge depends on your working memory and the inhibitory control skills that are part of it. Your working memory is the capacity to store and process information during the performance of a cognitive task. This requires the aptitude to manage and control interference from information processed earlier (that's where inhibitory control skills come into play), while simultaneously storing and processing currently relevant information.

What does this have to do with bilingualism? In a bilingual's brain, both languages are always active to some degree, all the time. This requires the bilingual person to use a cognitive mechanism for keeping his/her two languages separate and controlling the relative activation of each so as to achieve fluent performance in the language used at this specific time, without intrusion from the other, unwanted language. That cognitive mechanism is working memory and the inhibitory control skills that working memory implies. In other words, when a French-English bilingual wants to say "bottle" for example, both "bottle" and "bouteille" are activated in the brain and, to perform a fluent sentence, the person has to inhibit "bouteille" to select and say "bottle". Now if you imagine that bilinguals do that all the time for every single word they say in their sentences, then it becomes clear that bilinguals get a huge amount of practice in working memory and inhibitory control since they are training every day.

The good news for bilinguals is that working memory and inhibitory control skills are exactly those cognitive skills that decline with aging, and what helps delay this decline is practice

such as speaking several languages every day. Research has indeed repeatedly shown that bilingualism delays age-related cognitive decline! The problem, I thought, is that all the research on this had been done on lifelong bilinguals only, meaning people who have learned two or more languages from childhood. What I wanted to find out in my study is whether bilinguals still had the same processing advantages when they achieved fluency in a second language **after adolescence** and had been speaking at least two languages daily for several years only, and not since childhood. (I will refer to this type of bilinguals as *late bilinguals*). If *late bilinguals* showed the same advantages, then it would mean that the bilingual advantage in working memory and inhibitory control skills is simply due to practice in those skills, and not to something 'special' acquired during childhood development.

To answer my research question, I used the Simon Task, a computerized test that measures working memory and inhibitory control, and I tested monolingual, lifelong bilingual, and late bilingual students at AUP to compare their reaction times. The results I gathered are only an indication because a bigger sample size/number of participants is needed to ensure that the scores found on the Simon Task are actually representative of the general population of *monolinguals*, *lifelong bilinguals*, and *late bilinguals*. I hope to be able to carry on this research later. Still, the present results show that *lifelong bilinguals* and *late bilinguals* were faster than monolinguals. And the surprising and fascinating finding was that *late bilinguals* were even faster than *lifelong bilinguals*. My interpretation of this is that, relative to the lifelong habit of managing two languages, *late bilinguals'* new learning experience of daily processing and effectively managing two languages so as to achieve functional proficiency provides the most intensive form of cognitive training.

In a nutshell, my study suggests that bilinguals' processing advantage is a result of training. Bilingualism can thus be seen as a lifestyle factor that helps maintain cognitive functioning in older age. Conclusion? Go bilingual! ■

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Winner of the Sin-Ming Shaw Award 2007