Bilingualism delays onset of dementia

It is by now widely known that bilingualism delays the onset of dementia. What is less widely known is the fact that this knowledge is almost exclusively derived from Canadian research conducted by Ellen Bialystok and her team (e.g., Bialystock et al., 2007). The data for these studies come from comparing monolingual English-speaking native-born Canadian dementia sufferers with their bilingual counterparts. The bilinguals are all migrants to Canada who had learned English during adolescence or young adulthood and come from a variety of first-language backgrounds with Central and Eastern Europeans predominating.

This data base raises an obvious problem: is it bilingualism that delays the onset of dementia or is it the fact of migration or other confounding variables?

Research published in Neurology last week addresses exactly this bias in a study of the relationship between bilingualism and onset of dementia in a non-migrant population in India. The researchers, Alladi et al., investigated age at onset of dementia in a group of more than 600 dementia sufferers in Hyderabad, the capital of Andhra Pradesh. Hyderabad constitutes a highly diverse linguistic environment: the official languages of Andhra Pradesh are Telugu and Urdu; English and Hindi are widely spoken due to their official status on the national level; other languages with significant numbers of speakers include Tamil, Marathi and Kannada.

Bi- and multilingualism are indigenous to Hyderabad – as they are to most of India – and bi- and multilinguals do not systematically differ from monolinguals on migration status or other variables.

In this cohort, the researchers found that the onset of dementia in the bilingual population was delayed by 4.5 years (a finding very similar to the 4.3 years found by Bialystok et al. in Canada).

A variable that often correlates with bilingualism in these studies is education and here Alladi et al. are also breaking new ground by including an illiterate cohort. Among illiterates (defined as people without any formal education), the protective effect of bilingualism was even greater: the onset of dementia in bilingual illiterates was 6 years later than in their monolingual counterparts.
Why does speaking more than one language have these protective effects? Having to switch between languages on a regular basis enhances “executive control” making frequent linguistic choices – activating one language and suppressing another – is a form of practicing cognitive multitasking. Like other forms of cognitive practice – participating in continuing education, undertaking stimulating intellectual activities, engaging in physical exercise – bilingualism thus contributes to an individual’s “cognitive reserve” and wards off the effects of aging a bit longer.

Confirmation that bilingualism delays the onset of dementia in a different bilingual population than the one studied to date is good news for bilinguals.

Even more importantly, the study by Alladi et al. makes a significant contribution to bilingualism research by extending the evidence base to a population with a very different sociolinguistic profile from the one that predominates in the literature. Even so, psycholinguistic and sociolinguistic approaches to bilingualism still have a long way to go before they will truly meet.

The gap between the psycholinguistics and sociolinguistics of bilingualism is nicely illustrated by another of Alladi et al.’s findings: in the Hyderabad sample, the protective effect of bilingualism does not increase with speaking more than two languages, i.e. from the perspective of the delayed onset of dementia, trilingualism or quadrilingualism do not offer any more benefits than bilingualism. This finding is in contrast to another Canadian study (Chertkow et al., 2010). Those researchers found – similarly to Bialystok et al. – that the onset of dementia was delayed in bilingual immigrants to Canada and in French-speaking Canadians. However, they did not find that bilingualism was similarly beneficial for English-speaking Canadians. In fact, in that study the onset of dementia was later in monolingual English-speaking Canadians than in bilingual English-speaking Canadians. For language learning and use to have a protective effect for English-speaking Canadians, they needed to be at least trilingual. Chertkow et al. concluded that bilingualism was sometimes beneficial in delaying the onset of dementia but multilingualism was always beneficial.

Alladi et al. draw on sociolinguistics, specifically language ideologies, to explain their differential findings:

In places in which an official dominant language coexists with a number of minority languages, it can be reasonably assumed that the amount of language switching between languages is proportional to the number of languages spoken: the more languages people know, the more occasion they will have to switch between them. In the strongly trilingual environment of Hyderabad with Telugu, [Urdu] and English being used extensively and interchangeably in both formal and informal environments, with high levels of code switching and mixing, it could be speculated that those speaking 2 languages have already reached a maximum level of switching and the knowledge of additional languages will not be able to increase it. Such an interpretation would be supported by the view that neural mechanisms underlying cognitive control demands in bilingual communities with high levels of code switching are different from bilingual communities with practice in avoiding language switching or mixing. (Alladi et al., 213, pp. 4f.)

One of the frustrating aspects of much psycholinguistic research addressing the cognitive advantages – or otherwise – of bi- and multilingualism lies in the fact that the findings of different researchers frequently conflict. As long as bi- and multilingualism are taken as unitary phenomena inherent in the individual, this will always be the case. Not only do we need to extend the evidence base to include different linguistic, cultural and national
contexts, we also need to bring psycho- and sociolinguistic research together to get a better understanding of what “bilingualism” might actually mean in a particular context. Alladi et al. have taken a most welcome step in the right direction.

References

Bialystok E, Craik FI, & Freedman M (2007). Bilingualism as a protection against the onset of symptoms of dementia. Neuropsychologia, 45 (2), 459-64 PMID: 17125807