

# Canadian study shows bilingualism has protective effect in delaying onset of dementia by four years

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Canadian scientists have found astonishing evidence that the lifelong use of two languages can help delay the onset of dementia symptoms by four years compared to people who are monolingual.

There has been much interest and growing scientific literature examining how lifestyle factors such as physical activity, education and social engagement may help build "cognitive reserve" in later years of life. Cognitive reserve refers to enhanced neural plasticity, compensatory use of alternative brain regions, and enriched brain vasculature, all of which are thought to provide a general protective function against the onset of dementia symptoms.

Now scientists with the Rotman Research Institute at the Baycrest Research Centre for Aging and the Brain have found the first evidence that another lifestyle factor, bilingualism, may help delay dementia symptoms. The study is published in the February 2007 issue of *Neuropsychologia* (Vol.45, No.2).

"We are pretty dazzled by the results," says principal investigator Ellen Bialystok, Ph.D., whose research team at Baycrest included psychologist Dr. Fergus Craik, a world authority on age-related changes in memory processes, and neurologist Dr. Morris Freedman, an eminent authority on understanding the mechanisms underlying cognitive impairment due to diseases such as Alzheimer's.

"Our study found that speaking two languages throughout one's life appears to be associated with a delay in the onset of symptoms of dementia by four years compared to those who speak one language," says Dr. Bialystok, Professor of Psychology at York University and Associate Scientist at the Rotman Research Institute at Baycrest.

The study follows on the heels of previous published reports by Dr. Bialystok and colleagues showing that bilingualism enhances attention and cognitive control in both children and older adults. Those results inspired Bialystok and her research team to ask, "So what does this mean for the onset of dementia?"

In this present study, researchers set out to answer that question by examining the diagnostic records of 184 patients who came to Baycrest's Sam and Ida Ross Memory Clinic between 2002 and 2005 with cognitive complaints. Of that group, 91 were monolingual and 93 were bilingual. The bilinguals included speakers of 25 different languages, the most prevalent being Polish, Yiddish, German, Romanian and Hungarian.

Researchers found that 132 patients met criteria for probable Alzheimer's; the remaining 52 were diagnosed with other dementias. Patient data included Mini-Mental State Examination (MMSE) scores (a measure of general cognitive functioning), years of education and occupation. The MMSE scores were equivalent for the monolingual and bilingual groups at their initial visit to the clinic, indicating comparable levels of impairment. The age of onset of cognitive impairment was determined by the interviewing neurologist at the first clinic visit who asked patients and their families or caregivers when symptoms were first noticed.

The researchers determined that the mean age of onset of dementia symptoms in the monolingual group was 71.4 years, while the bilingual group was 75.5 years. This difference remained even after considering

the possible effect of cultural differences, immigration, formal education, employment and even gender as influencers in the results.

"There are no pharmacological interventions that are this dramatic," says Dr. Freedman, who is Head of the Division of Neurology, and Director of the Memory Clinic at Baycrest, referring to the four-year delay in onset of symptoms for bilingual patients.

"The data show a huge protective effect," adds co-investigator Dr. Craik, who cautioned that this is still a preliminary finding but nonetheless in line with a number of other recent findings about lifestyle effects on dementia.

The team is working on a follow-up study that will further examine bilingualism and dementia onset. They plan to conduct interviews and cognitive assessments on bilingual and monolingual patients in Baycrest's Memory Clinic and follow them for a few years.

Source: Baycrest Centre for Geriatric Care

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