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Better living through video games?

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FROM THURSDAY'S GLOBE AND MAIL

When he snags downtime from his schoolwork, Ryerson University student Brad Evans gabs with friends, grooves to Kanye West on his MP3 player and races virtual hotrods on his Sony PlayStation. All at the same time.

Before you assume gadgets and video games fry the minds of the future, consider this: Canadian researchers are finding evidence that the high-speed, multitasking of the young and wireless can help protect their brains from aging.

A body of research suggests that playing video games provides benefits similar to bilingualism in exercising the mind. Just as people fluent in two languages learn to suppress one language while speaking the other, so too are gamers adept at shutting out distractions to swiftly switch attention between different tasks.

A new study of 100 university undergraduates in Toronto has found that video gamers consistently outperform their non-playing peers in a series of tricky mental tests. If they also happened to be bilingual, they were unbeatable.

"The people who were video game players were better and faster performers," said psychologist Ellen Bialystok, a research professor at York University. "Those who were bilingual and video game addicts scored best -- particularly at the most difficult tasks."

The York study, which tested subjects' responses to various misleading visual cues, is to be published next month in the Canadian Journal of Experimental Psychology. Three other studies published in the past two years have also concluded that action video games can lead to mental gains involving visual skills and short-term memory.

No one is certain how this translates to general learning or everyday life. But Mr. Evans, 21, an aerospace engineering student, said years of gaming have added valuable dimensions to his thinking.

"I grew up with video games, starting with Nintendo and SuperMario . . . from the age of 8 or 9," he said. "I know it helps with my dexterity; it's good for co-ordination and faster reflexes."

Prof. Bialystok suspects video gamers, like bilinguals, have a practised ability to block out information that is irrelevant to the task at hand.

"It's like going to the gym," she said. "You build up the ability to control impulses with practice."

Brain-imaging research released this week shows that the physical inability to silence mental noise is key in making the elderly prone to distraction and poor multitaskers.

That study, published in the Journal of Cognitive Neuroscience, shows the elderly lose the ability to power up brain regions, such as the frontal lobe, needed to focus on a task, and to turn down activity in inner brain regions that are most active when a person is in idle or default mode.

"You can't turn off the extraneous things . . . the areas involved in thinking of the self -- 'What do I have to do? . . . Gee, I have a really bad headache," said study leader Cheryl Grady, senior scientist and associate director at Toronto's Rotman Research Institute at Baycrest.

In contrast, the brain images of people between ages 20 and 30 displayed a far more dramatic see-saw effect activating and de-activating regions as they shifted out of idle to task. The study found this pattern begins to dull in middle age and actually results in cognitive deficits beyond age 60.

Dr. Grady said the results suggest that the brains of today's youth might grow up differently.

"Young people using all of these gadgets all of the time, at the same time, it may actually make a difference when they're old, like bilingualism does," she said. "We know that practice changes the brain, as with playing an instrument, a motor task -- it makes physical changes in the brain. Maybe those kids who play video games and who are also bilingual will be the best of older adults at filtering out distractions."

Neuroscientist Shitij Kapur, chief of research at Toronto's Centre for Addiction and Mental Health, said "it would be quite reasonable to expect that these teens are good at multitasking, because they grow up in a world that demands it."

But, he noted: "Today's teens may be better than their grandparents, but when they are in their 70s, their grandchildren will say, 'Hey, he can only play three games at the same time and I play seven.' It's relative impairment. Their grandchildren will not think any higher of them."

Prof. Bialystok first noticed bilingual children were proficient in blocking out irrelevant information about 20 years ago. When asked to identify a grammatically correct sentence, for example, both bilinguals and monolinguals are, by age 5, able to choose, "Apples grow on trees," over "Apple trees on grow" as the correct one.

But when it came to asking "Apples grow on noses" versus "Apples nose on grow," only the bilingual children were able to choose the right answer. Although the first sentence is grammatically correct, monolingual children could not get over its silliness. "That's crazy," they'd shout, "You can't say that!"

"We have been able to show on a huge range of cognitive tests that bilinguals are always better at problems with tricky, misleading information," Prof. Bialystok said.

On average, she said, monolingual children take a year longer to learn to block out irrelevant information and focus on a specific task.

Skeptics have argued that this matters little since monolingual children eventually catch up to bilingual ones. As well, children fluent in two languages can take slightly longer in tests identifying objects and also go through a period when they might have smaller vocabularies than those fluent in just one language.

But for anyone of two minds about learning a second language, researchers are finding that bilingualism -- be it in French, Greek, Portuguese or Hindi -- has lifelong benefits.

"Does bilingualism protect you from cognitive decline? Every study we've done suggests that it does," Prof. Bialystok said.

The York team recently compared 94 bilinguals and monolinguals between the ages of 30 and 80. It found that while both groups started showing cognitive decline by age 60, the rate of slowing for bilinguals was much slower.

Now young people who play video games are showing this similar pattern of high performance in resisting irrelevant impulses. The current report compared 50 avid players against 50 non-players and then subdivided each group between bilinguals and monolinguals.

When asked to describe the colour of the word "blue," for example, when it is written in green ink, non-players were far more likely to choose the dominant impulse and say "blue," though the colour is green. "The [video game players] are much harder to mislead, to trick," Prof. Bialystok said.

Although Prof. Bialystok is a strong proponent of bilingual education, she is less enthusiastic about video games. Recent studies have found overexposure to violent video games may desensitize children to violence and that gaming can become addictive enough to distract from other activities.

"I'd still be plenty concerned if my child played them all the time," Prof. Bialystok said. "Sure, they're getting better at rapid search and response problems, but I really would prefer my child read a book."