



# Practice Makes Perfect:



## Switching between languages pays off

Concordia researchers show bilingual toddlers who obtain more practice in language switching are better at certain types of problem solving.

By Cl  a Desjardins

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**Montreal, February 3, 2016** — It's estimated that half of the world's population speaks two or more languages. But are there hidden benefits to being bilingual? Research from Concordia University in Montreal reveals a new perk visible in the problem-solving skills of toddlers.

The results of a study recently published by the *Journal of Experimental Child Psychology* show that bilingual children are better than monolinguals at a certain type of mental control, and that those children with more practice switching between languages have even greater skills.

Bilingual speakers can thank the sometimes arduous practice of switching from one language to another for this

skill. "This switching becomes more frequent as children grow older and as their vocabulary size increases," says Diane Poulin-Dubois, a professor in Concordia's Department of Psychology and the study's senior author.

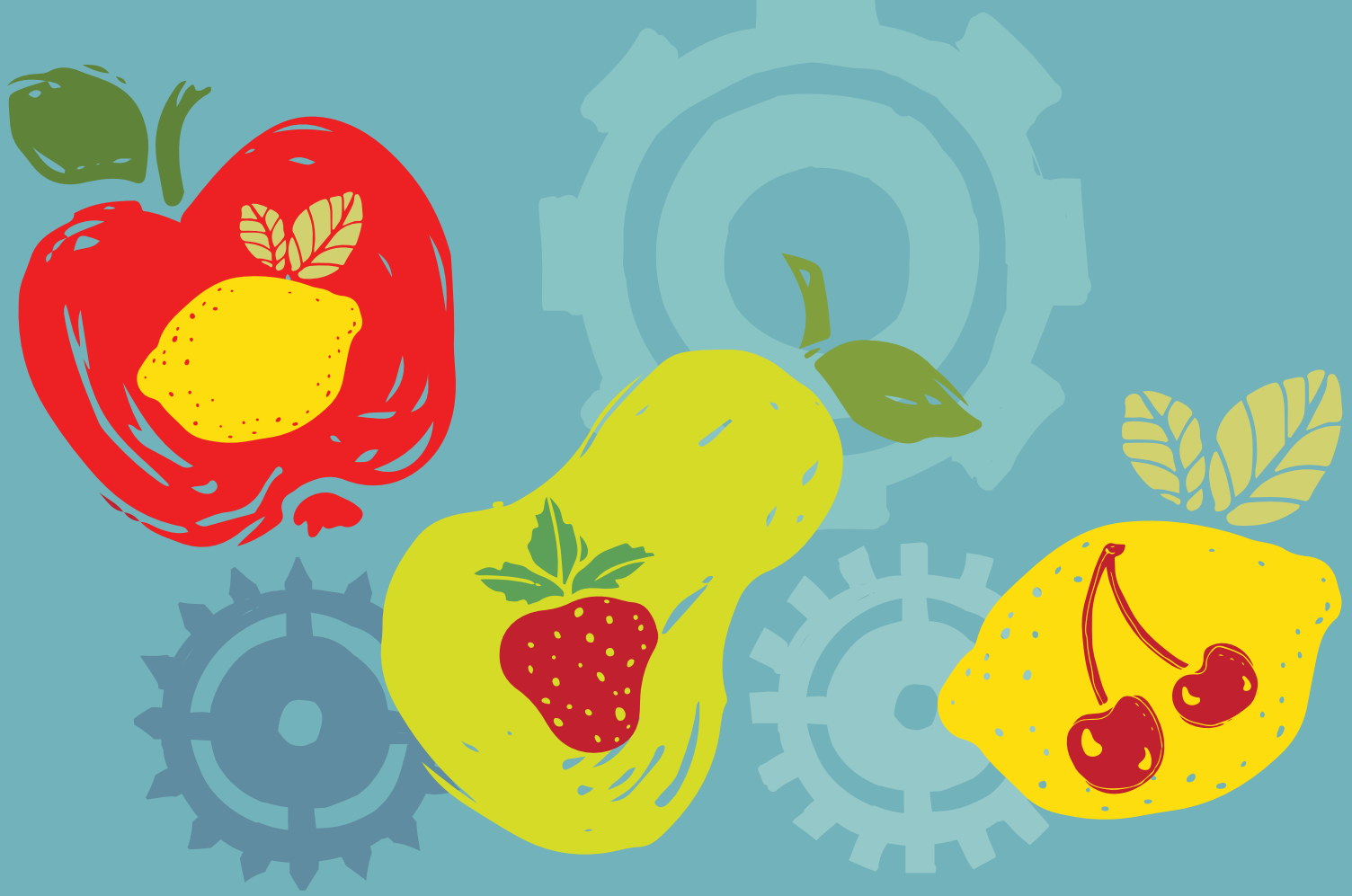
"Therefore, the superior performance on these conflict tasks appears to be due to bilinguals' strengthened cognitive flexibility and selective attention abilities as they have increased experience in switching across languages in expressive vocabulary."

Poulin-Dubois and Cristina Crivello, a graduate student with Concordia's Centre for Research in Human Development (CRDH), led a group of researchers\* in a longitudinal investigation, which com-

pared bilingual toddlers to their monolingual peers, tracking the tots as they gained greater vocabularies in each of their two languages.

For the study, the researchers assessed the vocabularies of 39 bilingual children and 43 monolinguals when they were aged 24 months, and then again at 31 months. During the second assessment, the researchers also had the young participants perform a battery of tasks to test their cognitive flexibility and memory skills.

"For the most part, there was no difference between the bilingual and monolingual toddlers," says Poulin-Dubois, who is also a member of CRDH. "But that changed dramatically when it came to



the conflict inhibition test, and the differences were especially apparent in the bilingual toddlers whose vocabulary had increased most.”

In this case, conflict inhibition refers to the mental process of overriding a well learned rule that you would normally pay attention to.

To assess toddlers’ abilities in this domain, Crivello, who undertook the research as part of her master’s thesis and is the first author of the study, administered two tests:

## 1 Reverse categorization

participants were told to put a set of little blocks into a little bucket and big blocks into a big bucket. Then the instructions were switched — big blocks in the little bucket and little blocks in the big bucket.

## 2 Shape conflict

participants were shown pictures of different sized fruit and asked to name them. Then a new series of images was shown, with a small fruit embedded

inside a large one. Toddlers were asked to point to the little fruit.

It wasn’t surprising to the researchers that the bilingual children performed significantly better on the conflict inhibition tasks than did their monolingual counterparts.

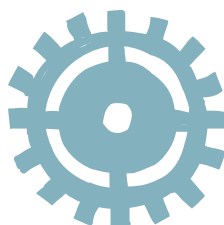
“Language switching underlies the bilingual advantage on conflict tasks,” says Crivello. “In conflict inhibition, the child has to ignore certain information — the size of a block relative to a bucket, or the fact that one fruit is inside another. That mirrors the experience of having to switch between languages, using a second language even though the word from a first language might be more easily accessible.”

The unique feature of the study was the finding that the more language switching toddlers engaged in, the

more it benefited them. Within the bilingual group of toddlers, those who had amassed a greater number of “doublets” — pairs of words in each language, such as dog/chien performed even better on the conflict inhibition tasks.

“By the end of the third year of life, the average bilingual child uses two words for most concepts in his or her vocabulary, so young bilingual children gradually acquire more experience in switching between languages,” says Poulin-Dubois. ■

**\* Partners in research:** This research was supported by a Discovery Grant from the Natural Sciences and Engineering Research Council of Canada (NSERC) and by the National Institute of Child Health and Human Development. The study’s additional co-authors are Olivia Kuzyk and Momyka Rodrigues (Concordia University), Margaret Friend (San Diego State University) and Pascal Zesiger (Université de Genève).



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