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When language of instruction and language of application differ: cognitive costs of bilingual mathematics learning.

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Summary: Bilingual education programs implicitly assume that the acquired knowledge is represented in a language-independent way. This assumption, however, stands in strong contrast to research findings showing that information may be represented in a way closely tied to the specific language of instruction and learning. The present study aims to examine whether and to which extent cognitive costs appear during arithmetic learning when language of instruction and language of retrieving differ. Thirty-nine high school students participating in a bilingual education program underwent a four-day training on multiplication and subtraction problems in one language (German or French), followed by a test session in which they had to solve trained as well as untrained problems in both languages. We found that cognitive costs related to language switching appeared for both arithmetic operations. Implications of our findings are discussed with respect to bilingual education as well as to cognitive mechanisms underlying different arithmetic operations.

Classification: C54 F34

Keywords: bilingual learning; bilingualism; language switching; mathematical learning

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