

ZMATH 2012d.00170

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Priming addition facts with semantic relations.

J. Exp. Psychol.: Learn. Mem. Cogn. 34, No. 2, 343-352 (2008).

Summary: Results from two relational-priming experiments suggest the existence of an automatic analogical coordination between semantic and arithmetic relations. Word pairs denoting object sets served as primes in a task that elicits "obligatory" activation of addition facts ($5 + 3$ activates 8; LeFevre, Bisanz, Mrkonjic). Semantic relations between the priming words were either aligned or misaligned with the structure of addition (Bassok, Chase, Martin). Obligatory activation of addition facts occurred when the digits were primed by categorically related words (tulips-daisies), which are aligned with addition, but did not occur when the digits were primed by unrelated words (hens-radios, experiment 1) or by functionally related words (records-songs, experiment 2), which are misaligned with addition. These findings lend support to the viability of automatic analogical priming (Spellman, Holyoak, Morrison) and highlight the relevance of arithmetic applications to theoretical accounts of mental arithmetic.

Classification: C30 C80 F30

Keywords: cognitive science; cognitive psychology; research; mental recall; paired-associate learning; problem solving; reaction time; semantics; mental computation; arithmetic; semiotics; experiments

doi:10.1037/0278-7393.34.2.343