

**ZMATH 06675924**

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**How does space interact with numbers?**

Khine, Myint Swe (ed.), Visual-spatial ability in STEM education. Transforming research into practice. Cham: Springer (ISBN 978-3-319-44384-3/hbk; 978-3-319-44385-0/ebook). 241-263 (2017).

Summary: Mathematics requires visuo-spatial processing. This is obvious for geometry which is ostensibly spatial and requires creating, maintaining, and performing transformations on 2-D or 3-D visuospatial models. However, it is also the case for other mathematical dimensions. Understanding the place-value system of Arabic numbers for instance requires the processing of the position of each digit in the number. Doing multi-digit calculation in columns similarly involves the processing of spatial information; and the use of visual images has been shown to be positively correlated with higher mathematical word-problem-solving performance. Globally, numerous researchers have found close connection between spatial thinking and mathematics with good math abilities in people with higher spatial skills. In the first part of this chapter, we will examine evidence showing that number magnitude is spatially coded. Then, we will show that the spatial representation of numbers improves with age. Third, we will report the effects of weak visuo-spatial abilities on numerical development in children. Finally, we will consider how this space-number interaction has been considered in training aiming at fostering numerical development.

*Classification:* C40 F10 C90 D70

*Keywords:* STEM; visuo-spatial abilities; numbers; space; spatial skills

doi:10.1007/978-3-319-44385-0\_12