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**Are numbers grounded in a general magnitude processing system? A functional
neuroimaging meta-analysis**

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Abstract

It is currently debated whether numbers are processed using a number-specific system or a general magnitude processing system, also used for non-numerical magnitudes such as physical size, duration, or luminance. Activation likelihood estimation (ALE) was used to conduct the first quantitative meta-analysis of 93 empirical neuroimaging papers examining neural activation during numerical and non-numerical magnitude processing. Foci were compiled to generate probabilistic maps of activation for non-numerical magnitudes (e.g. physical size), symbolic numerical magnitudes (e.g. Arabic digits), and nonsymbolic numerical magnitudes (e.g. dot arrays). Conjunction analyses revealed overlapping activation for symbolic, nonsymbolic and non-numerical magnitudes in frontal and parietal lobes. Contrast analyses revealed specific activation in the left

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