

Numerical cognition in the absence (or temporary unavailability) of language for
number

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What is the relationship between language and thought? Traditional approaches to this question have staked out extreme positions: either that language determines the shape of the thoughts you can entertain, or else that language is only an overlay on top of a more basic "language of thought". Our work in the domain of numerical cognition supports a middle view: that language is a tool which can help with complex cognitive tasks, supplementing but not altering other core cognitive capacities. We show that the Pirahã, an Amazonian group with no words for numbers, use the same core systems for numerical estimation as MIT undergrads who are temporarily prevented from counting via verbal interference. In addition, language may be only one among a range of possible "cognitive technologies" for representing exact number, as suggested by our recent studies of schoolchildren in Gujarat, India who have learned to use a mental representation of an abacus — an exact representation of number that relies on visual rather than linguistic resources — to perform arithmetic calculations.