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The effect of language on the approximate number system

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Abstract

The approximate number system (ANS) underlies our rapid and intuitive sense for quantities (Feigenson et al., 2004). The ANS, tapped into when performing rapid number judgement (DeWind et al., 2015), is affected by the properties of visual stimuli (e.g., object density and grouping). In these studies, we test whether the ANS is also affected by semantic information, an effect previously found in the processing of other types of spatial information (e.g., language presented at encoding affects spatial memory, see Gudde et al., 2016; Loewenstein & Gentner, 2005). We present the results of four experiments manipulating vague quantifiers (few, several, many, lots, 'no quantifier') prior to flashing a visual scene containing a number of objects. If higher-level cognition can penetrate the ANS, we expected that quantifiers presented at encoding would bias approximate number judgments towards the previously presented quantifier. Such results would provide compelling evidence that expectation mediates low-level visual processes.