Understanding exact large number is possible in Amazonian languages

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Abstract

There is debate regarding the role of number words in numerical cognition, especially for understanding exact large numbers. Studies of languages with number words for only small numbers suggest those languages do not provide symbolic scaffolding for exact large numerical cognition. This study investigates numerical cognition in speakers of the Amazonian language Awetý which has twenty number words. In experimental tasks with numbers/objects up to 20, Awetý participants demonstrated high accuracy in counting, verbal number comprehension, verbal and non-verbal one-to-one matching, and exact subtraction. Awetý speakers also performed with high accuracy on approximate non-symbolic number comparison with more than 20 items, i.e. beyond their number word range. Awetý participants performed as well as Portuguese speaking control participants across tasks. These findings demonstrate that knowledge and use of a system of twenty numeral words is sufficient for understanding exact numerical equivalence, at least up to 20, and basic arithmetic proficiency.

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