Language facilitates 2.5-year-olds reasoning by the disjunctive syllogism

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Abstract

Children and animals successfully reason by elimination: if a reward is hidden in A or B, and they see A empty, they search in B (Call, 2004; Hill et al., 2012). Twenty-seven-month-olds also solve similar tasks when emptiness is conveyed verbally, through negation (The toy is not in the box, Feiman et al., 2017). However, it is unclear whether participants solved these tasks with the disjunctive syllogism (A OR B, NOT A, THEREFORE B); in a 4-cup paradigm requiring disjunctive reasoning only 3-5-year-olds but not 2.5-year-olds succeeded (Mody & Carey, 2016). We used a linguistic version of the 4-cup task to examine childrens ability to reason disjunctively using verbal negation. We found that 3- and 2.5-year-olds performed significantly above chance (58.1%, 54.2%, respectively, ps¡.05). Thus, presenting the negative premise verbally facilitated 2.5-year-olds deductions. We conclude that older 2-year-olds have a robust understanding of negation, which they apply in abstract reasoning.