# Childrens use of linguistic and non-linguistic negation in reasoning by the disjunctive syllogism

**Myrto Grigoroglou**
University of Toronto, Toronto, Ontario, Canada

**Patricia Ganea**
University of Toronto, Toronto, Ontario, Canada

**Abstract**

Whether logical inference is available without language is highly debated. One such inference is the disjunctive syllogism (A Or B, Not A, Therefore B). Evidence from a search task that required disjunctive reasoning suggests that that the syllogism is unavailable before age 3 (Mody & Carey, 2016). However, in a replication of the same task using language (i.e., verbal negation), even 2.5-year-olds succeeded (Grigoroglou, et al., 2019). Here we explore the role of language in childrens logical reasoning. 2.5- to 4-year-olds performed the non-linguistic task, after a short training in reasoning by exclusion. Half of the children received linguistic training (e.g., heard there is no coin in X cup); half received non-linguistic training (i.e., saw that one location was empty). Results show that 2.5- and 3-year-olds were more successful in reasoning with the disjunctive syllogism after the linguistic training. Thus, offering children the premise Not A verbally facilitated logical reasoning.