

Relation between Mathematics Achievement, Fraction Magnitude Estimation, and Proportional Reasoning: A Cross-Cultural Study

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Most research examining the relation between fraction number line estimation (NLE) and maths achievement has taken place in the United States. Fraction instruction in the United States predominantly focuses on a part-whole model; whereas Australian curriculum includes both measurement and part-whole models. The current study examined the relation between maths achievement, fraction NLE, and non-symbolic proportional reasoning in samples of 4th and 6th grade students from Australia and the United States. In both countries, proportional reasoning was correlated with fraction NLE, which, in turn, predicted concurrent maths achievement, suggesting a general cognitive mechanism that involves spatial scaling.