The relation between Spontaneous Focusing on Numerosity (SFON) and mathematical performance in children

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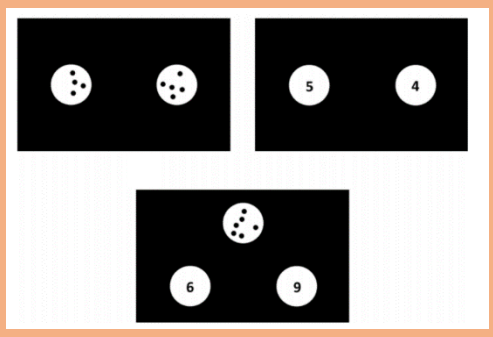
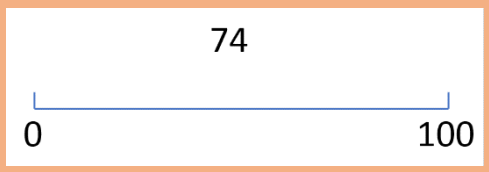
Past Research



- Spontaneous Focusing on Numerosity (SFON) refers to the ability to self-initiatively focus on numerosity in the surrounding (Hannula et al., 2010).
- SFON is associated with different aspects of Math performance, e.g. object counting, numerical skills and cardinality understanding (Hannula & Lehtinen, 2005).
- High-SFON children are better in mapping between non-symbolic and symbolic representations of number (Bull, 2013).
- SFON predicts later mathematical achievement, including arithmetic skills and rational number conceptual knowledge (Hannula et al., 2010).
- Few studies have explored how SFON is related to different mathematical domains and its relation with long-term mathematical performance.

Objective



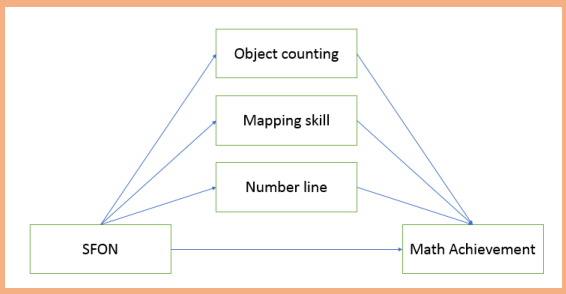
- To investigate whether object counting, mapping skills and number line concept play a mediating role in explaining the relations between SFON and different domains of early mathematical skills.
- To find out whether children's SFON tendency can predict later mathematical achievement.

Hypothesis

- SFON positively correlates with math performance in children.
- The relations are explained by individual difference in child's ability in object counting, mapping skills and number line concept.

Method

- Participants: 200 children aged 4-5
- Longitudinal study of 2 phases
- Tasks: SFON, symbolic and non-symbolic comparison, mapping, enumeration, arithmetic skills, digit span and listening comprehension



Predicted results

- Children's SFON tendency in phase 1 can predict their mathematical achievement in phase 2.
- Object counting, mapping skills and number line concept are mediators in the relations between SFON and different domains of early mathematical skills.

Reference

Bull, R. (2013, April). *Examining sources of individual differences in acuity of the approximate number system.* Paper presented at the biennial meeting for the Society for Research in Child Development (SRCD), Seattle, Washington.

Hannula, M., & Lehtinen, E. (2005). Spontaneous focusing on numerosity and mathematical skills of young children. *Learning and Instruction, 15,* 237-256.

Hannula, M., Lepola, J., & Lehtinen, E. (2010). Spontaneous focusing on numerosity as a domain-specific predictor of arithmetical skills. *Journal of Experimental Child Psychology, 107,* 394-406.