CORRELATION OF PRESCHOOL ACUITY OF APPROXIMATE NUMBER SYSTEM WITH SCHOOL MATH ABILITY

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INTRODUCTION

- Individual differences in math abilities present from earliest years of formal learning.
- Differences due to social factors and cognitive capacities.
- Recent focus also on possibility of unlearned number skills.

APPROXIMATE NUMBER SYSTEM (AMS)

- A cognitive system that relies on estimation of magnitude.
- Present right from childhood and precision improves with age.
- Independent from language and other acquired number symbols.
- Intraparietal sulcus found to be the neural locus of ANS.

- ANS supports quantitative computations.
- Performance at computing over ANS representations follows Weber's Law.
- **WEBER'S LAW:** Difference between two stimuli proportional to magnitude of stimuli.
- Experiments with 14 year olds shows ANS acuity correlates with math ability.

- Several experiments relate ANS to math ability even in younger ages.
- Booth and Siegler's number line experiment.
- But these also require processing of number symbols and not entirely ANS.

AUTHOR'S EXPERIMENT

- Conducted on 200 3 to 5 year olds.
- Included ANS acuity tasks and tests on math and verbal abilities.
- Results prove ANS acuity correlates with early math abilities.

- Cause of link between ANS acuity and math ability still a question.
- A possibility that ANS is fundamental for acquiring numeric symbols.
- Less accurate ANS may lead to math anxiety.
- Experiment did not control factors such as overall intelligence and information processing. Instead it controlled vocabulary skills which correlate with these.

Thank You