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# The Influence of Visuospatial Intervention on Mathematical Ability

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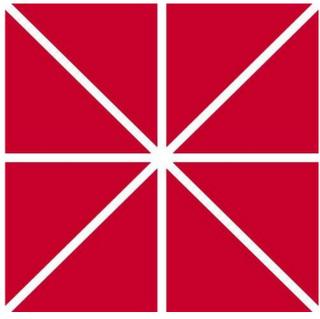
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# The Influence of Visuospatial Intervention on Mathematical Ability

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## Introduction

- Many prior studies have focused on the relationship between visuospatial ability (the ability to identify and comprehend visual and spatial relationships among objects) and performance in math.
- These studies show that a relationship exists between levels of visuospatial ability and performance in math.
- Gunderson et al. (2012) discovered that having greater spatial skills aids in the acquisition of a linear spatial representation of numbers
- No past research has sought to determine whether or not improvements in visuospatial ability correlated with improvements in mathematical ability.
  - Moreno et al. (2011) sought to discover if training in visual arts would manifest into better mathematical performance, but found no strong correlation.
- Determine if visuospatial skills correspond with improvements in mathematical ability

## Method

- **The goal of the study is to determine whether mathematical ability improves from pre-test to post-test after having participated in a visuospatial intervention.**
- After testing, it will be determined whether or not there is a relationship between visuospatial ability and mathematical ability
  - Specifically, whether the visuospatial interventions are successful at improving mathematical ability relative to the control intervention.
- Analyses to determine whether or not significant effects were present for the various extraneous variables will also be performed.

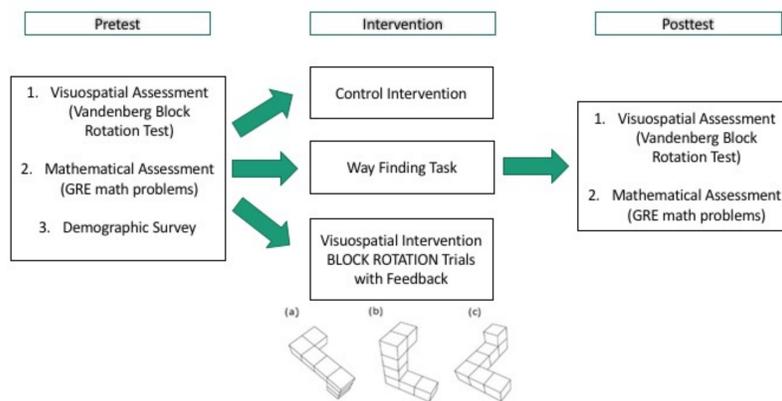


Figure 3. Examples of block visuals presented during the Vandenberg Block Rotation Test (VBRT).

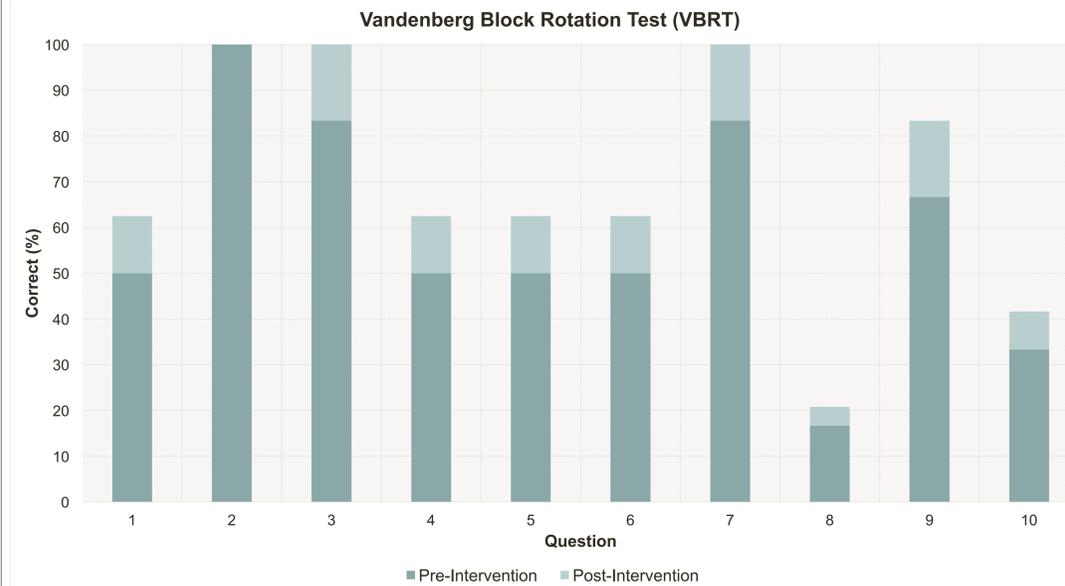


Figure 1. The number of correct answer chosen per question on the Vandenberg Block Rotation Test (VBRT) and our predicted scores after the intervention.

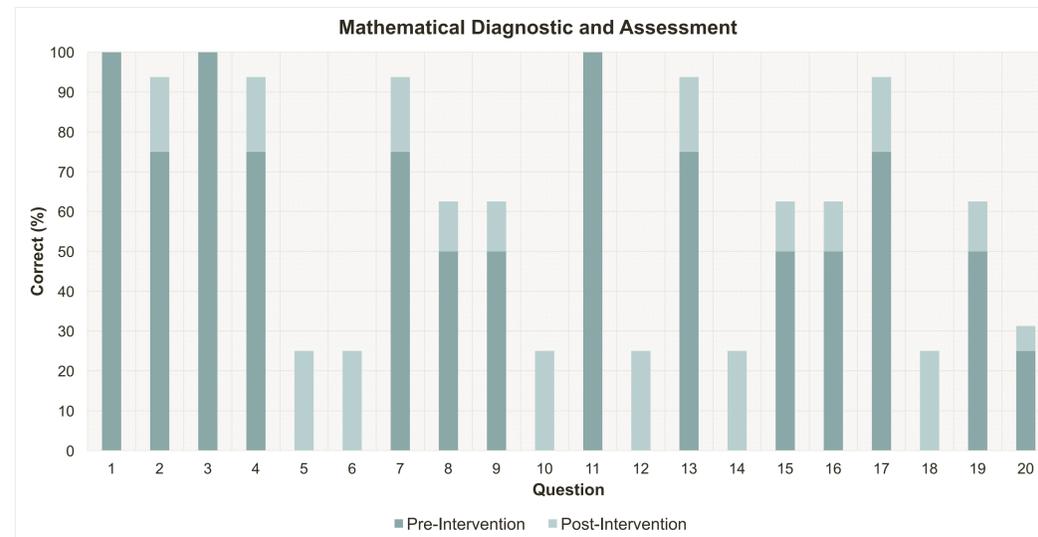


Figure 2. The number of correct answer chosen per question on Math Diagnostic Assessment and our predicted scores after the intervention.

## Predicted Conclusion

- Results from pilot testing:
  - Visuospatial assessment (VBRT)
    - **Mean = 60%**
  - Mathematical assessments (GRE practice problems)
    - **Mean = 50%**
- These results indicate pretest measures for baseline.
- Gunderson et al (2012) found in their studies, training one's visuospatial ability and awareness can show improvements in understanding linear relationships and can improve one's overall knowledge of numeric relationships.
- We predict that after visuospatial intervention of either the object rotation task or the wayfinding task, there will be a **25%** increase in the mathematical assessment score.
- We predict that visuospatial intervention will increase the participant's visuospatial assessment score by **25%**.
- We hypothesize that our data will show a relationship between mathematical ability and visuospatial ability.
- Future testing will yield a larger sample size in order to concisely predict and conclude our findings on whether or not there is a correlation between visuospatial training and mathematical ability.

## References

- Gunderson, E. A., Ramirez, G., Beilock, S. L., & Levine, S. C. (2012). "The relation between spatial skill and early number knowledge: The role of the linear number line": Correction to Gunderson et al. (2012). *Developmental Psychology*, 48(5), 1241-1241.
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