Does Experience with Physics Concepts Improve Mental Rotation Performance?

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Abstract: STEM disciplines have been shown to positively impact an individual's visuospatial skills (Kozhevnikov, 1999). The current study examines improvement in spatial thinking in physics undergraduate students over the course of a semester. Students completed the Shepard and Metzler (1971) task at two time points– beginning and end of a semester – where they were asked to determine if two 3D figures were a match or mirror-images of each other. A Tobii X60 eye-tracker was used to record eye movement as an indirect measure of cognitive strategy selection. Preliminary analysis show a significant improvement in mental rotation performance from time point 1 (M=31.867, SD=5.027) to time point 2 (M=35.333, SD=3.885) t(14)=-3.014, p=.009. A latent profile analysis will be used to model cognitive strategies selected at time points 1 and 2 and analyzed for sex differences. The findings of this study are important for understanding the underrepresentation of women in STEM.