

Confidence Mediates The Sex Differences Observed In Mental Rotation Tests

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Mental rotation is defined as the ability to rotate 2-D and 3-D objects in space using one's mind. Individual differences recorded in this ability are related with entry into STEM. Several research laboratories bespeak that factors explaining these sex differences include exposure to spatial activities/toys, spatial anxiety, and cognitive strategy used to resolve tasks. One discrete factor receiving less attention is confidence. The study attempted to replicate these differences, examine whether confidence interacts with mental rotation ability estimation, and determine whether confidence mediates these differences. 510 college students completed a 24-item Mental Rotation Test, in which they were shown one target figure and four test figures. Two of the figures were identical to the target figure being displayed but rotated and the other two were rotated *mirror* images. Participants were required to select the two that they believed matched the figure and report their confidence level towards each item, with higher numbers on a 7-point scale indicating an increased confidence of accurately identifying the answers. The study was designed to only mark correct the items where both matches were selected. The total number of correct MRT items and average confidence across all items were calculated. Consistent with previous studies, males scored higher and exhibited greater confidence in judging their accuracy on the MRT compared to females. Sex predicted both MRT and confidence while confidence predicted MRT. When confidence was included as a potential mediator, the path coefficient was reduced and no longer significant. Further analysis revealed that confidence explicitly mediated MRT differences. Based on the results, females remained performing lower than males. Ultimately, the desire was to investigate whether the accuracy estimation of confidence on MRT execution was responsible for mediating these sex differences. The finding of males being more assertive in their spatial ability demonstrates this to be true.