

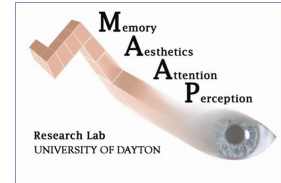


The Use of a Mental Rotation Task to Assess Narcissism and Gender Biases

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Background

The methods for assessing verbal competency are varied; however, previous studies fail to present reliable gender differences. Mental rotation tasks, on the other hand, demonstrate a slight male bias, perhaps less related to cognitive ability than to decision strategy and confidence (Cooke-Simpson & Voyer, 2007). The bias is that men often-times perform better than women on spatial tasks whereas women oftentimes perform better than men on verbal tasks.

Related to the notion of performance is overconfidence. Defined as subjective confidence exceeding objective performance; overconfidence leads to myriad problems in everyday life (Pelham, DeHart, & Cavallo, 2001).

Narcissism is the personality trait related to self-esteem, which includes the set of character traits concerned with self-image or ego. It has been identified as a core personality trait impacting behavior and attitude (Ames, Rose, & Anderson, 2005) and is thought to affect confidence.

Hypotheses

- For the control group, as expectations for performance decrease, confidence will also decrease. More specifically, without the bias being introduced, if performance decreases, reported confidence will decrease.
- Women in the control condition will exhibit more appropriate levels of confidence than men.
- Men will show higher rates of confidence than women.
- As need for achievement is greater, confidence will also be greater.
- As narcissism is greater, overconfidence will also be greater.

References

- Ames, D. R., Rose, P., & Anderson, C. P. (2006). The NPI-16 as a short measure of narcissism. *Journal of Research in Personality*, 40, 440-450.
- Cooke-Simpson, A., & Voyer, D. (2007). Confidence and gender differences on the Mental Rotations Test. *Learning and Individual Differences*, 17, 181-186.
- Pelham, B.W., DeHart, T., & Cavallo, M. (2001). Overconfidence as dissonance reduction. *Journal of Experimental Social Psychology*, 37, 373-385.

Method

Participants

- College undergraduate students
- 20 men and 20 women

Materials

- **Irrational Behavior Scale** : Participants used a scale of 0 to 100 to rate their confidence levels in their abilities to accomplish different behaviors.

Ex: "Master a rubix cube in 15 minutes."

- **Need For Achievement Scale**: Participants were asked to rate their levels of agreement or disagreement on each statement listed, using a scale of -4 (*very strong disagreement*) to +4 (*very strong agreement*).

Ex: "I have difficulty working in a new and unfamiliar situation."

- **Narcissistic Personality Inventory (NPI)**: Using a forced-choice questionnaire, participants were asked to choose which statement came closest to describing their feelings and beliefs about themselves.

Ex: "I really like to be the center of attention." OR
"It makes me uncomfortable to be the center of attention."

- **Mental Rotation Task (MRT)**: A computer-based task



Mirrored Formation Correct Formation

Procedure

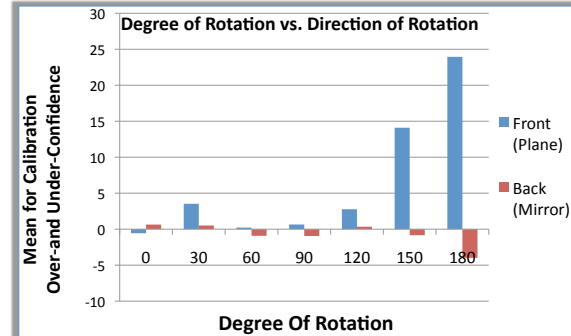
- Experimental group was presented with a gender bias: *Some research shows that men perform better at spatial tasks and women perform better at verbal tasks.*
- Participants completed the MRT on a computer, deciding whether the letters presented were in their correct or mirrored orientation
 - Letters F, L, and R
 - 12 orientations (*up* and deviations from *up*): 0, 30, 60, 90, 120, 150, 180, 210, 240, 270, 300, and 330 degrees
 - Participants rated level of confidence for each image on a scale from 0 to 100.

Results

Table 1

Degree of Rotation	Direction of Rotation	
	Front (Plane)	Back (Mirror)
0	-.56 (5.12)	.64 (9.53)
30	3.53 (12.79)	.51 (11.53)
60	.22 (8.91)	-.92 (14.20)
90	.65 (14.16)	-.95 (18.30)
120	2.77 (21.72)	.34 (18.98)
150	14.10 (35.96)	-.84 (16.72)
180	23.95 (33.13)	-3.98 (19.27)

Table 1: Mean (Standard Deviation) for Calibration (Over- and Under-confidence) for All Participants Combined across both biasing conditions.



Discussion

As expected, there was an interaction between degree and direction of the images: Direction of rotation (Correct or Mirrored), $F(1, 162) = 7.034, p < .01, \eta^2 = .207$; Degree of rotation, $p < .05$; interaction Degree x Direction, $p < .0001$. There was no effect of gender, biasing condition, and no interaction of these with other factors. Visual overconfidence is evident in 9 out of 14 conditions, regardless of gender, and visual under-confidence (slight) in the other 5 conditions (4 were mirrored direction of rotation). By one-sample *t*-tests comparing overconfidence and under-confidence with mean of 0.0, two conditions were statistically different from 0.0: Front 150 degree, and front 180 degree. This was unexpected for degree, but somewhat unexpected by direction.