SEX DIFFERENCES IN VIRTUAL NAVIGATION INFLUENCED BY Scale, Visual Cue-Types, Spatial Memory and Lifetime Mobility

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INDIVIDUAL DIFFERENCES MEASURES

Aim
To test whether sex-specific differences in cue preference are similarly observed in large and small-scale environments.

Methods
Participants: 75 participants (41 males, 34 females)
Between-subjects: Age and gender
Within-subjects: Cue condition (visual, auditory, and spatial)

Hypotheses
- Sex differences may vary with the scale of the environment.
- Individual differences measures of mental rotation and a measure of spatial memory will be significant predictors of performance.

Maze Task
Performance accuracy was measured by calculating the Euclidean distance from the remembered location to the actual location of the dots (distance error).

Two analyses were conducted:
1) A mixed-design ANOVA to determine if females and males performed differently when presented with distal and proximal cues in mazes of two different scales.
2) A linear mixed-effects analysis was used to assess the influence of the participant’s lifetime mobility and MRT on maze performance.

Women who were highly mobile perform as well as highly mobile men when they were navigating with proximal cues.

DATA ANALYSIS

ANALYSIS ONE
Virtual Maze Measures and Scale
- In the small-scale maze, no significant difference was found in maze performance, showing that females only display an advantage when navigating with distal cues.
- However, this pattern did not extend to the large-scale maze. In the large-scale maze, males showed a strong advantage in both the proximal and distal cue conditions.

ANALYSIS TWO
Maze measures, Mobility, and MRT
MRT is a cue: Males perform better with MRT more in the proximal cue condition, while females perform the worst in the distal cue condition.

Cue Mobility x Sex: In the proximal cue condition there was no sex difference, while females performed better in the distal cue condition.

SUMMARY
1) Modifying the maze parameters (scale) affected performance on the virtual Morris maze.
2) Individual differences measures of MRT and mobility predicted maze performance more in the proximal cue condition and differently for females and males.
3) Women who have traveled to more places in their lifetime have increased performance when navigating with only proximal cues, but not with distal cues.