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COMMENTARY

Sex differences in theory of mind: The on-average female advantage on the Reading the Mind in the Eyes Test

Simon Baron-Cohen[1] | **Marcin A. Radecki**[1,2] | **David M. Greenberg**[1,3,4] | **Varun Warrier**[1] | **Rosemary J. Holt**[1] | **Carrie Allison**[1]

[1]Autism Research Centre, Department of Psychiatry, University of Cambridge, Cambridge, UK

[2]Social and Affective Neuroscience Group, IMT School for Advanced Studies Lucca, Lucca, Italy

[3]Interdisciplinary Department of Social Sciences, Bar-Ilan University, Ramat Gan, Israel

[4]Department of Music, Bar-Ilan University, Ramat Gan, Israel

Are there on-average sex differences in theory of mind (ToM)? Dorris et al.[1] report an important large-scale study of ToM, or cognitive empathy, defined as the ability to attribute mental states to oneself and others in order to explain and predict behaviour.[2] Developmental precursors of ToM are evident already between 9 to 15 months of age in joint attention behaviours and pretend play. By 4 years old, children understand what another person is thinking (first-order ToM); by 6 years old, children also understand what someone is thinking about another person's mental state (second-order ToM); by 11 years old, children also recognise faux pas, and ToM continues to develop well into late adolescence.

One of the most widely used ToM tasks is the Reading the Mind in the Eyes Test (RMET), recommended in the US National Institute of Mental Health Research Domain Criteria, and this is the measure that Dorris et al. employed. On average, reduced performance on the RMET has been reported in individuals with autism as well as in those with personality, eating, and substance abuse disorders and in individuals with schizophrenia or dementia. From a neuropsychological perspective, patients with lesions in the amygdala and inferior frontal gyrus have shown acquired deficits on the RMET. These two brain regions also show reduced activity in individuals with autism and their siblings while taking the RMET during functional magnetic resonance imaging. A number of meta-analyses in the general population further add to our understanding of RMET performance in the brain.

There is evidence that biological, social, and demographic factors all contribute to individual differences in performance on the RMET. In terms of biological factors, performance on the RMET is partly genetic[3] and has been associated with hormonal levels – testosterone (both prenatal and administered in adults) and oxytocin (administered in adults). On average, females score higher on the RMET. Convergence across meta-analyses and large-sample studies indicates statistically robust sex differences in ToM, as measured on the RMET[3,4] and other tasks,[5] with an on-average female advantage from childhood to adulthood (Cohen's d in adulthood ≤ 0.2). Dorris et al.'s study clearly confirms the on-average female advantage. This effect could be due to the same set of biological factors that contribute to individual differences, and/or to social factors such as sex equality or socioeconomic development.

We look forward to more work investigating when exactly the female advantage in ToM emerges, if it is observed across cultures, and what are the underlying mechanisms that are driving it.

DATA AVAILABILITY STATEMENT

Not required.

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This commentary is on the original article by Dorris et al. To view this paper visit https://doi.org/10.1111/dmcn.15263.

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