

OSSD Paper Pick for July 12, 2022 – Natalie Tronson

Chen CS, Knep E, Han A, Ebitz RB, & Grissom NM (2021) Sex differences in learning from exploration. *eLife* 10:e69748.

<https://doi.org/10.7554/eLife.69748>

Statement of importance:

In decision making and cognitive tasks, there are processes that are likely modified by sex-related biological variables, but overall behavioral performance is often similar across sex. Indeed, in some cases, sex differences may act to reduce differences between sex (De Vries, 2004). And yet, specific cognitive strategies and neural systems engaged may contribute to sex-dependent biases for psychiatric and neurological disorders. How then, can we unpack sex influences on cognitive processes, even when performance is similar?

This paper by Chen et al., (together with a previous paper also from the Grissom lab, PMID:[PMC8120733](https://pubmed.ncbi.nlm.nih.gov/35120733/)) uses a computational approach to understand latent variables that influence strategies for a decision-making task. They demonstrated that despite similar overall performance and accuracy on a value-based decision-making task, male and female mice used different exploratory choices to learn this task. Males explored more, whereas females learned more quickly during exploration and then explored less. Importantly, sex is not the only driver of strategy use in these animals, and this paper describes how individual variability also influenced performance and strategy for these tasks. These findings, and the computational methods used to identify these differences, are important advances toward understanding how sex influences cognitive strategies in complex environments, and a basis for understanding sex-dependent vulnerabilities and resilience to complex psychiatric and neurological disorders.

References/additional reading:

Chen CS, Ebitz RB, Bindas SR, Redish AD, Hayden BY, Grissom NM. (2021) Divergent Strategies for Learning in Males and Females. *Current Biology*. 31(1):39-50.e4.

De Vries, GJ (2004), Sex differences in adult and developing brains: Compensation, compensation, compensation. *Endocrinology* 145(3):1063-1068.