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Are We Ovary-Acting? All Visuospatial Abilities May Not Be Equally Affected Throughout the Menstrual Cycle.

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Visuospatial skills pertain to the ability to conceptualize and comprehend visual representations of objects and the spatial relationships among objects. They are integral for the proper functioning of other cognitive systems such as memory, attention, and reasoning (Kaufman, 2007). Sex hormones are one of many factors reported to affect visuospatial processing, with estrogen specially being associated with poor performance on visuospatial tasks in females (Hausmann, 2000). The current study investigated performance differences on three visuospatial domains (working memory, mental imagery, and spatial reasoning) in relation to estrogen modulations associated with females' menstrual cycles. It was hypothesized that performance would domain specific, rather than the widespread effects suggested in the literature. Spatial reasoning performance is expected to be lowest in the early luteal phase (high estrogen) and highest in the early follicular phase (low estrogen), with no performance differences expected for mental rotation and corsi block tasks. In the current study, participants completed a weekly visuospatial battery, once a week for 5 weeks, including three tasks (corsi block, mental rotation, and spatial reasoning), self-reports of menstrual cycle, and salivary samples. Pilot data from 33 females demonstrated highest performance during estrogen-low phases (early follicular) compared to lower performance during estrogen-high phases on the spatial reasoning task only. No cycle modulations were revealed on the other visuospatial domains of working memory and mental rotation. The current study aimed to increase studied sample size and compliment self-reports of cycle with tangible salivary estrogen biomarkers. Data collection is ongoing, and the findings will be reported at the conference. These findings address a void in the literature in terms of female-centric research and over-generalization of previous findings. This may help

better elucidate true effects of modulating estrogen levels over the course of a menstrual cycle on visuospatial skills, demonstrating domain-specific effects rather than erroneous widespread sequalae.