

Researchers question whether genius might be a result of hormonal influences

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A longstanding debate as to whether genius is a byproduct of good genes or good environment has an upstart challenger that may take the discussion in an entirely new direction. University of Alberta researcher Marty Mrazik says being bright may be due to an excess level of a natural hormone.

Mrazik, a professor in the Faculty of Education's educational psychology department, and a colleague from Rider University in the U.S., have published a paper in *Roeper Review* linking giftedness (having an [IQ score](#) of 130 or higher) to [prenatal exposure](#) of higher levels of testosterone. Mrazik hypothesizes that, in the same way that physical and cognitive deficiencies can be developed in utero, so, too, could similar exposure to this naturally occurring chemical result in giftedness.

"There seems to be some evidence that excessive prenatal exposure to [testosterone](#) facilitates increased connections in the brain, especially in the right [prefrontal cortex](#)," said Mrazik. "That's why we see some intellectually gifted people with distinct [personality characteristics](#) that you don't see in the normal population."

Mrazik's notion came from observations made during clinical assessments of gifted individuals. He and his fellow researcher observed some specific traits among the subjects. This finding stimulated a conversation on the role of early development in setting the foundation for giftedness.

"It gave us some interesting ideas that there could be more to this notion of genius being predetermined from a biological perspective than maybe people gave it credit for," said Mrazik. "It seemed that the bulk of evidence from new technologies (such as Functional MRI scans) tell us that there's a little bit more going on than a genetic versus environmental interaction."

Based on their observations, the researchers made the hypothesis that this hormonal "glitch" in the in-utero neurobiological development means that gifted children are born with an affinity for certain areas such as the arts, math or science. Mrazik cautions that more research is needed to determine what exact processes may cause the development of the gifted brain.

He notes that more is known about what derails the brain's normal development, thus charting what makes gifted people gifted is very much a new frontier. Mrazik hopes that devices such as the Functional MRI scanner will give them a deeper understanding of the role of neurobiology in the development of the gifted brain.

"It's really hard to say what does put the brain in a pathway where it's going to be much more precocious," he said. "The next steps in this research lay in finding out what exact stimuli causes this atypical brain development."

Provided by University of Alberta

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