

Study shows girls have advantage over boys on timed tests

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New research attempting to shed light on the evergreen question — just how do male and female brains differ? — has found that timing is everything.

In a study involving more than 8,000 males and females ranging in age from 2 to 90 from across the United States, Vanderbilt researchers Stephen Camarata and Richard Woodcock discovered that females have a significant advantage over males on timed tests and tasks. Camarata and Woodcock found the differences were particularly significant among pre-teens and teens.

"We found very minor differences in overall intelligence, but if you look at the ability of someone to perform well in a timed situation, females have a big advantage," Camarata said. "It is very important for teachers to understand this difference in males and females when it comes to assigning work and structuring tests. To truly understand a person's overall ability, it is important to also look at performance in un-timed situations. For males, this means presenting them with material that is challenging and interesting but is presented in smaller chunks without strict time limits."

The findings are particularly timely, with more attention being paid by parents, educators and the media to the troubling achievement gap between males and females in U.S. schools.

"Consider that many classroom activities, including testing, are directly

or indirectly related to processing speed," the researchers wrote. "The higher performance in females may contribute to a classroom culture that favors females, not because of teacher bias but because of inherent differences in sex processing speed." An additional question is whether this finding is linked to higher high school dropout rates for males and increased special education placement for males that do stay in school.

In their new article, Camarata and Woodcock focus on understanding differences in processing speed between males and females.

"'Processing speed' doesn't refer to reaction time or the ability to play video games," Camarata said. "It's the ability to effectively, efficiently and accurately complete work that is of moderate difficulty. Though males and females showed similar processing speed in kindergarten and pre-school, females became much more efficient than males in elementary, middle and high school."

The researchers found that males scored lower than females in all age groups in tests measuring processing speed, with the greatest discrepancy found among adolescents. However, the study also found that males consistently outperformed females in some verbal abilities, such as identifying objects, knowing antonyms and synonyms and completing verbal analogies, debunking the popular idea that girls develop all communication skills earlier than boys.

The researchers found no significant overall intelligence differences between males and females in any age group.

The research was published in the May/June 2006 issue of the journal *Intelligence*. Camarata and Woodcock compiled their results through an evaluation of three sets of data collected from 1977 to 2001 as part of the Woodcock-Johnson Series of Cognitive and Achievement Tests.

Camarata and Woodcock plan to conduct studies to measure brain activity using tools such as functional magnetic resonance imaging and event-related potential tests to better understand which brain areas are playing a role in processing speed and how these areas react differently in males and females.

"We know that there are different paths to competence, and we believe there are fundamental differences in how male and female brains end up getting organized," Camarata said. "Our next studies will give us some insight into where these processing differences are occurring."

Camarata is a deputy director of the Vanderbilt Kennedy Center for Research on Human Development, a professor of hearing and speech sciences and an associate professor of special education.

Source: Vanderbilt University

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