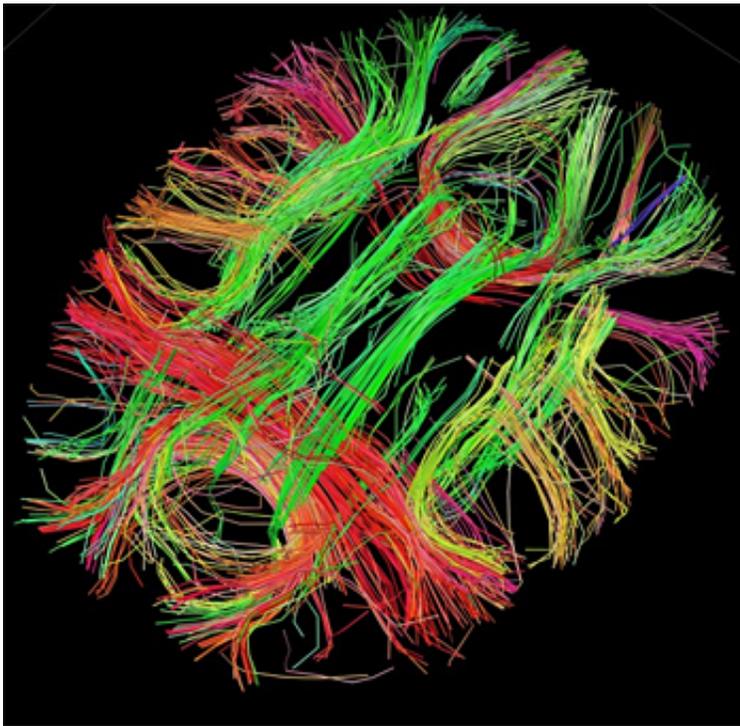


# Male brains 'overwhelmed' in multitasking test: study

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White matter fiber architecture of the brain. Credit: Human Connectome Project.

Are women really better at multi-tasking? A study Wednesday said a tricky brain-teaser throws off men's walking gait but leaves most women unfazed, reopening an age-old debate about mental gender differences.

On a treadmill, men—and [women](#) over 60—started swinging their right

arm less while grappling with a complicated language test, researchers found.

Language function and right arm swing are both thought to be controlled mainly by the brain's left hemisphere.

"Women under 60 seemed to be resistant to this effect, as they were able to perform the verbal task with no change in arm swing," said study co-author Tim Killeen, a neuroscientist from the University Hospital Balgrist in Switzerland.

"In men and [older women](#), the verbal task appears to overwhelm the left brain to the extent that the movement of the arm on the right is reduced."

The "unexpected" findings were published in the journal *Royal Society Open Science*.

"We were surprised to find such a consistent gender difference in how two relatively simple behaviours—cognitive control and arm swing—interact with one another," Killeen told AFP.

The team had set out to study how people walk under different conditions, aiming to build a database of "normal" gait profiles for treating people with walking disorders.

They used infrared cameras to record the treadmill walking patterns of 83 healthy people, aged 18 to 80.

The participants were asked to walk—first normally, and then while performing a verbal task called the Stroop test.

Developed in the 1930s, the test involves printing the name of a

colour—such as "red", "green" or "blue"—in a non-matching colour, then asking a person to say the colour of the ink, not the word itself.

## **Better at language?**

This is difficult, explained Killeen, as the human brain "sees" both the written word and the colour of the ink, and must reconcile the two.

During normal walking, the left and right arms swung approximately equally.

"When we added the verbal task, we observed that in men of all ages and women over 60, this symmetry broke down, with a reduction in right arm swing while the left arm carried on swinging normally," said Killeen.

Does this prove women are better multi-taskers?

"Ha ha! I think this shows that younger women may be able to resist interference of these two fairly specific behaviours," she said.

Whether this might apply to other compound activities—such as driving and talking or walking and texting—has yet to be shown.

It is also unclear whether a woman's ability to take the verbal brain teaser in her stride confers any advantage over men, said Killeen.

The fact that women over 60 lose the capacity may provide a clue as to its origin, the researchers said.

Brain receptors of the female hormone oestrogen may get a bigger boost in [younger women](#), who have more of it.

"Alternatively, women are often shown to have somewhat better verbal skills than men" and may find the Stroop test easier, Killeen said by email.

"However, this does not explain why older women revert to the 'male pattern' after 60."

Previous studies have disagreed on whether women are actually better than men at doing more than one thing at the same time.

"This may be a paradigm for investigating this further—maybe someone can finally settle this age-old question!" said Killeen.

**More information:** Increasing cognitive load attenuates right arm swing in healthy human walking, *Royal Society Open Science*, [rsos.royalsocietypublishing.org ... /10.1098/rsos.160993](https://royalsocietypublishing.org/doi/10.1098/rsos.160993)

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