

Our eye position betrays the numbers we have in mind, new study

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It will be harder to lie about your age or your poker hand after new research by the University of Melbourne, Australia has revealed that our eye position betrays the numbers we are thinking about.

In the study, participants were asked to state a series of random numbers. By measuring their vertical and horizontal eye position, researchers were able to predict with reliable confidence the next chosen number - before it was spoken.

Specifically, a leftward and downward change in eye position announced that the next number would be smaller than the last. Correspondingly, if the eyes changed position to the right and upward, it forecast that the next number would be larger. The degree of eye movement reflected the size of the numerical shift.

The paper was published today online in the prestigious journal [Current Biology](#).

First author, Dr Tobias Loetscher of the University of Melbourne's School of Behavioural Sciences and previously of the Department of Neurology, University Hospital Zurich, Switzerland says the research demonstrates how the eyes and their position give insight into the nature of the systematic choices made by the brain's random number generator.

"When we think of numbers we automatically code them in space, with smaller number falling to the left and larger numbers to the right. That

is, we think of them along a left-to-right oriented mental number line - often without even noticing this number-space association ourselves."

"This study shows that shifts along the mental number line are accompanied by systematic [eye movements](#). We suggest that when we navigate through mental representations - as for example numbers - we re-use brain processes that primarily evolved for interacting and navigating in the outside world."

Dr Michael Nicholls also of the School of Behavioural Sciences adds, "Clearly, the eyes not only allow us to see the world around us, but they also present a window to the working of our mind, as this study shows."

"This study will hopefully provide a template to investigate how the human mind works via a connection with the space and world around us," he says.

The study involved asking twelve right-handed men to select from a set of random numbers. Paced by an electronic metronome they named 40 numbers between 1 and 30 in a sequence as random as possible. For each number, the researchers measured the average eye position during the 500 millisecond interval before the numbers were stated.

Provided by University of Melbourne

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