

# Gamble on your opponent's gaze if you want to win

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Blackjack players who hold high-value cards tend to glance fleetingly to the right, whereas those with a lower-value hand do so spontaneously to the left. This is according to research on aspects of mental arithmetic, led by Kevin Holmes of Colorado College in the US. The findings are published in Springer's journal *Psychonomic Bulletin & Review*.

Research suggests that you can actually judge something about the mental arithmetic that people are doing silently in their heads based on involuntary tell-tale signs they produce. For example, when pointing to an arithmetic solution on a visually presented number line, participants are biased leftward on subtraction problems and rightward on addition problems.

Holmes and his colleagues, Vladislav Ayzenberg and Stella Lourenco of Emory University, conducted two experiments to find out what role attention plays in such a mental number line within a real-life setting. They turned to blackjack, a game in which players must repeatedly decide whether to stick with the [cards](#) in their hand or risk a "bust" by taking another card. Such decisions can only be done wisely if players are able to mentally sum up the values of successive cards, and thereby compute the total value of their hand.

During the two experiments, a total of 58 participants played a computerized version of blackjack. New playing cards were presented to them in succession in the middle of a screen. Participants then had to decide whether to discard a card or to keep their hand as is, which

inevitably involves mentally adding the values of the cards. In the process, Holmes' team analyzed in which direction participants moved their eyes while they were doing mental math.

It was found that [participants](#)' spontaneous eye movements along the horizontal axis reflected the overall numerical value of their cards. Participants tended to look toward the left side of the screen when they had smaller-value hands, while they looked toward the right side when they had larger-value hands. These effects were driven by the total value of the cards that a player had in the hand. It was not influenced merely by the number of cards that a player was holding, nor the value of the card he or she was just dealt.

"Whether our findings will help blackjack players in real life still has to be investigated," said Holmes. "The relatively small differences in absolute gaze position we found here may be undetectable to the naïve observer. Perhaps following training, observers could rely on gaze patterns to infer [hand](#) value."

**More information:** Kevin J. Holmes et al, Gamble on gaze: Eye movements reflect the numerical value of blackjack hands, *Psychonomic Bulletin & Review* (2016). [DOI: 10.3758/s13423-016-1055-0](https://doi.org/10.3758/s13423-016-1055-0)

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