

'Clean' your memory to pick a winner, study says

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Predicting the winner of a sporting event with accuracy close to that of a statistical computer program could be possible with proper training, according to researchers. In a study published today, experiment participants who had been trained on statistically idealized data vastly improved their ability to predict the outcome of a baseball game.

In normal situations, the brain selects a limited number of memories to use as evidence to guide decisions. As real-world events do not always have the most likely outcome, retrieved memories can provide misleading information at the time of a decision.

Now, researchers at UCL and the University of Montreal have found a

way to train the brain to accurately predict the outcome of an event, for example a baseball game, by giving subjects idealised scenarios that always conform to [statistical probability](#).

Dr Bradley Love (UCL Department of Cognition, [Perception](#) and [Brain Sciences](#)), lead author of study, said: "Providing people with idealized situations, as opposed to actual outcomes, 'cleans' their memory and provides a stock of good quality evidence for the [brain](#) to use."

In the study, published in *Proceedings of the National Academy of Sciences*, researchers programmed computers to use all available statistics to form a decision - making them more likely to predict the correct outcome. By using all data from previous sports leagues, the computer's predictions always reflected the most likely outcome.

Next, researchers 'trained' the brains of participants by giving them a scenario which they had to predict the outcome of. Two groups of subjects, those given actual outcomes to situations and those given ideal outcomes were trained and then tested to compare their progress.

The scenarios consisted of games between two Major League baseball teams. Participants had to predict which team would win and were told if their prediction was correct. Those in the 'actual' group were told the true outcome of the game and those in the 'ideal' group were given fictional results.

Prior to participants' predictions, the teams had been ranked in order based on their number of wins. For the ideal group, researchers changed the results of the match so the highest ranking team won regardless of the true outcome. This created ideal outcomes for the subjects as the best team always won, which of course does not happen in reality.

Participants in the experiment were tested by being asked to predict the

outcomes for the rest of the matches played in the league, but they were not given feedback on their performance. Even though the 'ideal' group had been given incorrect data during training, they were significantly better at predicting the winner.

Dr Love explained: "Unlike machine systems, people's decisions are messy because they rely on whatever memories are retrieved by chance. One consequence is that people perform better when the training situation is idealized – a useful fiction that fits are cognitive limitations."

Participants' prediction abilities were compared to computer models that were either optimized for prediction or modelled on human brains. After ideal outcome training, the study showed that 'ideal' subjects had greatly enhanced their skills and were comparable with the optimized model when predicting baseball game outcomes.

Authors suggest that idealized real world situations could be used to train professionals who rely on the ability to analyze and classify information. Doctors making diagnoses from x-rays, financial analysts and even those wanting to predict the weather could all benefit from the research.

More information: 'Limits in decision making arise from limits in memory retrieval' is published online today in the journal *Proceedings of the National Academy of Sciences*.

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