

# Of mice and memory: 'Working memory' of mice can be improved

March 25 2010

---



One of Louis Matzel's mice, having reached a dead end, considers his next move.  
Credit: Louis Matzel, Rutgers University

Mice trained to improve their working memory become more intelligent, suggesting that similar improvements in working memory might help human beings enhance their brain power, according to research published today in *Current Biology* by researchers at Rutgers, The State University of New Jersey.

"Working memory refers to a short-term [memory system](#) used to complete a task, such as remembering a phone number, a grocery list, [reading comprehension](#), or something else not intended to be stored in long-term memory," says corresponding author Louis Matzel, professor of psychology in Rutgers' School of Arts and Sciences. Matzel's co-

authors are postdoctoral researcher Kenneth Light; graduate students Christopher Wass and Stefan Kolata (now a postdoctoral researcher at the National Institutes of Health); undergraduate Ryan Zagalsky (now a graduate student at the University of Medicine and Dentistry of New Jersey); and laboratory technician Alexander Denman-Brice.

Working with about 60 young adult, genetically heterogeneous mice, Matzel and his colleagues used mazes to put the mice through a series of exercises designed to challenge and improve their ability to retain and use current spatial information. For example, they would allow a mouse to run through a particular maze (for a food reward) until he had the route down cold, and then teach him to run through a second maze. The researchers would then start the mouse on his way through the first maze, stop him en route and stick him in the second maze. This procedure is known to tax working memory, and was here found to promote an improvement in that skill.

"There is a lot of evidence from the literature on human [intelligence](#) that working memory and intelligence are correlated," Matzel said. "But that doesn't mean that one causes the other. So our question was, does improving an animal's capacity for working memory make him smarter? And the answer, from our experiment, was yes." In fact, mice that underwent this working memory "exercise" exhibited improved proficiency on a wide range of cognitive tests.

The all-male group of mice was deliberately selected for their genetic diversity, which is different from the practice in most research projects involving laboratory mice. Young adults at the time of the research, they are now nearing the end of their lives. (Mice rarely live more than 30 months.) The surviving [mice](#) seem to be hanging on to their cognitive abilities, and this suggests that the [working-memory](#) training they received in their youth may be at least partly responsible, Matzel said. "They are getting cranky, though," he added.

Provided by Rutgers University

Citation: Of mice and memory: 'Working memory' of mice can be improved (2010, March 25)  
retrieved 10 April 2024 from <https://phys.org/news/2010-03-mice-memory.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.