RESEARCH ARTICLE

Rich false memories of autobiographical events can be reversed

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Significance

Human memory is fallible and malleable. In forensic settings in particular, this poses a challenge because people may falsely remember events with legal implications that never actually happened. Despite an urgent need for remedies, however, research on whether and how rich false autobiographical memories can be reversed under realistic conditions (i.e., using reversal strategies that can be applied in real-world settings) is virtually nonexistent. The present study therefore not only replicates and

extends previous demonstrations of false memories but, crucially, documents their reversibility after the fact: Employing two ecologically valid strategies, we show that rich but false autobiographical memories can mostly be undone. Importantly, reversal was specific to false memories (i.e., did not occur for true memories).

Abstract

False memories of autobiographical events can create enormous problems in forensic settings (e.g., false accusations). While multiple studies succeeded in inducing false memories in interview settings, we present research trying to reverse this effect (and thereby reduce the potential damage) by means of two ecologically valid strategies. We first successfully implanted false memories for two plausible autobiographical events (suggested by the students' parents, alongside two true events). Over three repeated interviews, participants developed false memories (measured by state-of-the-art coding) of the suggested events under minimally suggestive conditions (27%) and even more so using massive suggestion (56%). We then used two techniques to reduce false memory endorsement, source sensitization (alerting interviewees to possible external sources of the memories, e.g., family narratives) and false memory sensitization (raising the possibility of false memories being inadvertently created in memory interviews, delivered by a new interviewer). This reversed the false memory build-up over the first three interviews, returning false memory rates in both suggestion conditions to the baseline levels of the first interview (i.e., to ~15% and ~25%, respectively). By comparison, true event memories were endorsed at a higher level overall and less affected by either the repeated interviews or the sensitization techniques. In a 1-y follow-up (after the

original interviews and debriefing), false memory rates further dropped to 5%, and participants overwhelmingly rejected the false events. One strong practical implication is that false memories can be substantially reduced by easy-to-implement techniques without causing collateral damage to true memories.

false memory suggestion reversibility long-term effects

Footnotes

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Author contributions: A.O., M.M.W., R.I., and H.B. designed research; M.M.W. performed research; A.O. and M.M.W. analyzed data; A.O. and H.B. wrote the paper; and M.M.W. and R.I. provided critical commentary.

The authors declare no competing interest.

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Data Availability

Anonymized (.sav) data have been deposited in Open Science Framework (http://dx.doi.org/10.17605/OSF.IO/SER63) (**93**).

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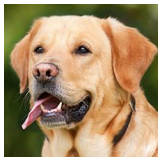

Human dispersal and dog domestication
Analyses of ancient dog DNA suggest that dogs were likely domesticated from Eurasian wolves around 23,000 years ago, possibly in Siberia.

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Pollen seasons and human-caused climate change
Pollen seasons have lengthened by 20 days and pollen concentrations have increased by 21% from 1990 to 2018 in North America, and anthropogenic climate change is a likely factor.

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