BRIEF REPORTS

False Memory Propensity in People Reporting Recovered Memories of Past Lives

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Are elevated rates of false recall and recognition in the Deese–Roediger–McDermott (DRM) paradigm associated with false autobiographical memories in everyday life? To investigate this issue, the authors recruited participants who reported improbable memories of past lives and compared their DRM performance with that of control participants who reported having lived only one life (i.e., their current one). Relative to control participants, those reporting memories of past lives exhibited significantly higher false recall and recognition rates in the DRM paradigm, and they scored higher on measures of magical ideation and absorption as well. The groups did not differ on correct recall, recognition, or intelligence. False memory propensity in the DRM paradigm may tap proneness for developing false memories outside the laboratory.

Keywords: recovered memory, false memory, past lives, Deese–Roediger–McDermott (DRM) paradigm

The debate concerning reports of repressed and recovered memories of childhood sexual abuse (CSA) has been the most contentious in the recent history of psychology (McNally, 2003). This controversy, however, has inspired research into mechanisms potentially operative in either inhibition of genuine memories (e.g., McNally, Clancy, Barrett, & Parker, 2004) or formation of false memories (e.g., Porter, Yuille, & Lehman, 1999).

To study false memory in the laboratory, psychologists often use a paradigm pioneered by Deese (1959) and revived and modified by Roediger and McDermott (1995). One version of this Deese–Roediger–McDermott (DRM) paradigm requires participants to listen to word lists comprising items, called associates, concerning a common theme (e.g., bed, rest, tired). Items on each list converge on a critical item: a word that captures the gist of the list (i.e., sleep) but that is not presented to participants. If participants produce a critical item on a recall test or endorse it on a recognition test as previously presented, then they have developed a false memory of encountering the critical item during the study phase of the experiment.

People vary in their propensity to fall prey to this memory illusion. In one study, women who reported having recovered memories of CSA exhibited a higher rate of false recognition of critical items than did other women, including those who reported never having forgotten their abuse (Clancy, Schacter, McNally, & Pitman, 2000). In another study, participants reporting recovered memories of CSA exhibited higher false recognition and false recall rates relative to participants reporting either no abuse history or never having forgotten their abuse (Geraerts, Smeets, Jelicic, van Heerden, & Merckelbach, 2005). These effects occurred for neutral word lists and lists comprising trauma-related words.

The heightened DRM false memory effects exhibited by recovered-memory groups are controversial. To the extent that DRM performance reflects a propensity to form false memories more generally, these findings are consistent with the hypothesis that some recovered memories of abuse also are false. However, many factors contribute to individual differences in the DRM task (Gallo, 2006). Merely because people falsely remember DRM critical items does not mean that their CSA memories are false.

Subsequently, Geraerts et al. (2007) distinguished two groups who report recovered memories of CSA. One group comprises adults who report spontaneously recalling their CSA after encountering reminders in everyday life. The other group reports gradually recalling their memories, usually during psychotherapy featuring hypnosis, guided imagery, and other methods designed to help patients recover presumably repressed memories of CSA. Geraerts et al. (2007) found that the CSA memories of the first group were corroborated at a rate (37%) statistically indistinguishable from that of people who report never having forgotten their abuse (45%), whereas none of the recovered memories in the
second group could be corroborated. Strikingly, Geraerts et al. (2009) subsequently reported heightened DRM false memory effects in participants who had recovered their memories during suggestive psychotherapy. Those who spontaneously recovered their memories after encountering reminders outside of psychotherapy did not exhibit heightened DRM false memory effects.

If some uncorroborated recovered memories of abuse were false, then having elevated DRM effects in the uncorroborated group suggests that false memory propensity in the laboratory can predict false memory proneness in everyday life. However, an inability to corroborate a CSA memory does not mean that it is false. Indeed, many CSA victims never told others about their abuse, making subsequent corroboration difficult. Without independent evidence that the DRM task relates to false autobiographical memories, the relationship between DRM effects and recovered autobiographical memories is theoretically ambiguous.

False Autobiographical Memories

Do people with extremely improbable autobiographical memories exhibit markedly high false memory rates on the DRM task? To test this hypothesis, Clancy, McNally, Schacter, Lenzenweger, and Fitman (2002) recruited participants who report abduction by space aliens. Relative to control participants who denied ever having been abducted by aliens, the “abductees” exhibited markedly higher false memory performance on recall and recognition tests. These results further suggest that the DRM paradigm taps a propensity to form “memories” of autobiographical events that never occurred. Given the theoretical and clinical importance of these findings, further work on the DRM task and false autobiographical memories is needed.

In the current study, we extend this line of research to another group of individuals who report improbable memories: people who recover memories from previous lives. From a purely scientific standpoint, memories of past lives are a more compelling instance of false autobiographical memory than memories of space alien abduction. Although highly improbable, alien abduction is, in principle, possible. In contrast, it is difficult to understand how memories once embodied in the brain of a person now dead have migrated and resurfaced in the brain of a person now living. Current science provides no mechanism that could mediate this phenomenon. Furthermore, alleged recollections of past lives often are inconsistent with verifiable facts from the historical period when the person supposedly had lived (Spanos, Menary, Gabora, DuBreuil, & Dewhirst, 1991).

According to one sociocognitive model of false memories (Mills & Lynn, 2000), certain personality traits foster reports of implausible memories. High levels of absorption (i.e., rich imaginative capabilities) and magical ideation (i.e., endorsement of unconventional modes of thinking) may make one vulnerable to developing false autobiographical memories. High scores on these measures may lead one to confuse the products of one’s imagination with genuine memories (Spanos et al., 1991). If people with this profile undergo hypnosis or related procedures to recover memories, they may be especially likely to generate imagery confusable with memories. Finally, exposure to the cultural lore of past lives (Mills & Lynn, 2000), alien abduction (Clancy, 2005), and so forth may shape the content of false memories. Other variables may influence content, too. For example, episodes of sleep paralysis accompanied by hypnopompic hallucinations of intruders in one’s bedroom are common among alien abductees (McNally & Clancy, 2005) but less so among people who report recovered memories of CSA (McNally & Clancy, 2005) or past lives (see below).

The primary goal of the present study was to investigate whether individuals reporting memories of past lives are especially susceptible to false memories in the DRM paradigm. If they exhibit higher false recall and recognition rates relative to control participants who report having lived only one life, then this would provide further support for the hypothesis that the DRM task taps false memory proneness outside the laboratory. Moreover, we also compared the groups on absorption, magical ideation, and intelligence. We predicted that, consistent with the sociocognitive model of false memory, the past-life group would score higher than the control group on measures of absorption and magical ideation but not differ on intelligence.

Participants

We recruited past-life participants in three ways. Two were referred to us by past-life regression therapists in the Boston area; 11 responded to our advertisement on Craigslist, an Internet bulletin board (http://boston.craigslist.org); and 2 had heard about our study from other participants. The advertisement read,

Participate in a fun and interesting study at Harvard! Have you regained memories from your past life or lives? If so, then a Harvard Psychology Department memory researcher would like to speak with you! (If you have not, and are interested in being in the study, there also are some opportunities to participate as a study “control”).

The past-life group consisted of 15 individuals (13 women) who reported experiences that they interpreted as memories from one or more past lives. These included déjà vu episodes, vivid sensory “flashbacks” (e.g., of selling newspapers as a youngster in 19th century Boston), out-of-body experiences, daydreams, physical pain attributed to injury during a past life, memories surfacing during hypnosis or meditation, vivid or recurrent dreams (e.g., of being a member of a British royal family), and images recovered during a childhood near-death experience. Some participants reported more than one of these experiences. These count as “recovered memories” in that participants said that they were unaware of having lived previous lives until they had these experiences. None mentioned experiencing sleep paralysis. Six participants had undergone hypnotic past-life regression, whereas the others had not. Previous lives included a Viking, a Druid priestess, a space alien, the Pharaoh’s scribe, and a polar bear.

To determine eligibility, we screened potential participants over the telephone. Eligible individuals had to report having memories from a previous life. Mere belief that one had lived before was insufficient. There were 13 Caucasians, 1 African American, and 1 southwest Asian. Their mean age and years of education were 42.9 years ($SD = 13.4$) and 16.1 ($SD = 1.6$), respectively. The mean number of past lives per past-life participant was 4.4 ($SD = 4.5$). One outlier reported 20 past lives; excluding her would have reduced the mean to 3.3 ($SD = 2.0$).

The control group consisted of 15 individuals (13 women) who did not believe they had recovered memories from any previous
life. In addition to recruiting control participants through the Craigslist ad, we also recruited several control participants through another Craigslist ad that did not mention past lives. During a phone screening, these participants denied believing they had recollected events from a previous life. Although none of them reported memories from past lives, they varied with regard to their belief in reincarnation. Three believed in reincarnation, 7 did not, 3 were unsure, and 2 did not say. There were 13 Caucasians, 1 African American, and 1 southwest Asian. Their mean age and years of education were 42 years ($SD = 11.4$) and 16.7 ($SD = 2.1$), respectively.

All participants provided written informed consent, used English as their primary language, completed a demographic questionnaire, and received a $20 honorarium for participating.

**Questionnaires**

Participants completed the Tellegen Absorption Scale (TAS), a 34-item true–false questionnaire tapping the tendency to become absorbed in fantasy and imaginative experiences, which is correlated ($r = .43$) with hypnotic susceptibility (Tellegen & Atkinson, 1974). Control participants in our previous research had a mean score of 14.1 on the TAS ($SD = 7.6$; McNally, Perlman, Ristuccia, & Clancy, 2006).

The participants completed the Magical Ideation Scale (MIS), a 30-item true–false questionnaire assessing beliefs in unusual modes of causation, such as acquiring knowledge via extrasensory perception (Eckblad & Chapman, 1983). A facet of schizotypy (Lenzenweger, 1999), magical ideation is also strongly related to fantasy proneness (Spanos et al., 1991). Normative data for the MIS include a mean of 8.56 for men ($SD = 5.24$) and 9.69 for women ($SD = 5.93$; Eckblad & Chapman, 1983).

Participants completed the Shipley Institute of Living Scale, a measure of general intelligence that correlates .74 with the full-scale WAIS-R (Zachary, 1991).

**Stimulus Materials**

The DRM tasks (Recall, Recognition I, and Recognition II) incorporated word lists drawn from Roediger, Watson, McDermott, and Gallo (2001). The words were presented via audiotape and read by a woman who spoke each word with 1 s elapsing between words.

The Recall Test involved 20 DRM word lists, each consisting of 15 words. For each list, all 15 words were semantically associated with a nonpresented critical word that captured the theme of the list. Recognition Test I involved an additional 15 DRM word lists—lists not used in the Recall Test but constructed in the same way. In Recognition Test II, we retested participants on the 20 DRM word lists used in the Recall Test. In previous research (Clancy et al., 2002), we had participants perform successive recall and recognition tests for the same material, hence confounding recognition performance with a previous recall test. In the current study, Recognition Test II was likewise confounded with the Recall Test. Recognition Test I permitted assessment of false memory propensity on a (new) recognition test that was unconfounded by a prior recall test for the same material.

Recognition Test I consisted of 66 total words: 15 critical items, 30 list items, and 21 distracter items (nonpresented words unrelated to the theme of the list). List items consisted of the third and seventh associates from the 15 encoded recognition lists. Distracters consisted of critical items and the third and seventh associates from 7 DRM lists that were not presented during encoding (Roediger et al., 2001).

Recognition Test II consisted of 90 total words: 20 critical items, 40 list items, and 30 distracter items. The critical items and list items were from the 20 lists encoded for the recall test. The list items consisted of the third and seventh associates from the previously encoded recall lists, with the exception of two items. In one case, Associate 6 substituted for Associate 7, and in the other case, Associate 8 substituted for Associate 7. Half of the distractors consisted of words drawn from other DRM lists (critical items and the third and seventh associates from five lists), and the other half consisted of five sets of three related words, chosen to mimic DRM critical items and associates (e.g., *Australia, koala, continent*). All participants received identical recognition tests with items presented in the same random order.

**Procedure**

Cynthia A. Meyersburg interviewed participants, conducted the DRM procedure, and administered the questionnaires. Before testing each participant individually, she told each of them that the purpose of this experiment is to test your memory for words. You will be presented with 20 sets of words over the tape player. It is important that you concentrate and listen carefully to each word in the list, because at the end of each list, when I hit the pause button, you will write down as many of the words of that list as you can remember onto the page in your booklet. You will be given a maximum of one minute to recall each list. During this time you may write down the words you remember in any order, but only write down those words that you are certain you heard. In other words, do not guess. Any questions?

Participants wrote the words they recalled in a booklet.

After finishing the 20-list DRM recall test, each participant completed the TAS and then the MIS. Each participant then heard 15 new word lists, one after another without a break, and then did Recognition Test I, an untimed, self-paced pencil-and-paper task requiring participants to circle only those words that they were confident they had heard.

After completing Recognition Test I, participants completed Recognition Test II, also self-paced. Once again, the experimenter asked participants to circle only those words that they were confident they had heard and explicitly told participants not to guess. Finally, participants completed the Shipley Institute of Living Scale.

**Data Reduction and Analyses**

For the Recall Test, Recognition Test I, and Recognition Test II, we computed the percentage of critical items that participants “remembered” having heard and the percentage of presented words that participants correctly said they had remembered hearing. We were missing data for 3 participants. One control participant was excluded from the Recognition II data analysis because she did not complete the second page of this test. Another control participant’s cell phone rang during the experiment; we excluded her data for one recall list and the Recognition Test II data.
analysis. Finally, the tape player malfunctioned during one recall list for a past-life participant; we excluded her data from this recall list and the Recognition Test II data analysis.

Results

For directional predictions regarding false recall, false recognition, absorption, and magical ideation, we used one-tailed t-tests. The other tests are two-tailed. We also report effect size r.

Recall

As shown in Figure 1, relative to the control group (M = .30, SD = .20), the past-life group (M = .44, SD = .24) falsely recalled a greater proportion of critical items, t(28) = 1.74, p = .046, p_{rep} = .88, r = .31 (see Figure 1A). The groups did not differ on correct recall (for the past-life group, M = .54, SD = .07; for the control group, M = .57, SD = .08), t(28) < 1 (see Figure 1B).

Relative to the control group (M = 2.60, SD = 1.88), the past-life group (M = 4.27, SD = 3.86) exhibited a trend for a greater number of other nonlist intrusions, t(28) = 1.50, p = .072, p_{rep} = .85, r = .27.

Recognition


Recognition Test I. Relative to the control group (M = .42, SD = .21), the past-life group (M = .52, SD = .15) tended to endorse a greater proportion of critical items, t(28) = 1.53, p = .069, p_{rep} = .85, r = .28. The groups did not differ significantly in the proportion of either unrelated distracters endorsed (for the past-life group, M = .05, SD = .07; for the control group, M = .05, SD = .06) or hit rate (for the past-life group, M = .45, SD = .12; for the control group, M = .49, SD = .12), t(28) < 1.

Recognition Test II. The past-life group (M = .76, SD = .18) endorsed a greater proportion of critical items than did the control group (M = .48, SD = .24), t(25) = 3.35, p = .001, p_{rep} = .98, r = .56. Relative to the control group (M = .60, SD = .12), the past-life group (M = .67, SD = .10) fell short of having a higher hit rate, t(25) = 1.64, p = .11, p_{rep} = .90, r = .31. The groups did not differ in the proportion of unrelated distracters endorsed (for the past-life group, M = .04, SD = .05; for the control group, M = .03, SD = .04), t(26) < 1.

The false memory effect was less robust in Recognition Test I than in Recognition Test II. To increase statistical power, we pooled the data from both recognition tests (Figure 2). The past-life group endorsed a greater percentage of critical items than did the control group, t(25) = 3.17, p = .002, p_{rep} = .98, r = .54 (see Figure 2A), whereas the groups did not differ in either hit rate (see Figure 2B) or in the proportion of distracters endorsed (for the past-life group, M = .05, SD = .05; for the control group, M = .04, SD = .04), t(26) < 1.

Additional Analyses

Relative to the control group, the past-life group had higher scores on the TAS (M = 24.5, SD = 6.8, vs. M = 16.8, SD = 7.4), t(28) = 2.97, p = .003, p_{rep} = .97, r = .49, and the MIS (M = 13.0, SD = 6.4, vs. M = 5.7, SD = 6.0), t(28) = 2.80, p = .01, p_{rep} = .95, r = .47. On the Shipley Institute of Living Scale, the scores of the past-life group did not differ from the scores of the control group (M = 65.7, SD = 7.0, vs. M = 66.6, SD = 7.0), t(28) < 1. Combining both groups and scoring control participants as reporting only one life, we found that scores on the MIS, r(27) = .40, p = .02, p_{rep} = .95, and the TAS, r(27) = .42, p = .01, p_{rep} = .97, were associated with the number of past lives reported even after we excluded the participant who reported 20 past lives (one-tailed tests).

Past-life participants who had undergone hypnosis (n = 6) had higher MIS scores than did other past-life participants (n = 9; M = 18.5, SD = 4.8, vs. M = 9.3, SD = 4.5), t(13) = 3.79, p = .002, p_{rep} = .99, two-tailed, r = .72. Likewise, past-life participants who had undergone hypnosis had marginally higher TAS scores than did the other past-life participants (M = 28.7, SD = 5.0, vs. M = 21.8, SD = 6.7), t(13) = 2.15, p = .05, p_{rep} = .92, two-tailed, r = .51. Perhaps people scoring high on these measures are especially keen to undergo hypnosis to recover memories of past lives.

Combining the data from both the past-life and control groups, we found that MIS, r(27) = .44, p = .02, p_{rep} = .95, and TAS scores, r(27) = .38, p = .05, p_{rep} = .92, were associated with false recognition of critical items. Two-tailed tests indicated that MIS scores were uncorrelated with either correct recognition, r(27) = .09, p = .65, p_{rep} = .63, or unrelated distracter endorsement rates, r(27) = .11, p = .60, p_{rep} = .64. Two-tailed tests indicated that TAS scores were also uncorrelated with either hit rate, r(27) = .26, p = .20, p_{rep} = .82, or unrelated distracter endorsement rate, r(27) = -.06, p = .76, p_{rep} = .59. None of the corresponding analyses correlating false recall with MIS and TAS scores were significant (ps = .23–.54).

Discussion

Individuals who report memories of past lives exhibited greater false recall and false recognition rates in the DRM paradigm relative to individuals who report having lived only one life. These findings are consistent with a study showing that past-life participants are more likely to exhibit another form of false memory in the laboratory—the “false fame” effect (Jacoby, Kelley, Brown, & Jaseckho, 1989)—than are control participants (Peters, Horselen-
berg, Jelicic, & Merckelbach, 2007). Moreover, the psychometric data are consistent with the sociocognitive view that elevated absorption and magical ideation are associated with reports of past lives (Mills & Lynn, 2000). Taken together, these findings suggest that people with false memories of past lives are less able to discriminate between imagined and real events, both inside and outside the laboratory.

The cause of these elevated DRM false memories is unknown. Similarly elevated DRM false memory effects occur among people with posttraumatic stress disorder (PTSD; Brenner, Shobe, & Kihlstrom, 2000; Brennen, Dybdahl, & Kapidžić, 2007; Zoellner, Foa, Brigidi, & Przeworski, 2000). However, memory differences between participants with PTSD and control participants are not confined to false memory effects: Participants with PTSD have shown poorer memory for words that were presented (Brenner et al., 2000; Brennen et al., 2007). In contrast, past-life participants and alien abductees (Clancy et al., 2002) differ from control participants only in terms of false memory propensity in the DRM paradigm.

Unfortunately, we did not assess the participants for PTSD. Without conducting a clinical interview, we cannot rule out the possibility that our past-life participants suffered from undiagnosed PTSD and that this illness accounts for the DRM false memory effect. Of course, other variables that influence DRM susceptibility (e.g., diminished working memory capacity) may be responsible for elevated DRM false memory effects in both past-life participants and participants with PTSD.

Even if false memory propensity in the DRM paradigm is associated with false memories outside the laboratory, one would not want to rely solely on DRM data, in the courtroom or elsewhere, to determine whether a person’s memories are true or false. However, other indicators, such as context of recovery and corroborating evidence, can help determine if a memory is true or false (McNally & Geraerts, in press).

Related to this point, Pezdek and Lam (2007) objected to calling recall or recognition of critical items in the DRM paradigm “false memories.” They argued that this paradigm does not concern recollection of an entirely false event. Others disagree (e.g., Wade et al., 2007), arguing that there is no clear-cut line between falsely recalling details of an episode versus falsely recalling an entire episode.

This debate, however, is irrelevant to our main question: Is false memory propensity, measured by the DRM task, associated with false autobiographical memories outside the laboratory? The relevance of the DRM paradigm does not presuppose equivalence between the laboratory phenomenon and false autobiographical memories in everyday life. Analogously, abnormalities detected during a cardiac stress test are not themselves heart attacks, but they predict risk for heart attacks. Likewise, elevated false memory rates in the DRM paradigm may identify individuals likely to develop false memories outside the laboratory.

References


