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In Review

What Do People Believe About Memory? Implications for the Science and Pseudoscience of Clinical Practice

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We examine the evidence concerning what people believe about memory. We focus on beliefs regarding the permanence of memory and whether memory can be repressed and accurately recovered. We consider beliefs about memory among the undergraduate and general population, mental health professionals, judges, jurors, and law enforcement officers to provide a broad canvass that extends to the forensic arena, as well as to psychiatry, psychology, and allied disciplines. We discuss the implications of these beliefs for the education of the general public and mental health professionals regarding the science and pseudoscience of memory and the use of suggestive procedures in psychotherapy.

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espite what many people believe, memory is not a repository of past experiences but a dynamic mechanism that ensures the stability and coherence of the self across situations. In recent decades, researchers have documented the striking limitations and plasticity of memories. Today, scholars recognize that memories are reconstructive rather than reproductive. Rarely, if ever, are memories exact replicas of the past.1,2 Instead, memories are often stitched together into plausible—but not necessarily accurate—narratives based on beliefs, feelings, intuitions, guesses, and memory fragments.3,4 As William James observed over a century ago,

False memories are by no means rare occurrences in most of us . . . Most people probably are in doubt about certain matters ascribed to their past. They may have seen them, may have said them, done them, or they may only have dreamed or imagined they did so.5, p 173–174

Nevertheless, many clinicians and laypeople hold beliefs about memory that contradict scientific evidence. These beliefs may lead therapists and patients to accept memory retrieval techniques that are suggestive and potentially harmful. In our article, we examine what people believe
about memory and briefly discuss the implications of these beliefs for psychotherapy.

Typically, the more vivid, detailed, and emotional the memories, the more easily they are accessed and held with confidence, regardless of their accuracy. Even in cases of emotionally compelling, so-called flashbulb memories—recollections often change substantially over time, as documented by studies of the catastrophic breakup of the space shuttle Challenger, the trial verdict of football star O J Simpson, the death of Princess Diana, and the September 11, 2001, attacks. Dekel and Bonanno conducted repeated memory assessments of survivors of the September 11th attacks who had witnessed them directly, and found considerable variation in memory reports at 7, compared with 18, months. People who were resilient in the face of trauma created a more benign memory over time, whereas those who experienced chronic posttraumatic stress disorder symptoms reported relatively stable memories. The causality of this finding is unclear; a more benign reconstruction of memory could lead to more benign outcomes, or vice-versa (or both). In a study of US veterans of the Gulf War, Operation Desert Storm, Southwick et al found that 88% of veterans recounted a different response regarding a traumatic event (for example, sniper fire) they experienced 2 years after their service, compared with 1 month after their return, and 61% of veterans experienced more than 1 changed memory.

Laboratory research also indicates that events can be remembered as more traumatic than they were initially experienced. Strange and Takarangi reported that participants claimed, incorrectly, to have witnessed 26% of the short clips removed from an emotionally disturbing film of a car accident in which 5 people, including a baby, were killed. Participants were particularly prone to mistakenly recall with high confidence the most traumatic clips.

The malleability of memory is further underscored by 2 findings: suggestive procedures can implant false memories of complex events, such as riding in a hot air balloon, being the victim of bullying, being subjected to a vicious animal attack, and committing a crime, in 20% to 80% of participants; and eyewitness testimony is frequently confidently expressed in the courtroom, even though it can be inaccurate. The specificity of recall of events and the emotion participants attach to these events provide no guarantee of their accuracy.

The finding that memory is reconstructive bears important implications for therapy, as does the contrary belief that memories are preserved in pristine form in the unconscious, yet accessible using memory recovery techniques. Therapist and patient beliefs regarding memory and the centrality of memory recovery to the process of therapy can steer decisions regarding the choice of therapeutic techniques. Beliefs and expectations can even influence the presentation of the patient.

The belief that memories lie hidden or dormant in the unconscious traces its origins largely to Freud and his conceptualization of repression as arising when the ego is “confronted by an experience, an idea, a feeling, arousing an affect so painful that the person resolved to forget it.” Although Freud used the term “resolved to forget,” he conceptualized repression as the unconscious, motivated forgetting of unpleasant material. The presumption that the recovery of repressed or dissociated traumatic memories is essential to mental healing became a fundamental tenet of psychoanalysis and remains central to contemporary memory recovery therapies.

The idea of the permanence of memory and the need to recover repressed memories to recover from trauma is vividly captured in the notion of body memories, as described in a manual for sexual abuse survivors:

Your body, believe it or not, remembers everything.

Sounds, smells, touches, tastes. But the memory is not held in your mind, locked somewhere in the recesses of your brain. Instead, it’s held in your body, all the way down at the cellular level.

In van der Kolk’s words, The Body Keeps the Score. The implication is that if somatic experiences are not recovered and dealt with, complete recovery from sexual abuse is difficult or impossible.

According to survey research, 36% of US psychotherapists interpret body pains or physical symptoms as indicative of childhood sexual abuse. Legault and Laurence found that 71% of Canadian social workers and 61% of licensed psychologists agreed that “Sensory impressions from early in life (preverbal memories) may form the basis for reliable memories which can be recovered later on.” This belief is mirrored in the general population. Freedman and Laurence reported in a conference presentation that 38.1% of psychology undergraduates reported that “Sometimes, it feels as though my body remembers things that I consciously forgot.”

Contemporary interventions that draw on memory recovery techniques often bear striking parallels to the expectations of the clinician, as in cases of supposed child sexual abuse, satanic ritual abuse, and alien abductions.

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often lack credible empirical support. Among them are sensorimotor psychotherapy, somatic experiencing therapy, neurolinguistic programming, alien abduction therapy, energy approaches, experiential integration, reenactment protocol, and internal family systems therapy, the last of which involves interaction and work with putatively dissociated parts of the personality.35,36 Many of these treatments can be considered pseudoscientific, because they are not only supported mostly or exclusively by anecdotal claims, rather than by controlled trials, but also reliant on scientifically unsupported beliefs that memory is permanent and that excavating memories is vital to positive therapy outcomes. These therapies can be contrasted with empirically supported interventions, such as exposure therapies, which seek to blunt the harmful emotional force of readily accessible memories with no implication that unearthing repressed memories is necessary.

A sampling of memory recovery therapies is illustrative. Brainspotting seeks to determine the location of unavailable experiences and symptoms of trauma at the “unconscious body brain” and release them, in which a brainspot is defined as the eye position which is related to the energetic/emotional activation of a traumatic/emotionally charged issue within the brain, most likely in the amygdala, the hippocampus, or the orbitofrontal cortex of the limbic system.37

Or, consider Somatic Transformation therapy, which purportedly balances the arousal and fear of recovered memories with felt experiences of self-regulation of the emotional physiological systems. Subtle gestures and movements of the body are utilized to access sensory data and result in shifts in the brain-body continuum.38

According to the Dr Janov’s Primal Center96 website, which espouses primal therapy (colloquially termed primal scream therapy),

We have found a way into those early emotional archives and have learned to have access to those memories, to dredge them up from the unconscious, allowing us to re-experience them in the present, integrate them and no longer be driven by the unconscious . . . The number one killer in the world today is not cancer or heart disease, it is repression.

The website of the Traumatic Incident Reduction [TIR] Association46 states,

When something happens that is . . . painful, one has the option of either confronting it fully and feeling the pain, or trying in some way to block one’s awareness of it . . . in the second case, the action of experiencing that incident is blocked . . . in the great majority of cases, TIR correctly applied results in the complete and permanent elimination of PTSD [posttraumatic stress disorder] symptomatology.

These claims are based on the scientifically dubious assumption that highly aversive experiences are typically banished from consciousness. To the contrary, a sizable corpus of findings reveal that emotional memories are usually highly salient and memorable.7, p 33;41

Beliefs About Memory
One reason why memory recovery therapies flourish is that beliefs in the permanence of memory and the repression of traumatic memories are prevalent among laypeople and mental health professionals. Golding et al42 reported that 89% of undergraduates had heard of a circumstance in which someone recovered a repressed memory. Not surprisingly, 75% learned of this circumstance via television. Moreover, the amount of media exposure was related to the believability of repressed memories. Patihis et al43 (in their Study 2) conducted a survey of beliefs regarding memory. Two-thirds of undergraduates agreed to some extent with the statement that “Memory of everything experienced is stored permanently in the brain, even if we can’t access all of it,”9, p 521 and a similar rate of laypeople responded affirmatively to the same question. Patihis et al found rates of endorsement of the same question of 59.3% in Great Britain and 84.4% in India. When Alvarez and Brown44 worded the question somewhat more restrictively (“Precise records of all our experiences are permanently stored in the brain”), a lower yet still sizable percentage (31%) of the US public endorsed it. A slightly lower rate (28%) emerged in response to the question, “Once you have experienced an event and formed a memory of it, that memory does not change,”45, p 3 in an online survey of the US community conducted via Mechanical Turk, compared with 47.6% in the community in a nononline survey.46 Simons and Chabris45 found that when the question was worded, “Human memory works much like a video camera, accurately recording the events we see and hear so that we can review and inspect them later,”9, p 3, “[Dr Lynn: Please provide the page number for this quotation] 46.9% of a sample drawn from Mechanical Turk responded affirmatively,45, p 4 and 63% of a sample acquired by SurveyUSA responded likewise.46, p 5 Clearly, a broad swath of the US population concurs that memories are permanently stored.

Turning to professional beliefs, high rates of practitioners in Canada93, p 122 agreed that memory is permanent, with percentages varying from 84% of social workers, 71% of psychologists, and 51% of physicians. Wise et al47 similarly found that about two-thirds of US law enforcement officers agreed that memory works like a tape recorder. In a survey of 103 psychologists in South Africa, Kagee and Breet48 reported that 31% indicated probable or definite agreement that memory works like a video camera or tape recorder, accurately reproducing everything we have experienced.
In contrast, several recent findings are somewhat more encouraging. In a sample of 234 licensed psychologists in New England, Meyer\(^ {49}\) reported that 12% disagreed that “Psychological research has discredited the idea that human memory works like a video or tape recorder.”\(^ {111}\) Simons and Chabris\(^ {56, p 5}\) found that none of the 16 experts (cognitive and [or] social experimental psychologists) surveyed agreed that memory does not change once it is formed, and a minority, but still disconcerting percentage (24%), of 96 experts that Pathis et al\(^ {43, p DS18}\) questioned affirmed this belief.

The belief in repressed memories is also widespread. More than 20 years ago, Loftus\(^ {5, p 534}\) called attention to the risk that therapists who hold this belief will communicate it to patients, opening the door to interventions geared to recovering ostensibly recovered memories. Despite strong evidence against the thesis that memories are readily repressed,\(^ {7, p 33}\) the idea that repression occurs is strong evidence against the thesis that memories are to recovering ostensibly recovered memories. Despite it to patients, opening the door to interventions geared that therapists who hold this belief will communicate (24%), of 96 experts that Patihis et al\(^ {43, p DS18}\) questioned formed, and a minority, but still disconcerting percentage survey agreed that memory does not change once it is.

Interestingly, practitioners of alternative therapies, including neurolinguistic programming, Thought Field Therapy (TFT), internal family systems therapy, and hypnotherapy, agreed, to some extent, with this latter statement, with rates between 80.6% (internal family systems therapists) to 100% (TFT and primal therapists). Additionally, 16.1% of research-oriented clinical psychologists, 43.1% of clinical practitioners, and 77.7% of general population adults agreed, to at least some extent, that “Traumatic memories are often repressed.”

These statistics complement those of earlier surveys of practitioners (71% of doctor of psychology clinicians and 58% of doctor of philosophy clinicians in the United States\(^ {50}\); 64% of licensed psychologists in Norway\(^ {51}\); and 96% psychotherapists in the Netherlands\(^ {52}\) who reported high levels of belief in recovered or repressed memories, compared with only 34% of experimental psychologists.\(^ {50, p 255}\) Poole et al\(^ {32, p 432}\) found that 71% of clinical and counselling psychologists had encountered at least one case of recovered memory. Moreover, Legault and Laurence\(^ {13, p 123}\) reported that 27% of Canadian psychologists concurred that “Recovered memories must be reliable because no one wants to have been abused as a child.”\(^ {123}\) Laurence and Freedman\(^ {43}\) reported that 17.5% of 2451 women treated for sexual abuse did not, according to their therapists, have any memory of abuse at the onset of therapy (31.5%) or merely suspected abuse but did not harbour any memories of it (68.5%), raising the possibility that many patients diagnosed and treated for abuse may not have been abused.

The rates of endorsement may differ across studies, because some items do not clearly distinguish memories that are purportedly repressed from those that are forgotten through ordinary mechanisms (for example, not thinking about events). For example, consider the following question:

> Sometimes adults in psychotherapy remember traumatic events from early childhood, about which they previously had absolutely no recollection. Do you think such memories are real or false?\(^ {51, p 56}\)

Additionally, the question of whether memories that are suddenly remembered are necessarily the products of the lifting of repression remains scientifically controversial. This point may explain why psychologists and psychiatrists who serve as experts in court proceedings in Norway\(^ {54}\) endorsed the aforementioned question (“all” or “most real”) at a rather high rate (59%) and close to the same rate (64%, see above) as licensed psychologists\(^ {51, p 57}\) in Norway and advanced clinical psychology students (66%) in Italy.\(^ {55}\) In contrast, Italian experimental psychology professors were more skeptical in response to this question (24%),\(^ {55, p 254}\)

Nevertheless, the differential endorsement rates imply that the beliefs of clinicians depart from those of researchers, who generally hold more skeptical views, suggesting a gap in knowledge regarding human memory. Indeed, clinicians who are not active in research, compared with their research-oriented counterparts, endorse stronger beliefs in repressed memories and the belief that memory recovery techniques do not result in false accusations.\(^ {50, p 255}\)

Still, providing some cause for concern regarding professional opinion about memory, 38% of members of the Norwegian Psychological Association—many of whom are academic psychologists—endorsed the option “they tell the truth” in response to the question:

> Sometimes people who have committed murder claim to have no memory for the crime. Do you think such memories can be repressed and that the perpetrator believes they are telling the truth, or do you think they are lying?\(^ {57}\)

Nevertheless, this question may pose a false dichotomy: people may forget a crime for reasons other than unconscious repression (for example, conscious suppression). Moreover, Melinder andMagnussen\(^ {54, p 57}\) reported that 39% of psychiatrists and psychologists in Norway who served as expert witnesses endorsed the option “they tell the truth,” and Mirandola et al\(^ {55, p 254}\) similarly found that 36% of professors in experimental psychology in Italy also did. Clearly, a sizable percentage of experts and professionals across different countries hold beliefs that conflict with scientific opinion, which holds that amnesia in these circumstances is highly unlikely.\(^ {56}\) In addition, in a survey of psychologists in South Africa mentioned earlier, 75.7% responded probably true or definitely true to the statement “individuals commonly repress the memories of traumatic experiences.”\(^ {48, p 5}\)

Beliefs about memory, repression, and techniques to retrieve memories are interrelated. Pathis et al\(^ {43, p 521}\) found that participants who believed that traumatic memories are often repressed were more likely than other participants
to believe that repressed memories could be retrieved in treatment and that one can be a victim of child sexual abuse yet have no memory of it. Moreover, certain individual differences predicted memory beliefs. For example, skepticism regarding repressed memories was associated with being male and with more years of college education; high SAT scores were associated with less agreement with the ideas that repressed memories can be retrieved in therapy and that some people have true photographic (eidetic) memories; and critical thinking ability was associated with skepticism that repressed memories can be recovered accurately in therapy and during hypnosis, that memory is permanently stored and photographic, and that memory is almost always reliable. Moreover, high scores on fantasy proneness and absorption predicted disagreement with the idea that memory is unreliable and agreement that memory is stored permanently. Trait empathy predicted belief that traumatic memories are often repressed.

A curious aspect of beliefs about memory is that people may simultaneously believe that memories are both permanent and cannot be trusted. For example, Patihis et al.\(^3\) reported that 85.9% of undergraduates agreed, to some extent, that “Memory is unreliable,” yet 66.7% agreed, to some extent, that “Memory of everything experienced is stored permanently in the brain, even if we can’t access all of it.” One might extrapolate that some people believe that memories that are accessible (for example, not repressed and not dissociated) may be subject to distortion, prone to suggestive influence, or overlaid by inaccurate memories.

Legault and Laurence\(^3\) reported that 71% of psychologists agreed that “Everything one experiences is permanently recorded in one’s brain,” while 97% agreed that “Post-event information can alter a person’s recall of an event.”\(^12\) Apparently, the idea that memory can be modified after the fact does not conflict with the notion that memories are permanently recorded. How people reconcile contradictory, or at least disparate, beliefs about memory warrants future research.

Although undergraduates’ opinions about the accuracy of repressed memories appear not to have changed much between 1995\(^4\), p 432 (mean 5.57 on a scale, with 1 = never accurate, 10 = always accurate) and 2011\(^4\), p 527 (mean 5.39), some changes in beliefs about recovered memory are evident among mainstream clinical psychology practitioners during this same period, based on responses to questions concerning a case vignette. This vignette described a woman in therapy who recovered vivid memories of sexual abuse at age 2 by her father. The therapists, who were sampled from the American Psychological Association, responded 6.45 (with 1 = not likely at all, 10 = extremely likely) regarding whether they believed the client was sexually abused,\(^5\) compared with a more recent study of members of the American Academy of Clinical Psychology sampled in 2011–2012,\(^4\), p 526 who rated the item 4.45, a significant decrease. Moreover, rated willingness to assist the client in retrieving memories of childhood sexual abuse decreased from 4.8 to 3.4, again a significant decrease. A similar significant decline was observed (from 4.6 to 2.9) in response to the question, “How likely are you to tell the client that you suspect a history of sexual abuse?” These changes in beliefs raise the possibility that clinicians are paying greater heed to the scientific literature on memory.

### Closing Thoughts

Beliefs can create reality. To the extent that laypeople—many of whom obtain psychotherapy—and mental health professionals hold outdated and poorly supported beliefs regarding the nature of human memory, mental health consumers and their loved ones will inevitably be exposed to psychological risk.\(^58\) In particular, many false beliefs about memory may contribute to the use of suggestive interventions geared to the recovery of repressed memories. These techniques include repeated prompting of memories, guided imagery, and hypnosis and hypnotic and nonhypnotic age regression. A nontrivial proportion of therapists use many of these techniques. The reported use of age regression techniques in psychotherapy ranges from 7.1%\(^3\) (for sexual abuse) to 20%\(^3,3\) p 124 Moreover, Legault and Laurence\(^3,3\) p 124 reported that 44% of therapists reported that they used imagination-based interventions, including hypnosis, to assist patients in recovering memories (see Polusny and Follette\(^6\) and Poole et al.\(^3\) for earlier surveys).

Regrettably, the basic science of human memory and cognition is rarely emphasized in the education and training of mental health professionals.\(^6\) Therefore, we strongly recommend that systematic exposure to the nature of human memory, especially its fallibility, become a required—not merely a desired—component in the coursework of psychologists, psychiatrists, psychiatric nurses, social workers, and other mental professionals. To practice scientifically, therapists must be certain to avail themselves of the best available scientific evidence on the nature of memory. By doing so, they can avoid inadvertently implanting false memories, and thereby ensure that they are not harming the very people for whom they have been entrusted to help.

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