

False Memories As A Factor in Undue Influence

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I. INTRODUCTION

The fact that people can acquire false memories that are difficult if not impossible to distinguish from veridical memories raises challenges for many areas of law, including elder abuse and undue influence. Although false memories are more often discussed within the controversial context of alleged repressed memories of sexual abuse or trauma, or in relation to efforts to identify contamination of crime scene witness testimony, there is a growing body of research suggesting that malfeasors in the estate planning context may implant false memories as a factor in exerting control over their victims.

Use of false memories for undue influence is especially likely where the victim is elderly. The elderly person is more vulnerable than the capable adult to the creation of false memories by repetitive efforts by the predator to reframe the elder's relationship with family members or favored institutions.

Insights by researchers who have investigated false memories and the mechanisms by which they are acquired and retrieved, suggest links to the field of behavioral economics. Daniel Kahneman and Amos Tversky teamed up to apply scientific testing to the psychological analysis of decision making starting in 1969. They applied their studies of behavior to all types of decisions, including investment decisions, creating the field of behavioral finance. They published their first paper reflecting their discoveries about how humans make decisions in 1974, "A Judgment under Uncertainty: Heuristics and Biases," (1974) 185 *Science Magazine* 1124. Kahneman received the Nobel prize in economics in 2002 for his work in behavioral finance.

Kahneman points out that people have internal "stories" about themselves, which define who they are and what their values are. However, Kahneman investigated painful or pleasurable experiences and found that such experiences are categorized in our memories based on the intensity as well as the resolution of the experience at the end. "But our memory... has evolved to represent the most intense moment of an episode of pain or pleasure (the peak) and the feelings when the episode was at its end." Kahneman at 284.

"[H]uman memory does not function like a video recorder that can be rewound and replayed; rather, our memories are malleable." Laney and Loftus, "Emotional Content of True and False Memories," 16 *Memory* 500, at 138 (2008). Predators can induce false memories by

repetition of false statements about past experiences or attitudes, seeking to change the person's perception and evaluation of persons they had dealt with. Asking **Leading Questions** to elicit agreement with propositions which may not be true. Assertion of **familial information false narrative** procedures, where the victim is plied by false information supposedly provided by trusted relatives and deceased family members.

A variety of studies show that repetition of new information regarding settled experiences or attitudes can create new memories, which the person has difficulty in placing in time sequence, with the most recent statements becoming more vivid than actual memories. *see* J. Dunsmoor et al, "Emotional learning selectively and retroactively strengthens memories for related events," *Nature*, January 2015; S. Du Brow, "Temporal Memory is Shaped by Encoding Stability and Intervening Item Reactivation," *The Journal of Neuroscience* (October 2014).

There has been extensive research into the scope and mechanisms of false memory as well as the particular susceptibility of the elderly to misinformation effects. However, experts admit that it is difficult, if not impossible, to make reliable determinations regarding the veracity of any specific memory (to say nothing of the challenges in the probate context when the subject is often deceased). Therefore, most researchers urge courts to demand external corroboration for suspicious recollections.

II. BECAUSE OF HOW MEMORY WORKS, UNSCRUPULOUS PEOPLE CAN MAKE VULNERABLE VICTIMS REMEMBER THINGS THAT DIDN'T HAPPEN

A. Memory is Not a Tape Recorder

Researchers into false memories must confront widespread popular misconceptions regarding the reliability and stability of memory, and how it works. Laney and Loftus write that "human memory does not function like a video recorder that can be rewound and replayed; rather, our memories are malleable." (Laney & Loftus 2013, 138). Weaver expands on the fallacy of viewing memory simplistically as a mechanical storage mechanism:

"Memory is often compared to two common storage mechanisms: videotape recorders and computer hard disks... Both of these metaphors are fundamentally flawed. Both represent memory as being static and unchanging, and imply that what is stored in memory is always a faithful representation of the actual event. Furthermore, both

metaphors suggest that memory retains everything that has ever happened to us, implying that all events are ultimately retrievable... But memory does not work this way. In fact, the single most important principle underlying memory is this: memory is a dynamic, creative, and reconstructive process.” (Weaver 2006).

This gap between popular and scientific understandings of memory has been explored in the legal context. In 2006, Schmechel et al. surveyed more than a thousand potential jurors in the District of Columbia to assess “common sense” beliefs regarding memory. They identified 10 areas in which their understandings differed from the scientific perspectives. The scientific understanding of memory tells us: 1) memory is highly selective, 2) central details are recalled better than peripheral details, 3) leading questions and suggestion can distort memories during retrieval, 4) much “forgetting” is actually failure to encode in the first place, 5) suggestive techniques to “refresh” memory often create false memories, 6) memories change over time, 7) “source confusion” exerts powerful effects on eyewitness reliability, 8) there is only modest correlation between confidence in memory and accuracy, 9) children are more susceptible to suggestion, fantasy, and source confusion, 10) warnings about possible misinformation do not always eliminate their effects. (Schmechel)

While urging the courts to be careful, researchers often point out that not just false memory, but ALL memory, by its nature, is unstable and unreliable. The psychologist, Frederic C. Bartlett, recognized in the 1930s that remembering is “imaginative reconstruction, or construction,” and “it is thus hardly ever exact.” (Bartlett 1932, 213.) This must be acknowledged without throwing out the baby with the bathwater.

“In essence, all memory is false to some degree. Memory is inherently a reconstructive process, whereby we piece together the past to form a coherent narrative that becomes our autobiography. In the process of reconstructing the past, we color and shape our life’s experiences based on what we know about the world. Our job as memory researchers and as human beings is to determine the portion of memory that reflects reality and the portion that reflects inference and bias. This is no simple feat, but one worthy of our continued investigation.” (Bernstein & Loftus 2009, 373.)

Further, what begins as false memory may become a “true” component of the subject’s identity:

“But sometimes what starts as a deliberate lie becomes the person’s “truth.” The story creates a memory rather than the other way around... People’s memories are not only the

sum of all that they have done, but there is more to them: The memories are also the sum of what they have thought, what they have been told, what they believe. Who we are may be shaped by our memories, but our memories are shaped by who we are and what we have been led to believe.” (Loftus 2003, 872).

B. Exposure to False Post-Event Information (PEI) May Generate Misinformation Effects That Feed Rich False Memories

Studies conducted in laboratories around the world have demonstrated that human memory is susceptible to errors as a result of exposure to post-event information. (Laney & Loftus 2013, 138.) In a typical study of this “**misinformation effect**”, research participants are asked to view an event, often a mock crime or accident. Some participants are then exposed to misleading information about what happened during the event. “This misinformation leads to errors in these participants’ memories, such that they end up less accurate in subsequent memory tests than are control participants who did not receive the misinformation.” (Laney & Loftus 2013, 138).

Hyman and Loftus (1998) described three processes that are critically involved in the creation of such false memories: First, the new information needs to be perceived as **plausible**, which can be achieved by simple interventions. For instance, Mazzoni et al. (2001) showed that merely reading mini-articles about the high frequency of an implausible event (like witnessing demonic possession) increased participants’ ratings of plausibility and likelihood that they had experienced the event. Second, the new information should be **visualized**. Vivid images with great sensory and perceptual details are more prone to be (falsely) labeled as memories for actual events (Drivdahl & Zargoza, 2001; Thomas, Bulevich & Loftus, 2003). Third, a **source memory error** should occur. This concerns the attribution of the memory’s origin to an incorrect source (e.g., to a personal experience, rather than other people, television, or a newspaper; Johnson, Hashtroudi, & Lindsay, 1993).

A person who goes through these stages may merely believe that an event is true, but have no sense of recollection. “But with guided imagination, with visualization of the stories of others, and with suggestive feedback and other sorts of manipulations, a rich false memory can develop.” (Loftus 2003, 871). **Rich false memories**, “are experiences about which a person can feel confident, provided details, even express emotion about made-up events that never happened.” (Loftus 2003, 869).

C. Techniques Commonly Employed For Undue Influence May Also Induce Formation of False Memories.

Loftus and others have investigated a variety of techniques and scenarios that may facilitate or increase susceptibility to formation of false memories introduced as PEI.

Unsurprisingly, many of the factors that facilitate persuasion in general or that have otherwise been identified as rendering subjects susceptible to influence, have also been found significant in the formation of false memories.

- **Repetition**, paradoxically, simultaneously increases source misattributions and improves memory for the suggestions' sources.
- Many experiments introduce PEI through **intentional suggestions** (Davis & Loftus 2007; Takarangi, Parker & Garry 2006)
- **Leading questions:** Information present in the questions themselves become incorporated into a witness's memory. For example, in one experiment, participants were shown a film about a car accident. Then some of them were asked to estimate the speed of the cars when they "smashed" into each other, whereas others received the same question in which the word "smashed" had been replaced by "hit". The "smashed" group made higher speed estimates than the "hit" group, and was more likely to report 1 week later that they had seen broken glass in the film, even though no broken glass had been shown. (Loftus & Palmer 1974). Also Huthwaite, Yesberg, Garry & Loftus, 2012. C/w other experiments that introduce PEI through **tiny differences in language** (Loftus 1975).
- **The "Lost-in-the-Mall" Technique** (otherwise known as "familial informant false-narrative procedure). Subjects are plied with false information ostensibly obtained from family members. (Loftus, 2005). In the paradigmatic case, researchers repeatedly suggested an entire fictitious event in which the subject as a child was lost in a mall. (Ceci et al. 1994). Relative to a single exposure, repeatedly exposing participants to suggestions increased the incidence of false memories for the suggested items. (Zaragoza and Mitchell 1996).
- **Sensory-Perceptual Elaboration.** In one experiment, participants watched a videotape of a burglary and were later exposed to misleading factual suggestions. Participants who answered questions that encouraged them to elaborate on perceptual characteristics of an item, such as its location and physical appearance, were much more likely to later claim they "definitely" remembered seeing that item. (Drivdahl and Zaragoza 2001). Likewise,

reliving a person's past through guided imagery increases likelihood of false memory formation. (Berkowitz & Loftus 22)

- **Mental Elaboration:** Any type of mental processing that embellishes the suggested event with details or other characteristics that render it confusable with a memory for a “real” event. For example, instructing people to imagine fictitious childhood experiences increases subjects’ belief that these fictitious events actually occurred, and can lead to false memories for fictitious childhood events. (Zaragoza, 48).
- **Semantic Elaboration:** Participants in the 2001 burglary videotape study were divided into semantic elaboration group and perceptual elaboration group. Participants in the semantic elaboration group were asked follow-up questions that led them to think about the meaning and implications of the suggested details, but not their perceptual characteristics (e.g., rather than asking for more details about the stolen ring, they would ask about the thief’s intentions or how incriminating the evidence was). Semantic elaboration led to greater increases in false memory than perceptual elaboration. “[I]t appears that misinformation that is embedded in a coherent network of relations is more likely to be confused for a “real” memory.” (Zaragoza 51).
- **False Photographs.** Researchers created a false photograph of a childhood event. They took an existing photograph of a parent and child riding in a hot air balloon and digitally inserted the faces of the experimental subjects as children and their parents over the existing faces. Half the subjects created a complete or partial memory for this fictitious event. (Wade et al. 2002). In another study, researchers showed subjects true photographs as a way of soliciting childhood memories. In addition to asking about the real event, they asked about a fictitious event (placing “slime” in their teacher’s desk). When shown real class photographs corresponding to the fictitious event, the rate of false memory reports of the fictitious event doubled. (Lindsay 2004). (Also Schacter 1997b)
- **False feedback paradigm.** (Laney & Loftus 2008). Giving a person false feedback that their symptoms suggest they were likely sexually abused (Berkowitz & Loftus 22). Also, interpreting a person’s dreams to indicate that they have been abused (Berkowitz & Loftus 22).
- **Demand characteristics.** Biases are introduced by the expectations of the researchers, the participants or both. (Brewer 1977; Foster & Garry 2012; Schacter 2001). When asked to view lineups in the presence of police officers, witnesses frequently make an identification even when they are uncertain. (Well & Luus 1990).

- **Social-Contagion Effect.** When two people witness the same event, a person's memory for the witnessed information can be contaminated by false information provided by the cowitness. (Zaragoza 53). *See also* Gabbert, Memon, Allan & Wright 2004; Wright, Self & Justice 2000. This effect is also apparent in situations where a person is placed into group therapy where they are exposed to others' stories of child sexual abuse (Berkowitz & Loftus 22)
- **Forced Confabulation Effect.** Participants in a study who were pressed to confabulate information about a witness's event later evidenced false memories for some of the events they had earlier confabulated knowingly. Moreover, confirmatory feedback increased false memory for forcibly confabulated events, increased confidence in those memories, and increased the likelihood that participants would freely report the confabulated events 1 to 2 months later. (Zaragoza, Payment, et al 2001).
- **Guided Imagination.** Individuals are led to imagine that they have had experiences (like breaking a window) that they have previously denied. Even a minute's worth of such imagination can increase people's confidence that in the past they had an experience like the imagined one—a phenomenon called **imagination inflation**. (Garry & Polaschek 2000). Some individuals, such as those who tend to have lapses in memory and attention, are more susceptible to imagination inflation than others. (Loftus, 2004, 145).
- **Utilizing hypnosis or sodium amytal treatment** (Berkowitz & Loftus 22). One study found that the use of hypnosis increased memory errors, but **misleading questions produced even more errors**. Those asked misleading questions tended to shift from reporting not knowing an answer to questions to reporting false information about the past. (Loftus 2003, 868).

D. Contextual Elements Frequently Present in Undue Influence May Also Increase Susceptibility to Misinformation Effect

The creative nature of memory itself raises the unhelpful possibility that anyone might form false memories. However, investigators have worked to narrow the field considerably through experiments isolating a variety of factors, some individual, others situational, that may increase susceptibility to forming false memories in response to introduction of misinformation. Not surprisingly, these are many of the same factors that have been identified as making subjects more susceptible to undue influence.

- Some studies have shown that **cognitive ability** is negatively correlated with proneness to incorporate misinformation into existing memories (Gudjonsson 1983; Singh &

Gudjonsson 1992; Zhu et al, 2010a), although other studies have failed to find this correlation. (Powers, Andriks, & Loftus 1979; Salthouse & Siedlecki 2007).

- Heightened **emotional arousal** at time of encoding of the misinformation, because it enhances memory storage. (Cahill & McGaugh, 1998)
- **Credibility of the source.** “Whereas participants are easily influence by misinformation that is provided by a credible source, they will effectively resist suggestion that is provided by a source who lacks credibility or whom they perceive as having intentions to mislead.” (Zaragoza at 37).
- Misinformation is more likely to influence later testimony when the false information appears as a **presupposition, rather than the direct focus** of the question. (Zaragoza at 36; Loftus, 1975).
- **Dramatic events** may be more vulnerable for the misinformation effect that ordinary events, because of their ability to evoke vivid images that interfere with source monitoring. (Cromburg et al. 1996)
- People are more likely to accept suggestions that are **stereotype consistent** than those that are inconsistent. (Bodenhausen, 1988; Leichtman & Ceci, 1995; Slusher & Anderson, 1987). However, it is also possible to plant false beliefs for stereotype-inconsistent events. (Berkowitz et al., 2008, 656).
- There is some evidence that **neuroticism** is positively correlated with susceptibility to the misinformation effect (Gudjonasson 1983; Liebman et al 2002). However, a recent study showed that **harm avoidance**, which is associated with neuroticism, correlated negatively with susceptibility to the misinformation effect. (Zhu et al, 2010b).

“Porter, Birt Yuille, and Lehman (2000) found that false memories were particularly likely when suggestions were given in interpersonal interactions between an **extroverted interviewer and an introverted participant**, thus highlighting important social factors underlying the production of some false memories. More recently, Gerrie and Garry (2007) found that individuals with higher working memory capacity were better able to resist some types of false memories.” (Laney & Loftus 2013, 142).

E. False Memories May Be Plausible or Highly Implausible.

The range of different kinds of memories that researchers have successfully implanted includes content that is both mundane and extraordinary, plausible and highly implausible. False memories successfully implanted by researchers in laboratory settings have included:

False Memories of Plausible Childhood Experiences.

- As children, they witnessed their parents having a physically violent fight. (Laney & Loftus 2008)
- As children, they were hospitalized overnight. (Laney & Loftus 2008)
- As children, they caught their parents having sex. (Laney & Loftus 2008)
- As children, they had their ear inappropriately licked by the Pluto character at Disneyland. (Berkowitz, Laney, Morris, Garry & Loftus 2008)
- As children, they had to be rescued by a lifeguard. (Heaps & Nash 2001)
- As children, they were lost in a mall. (Loftus & Pickrell, 1995)
- They had an accident at a family wedding. (Hyman, Husband, 1995)
- They were once the victim of a vicious animal attack. (Porter et al, 1999)

False Memories of Highly Implausible Events:

- As children, they witnessed their friend's demonic possession. (Mazzoni, Loftus & Kirsch 2001)
- Memories of satanic ritual abuse. (Ofshe & Watters, 1994)
- Memories of being abducted by a U.F.O. (Otgaar et al., 2009)
- As children, they helped a woman find her lost monkey. (Loftus, 2004, 147)
- As children, they helped a person who injured her ankle after spilling Play-Doh. (Loftus, 2004, 147).

F. False Memories May Be Just As Robust Over Time As True Memories

Researchers have also countered the perception that false memories are less hardy than true ones and more prone to fade after time.

In one experiment, researchers asked Dutch participants about details of a tragic plane crash that took place in Amsterdam in 1992. The crash had received much media coverage in the Netherlands, including reports of eyewitnesses and video of the aftermath, but there had been no video of the actual crash. However, over half the participants “remembered” seeing video of the crash and many “remembered” false details about how the plane hit the building, etc. (Crombag et al. 1996)

In another experiment, researchers planted false memories and then waited a significant interval before retrieval. About 2 months after deployment to Afghanistan, 249 soldiers were

interviewed about an event that did not take place on their deployment (a harmless missile attack at the base on New Year's Eve). They received subtle misinformation including sensory details (sounds, images). Seven months later, 26% of participants had incorporated the event into autobiographical memory. (Lommen et al. 2013). In a 2012 study, Zhu et al. used a misinformation technique to show that highly distorted memories can remain highly distorted for at least a year and a half, with distorted aspects of memory remaining in place for as long as true aspects. (Laney & Loftus 2013, 142).

G. False Memories Are Generally Indistinguishable From True Memories.

A key concern both for the scientific community and those of us worried about the role of false memories in undue influence is how false memories may be distinguished from true ones. Most of us assume that even if we have false memories, then they must be “weaker” in some respect than true ones. As discussed above, research has shown that false memories can endure over time, just like true memories.

Furthermore, research has shown that there are no obvious characteristics that distinguish true from false memories. “To our knowledge, nobody has developed a neurophysiological procedure that can be used to predict whether a single memory is true or false.” (Bernstein & Loftus 2009, 371). In other words, there are no scientifically verified tests, either in the laboratory or the courtroom, that would enable us to determine reliably that any given memory is false based merely on the characteristics or qualities of the memory. “Memory experts cannot and should not say that a given memory is wrong, but we can explain the factors present in the case they are known to affect memory.” (Weaver 2006).

“[J]ust because a memory report is expressed with confidence, detail, and emotion does not necessarily mean the underlying event actually happened.” (Loftus 2003, 871).

Consequentiality (whether or not the false memory has real consequences) is not a good way of discriminating between true and false memories. (Laney & Loftus 2013, 141). Also, “**emotionality** is not a useful indicator of memory truth.” (Laney & Loftus 2013, 141).

H. True Memories May Be Distinguishable From False Ones Insofar As They Tend To Contain More Information.

Despite the fact that false memories do not appear different to casual observation, scientists have found some ways to distinguish them from true memories. On average, real memories have more sensory and conceptual information than true memories. This includes visual, auditory, and olfactory details and spatial and temporal details. (Bernstein & Loftus 2009, 373; Suengas & Johnson 1988). The amount of perceptual detail needed to accept a remembered experience as a real memory (and not imagined or suggested) is much greater for recent events than for events from the distant past. (Zaragoza, 45). “[T]here is considerable evidence that the greater the vividness, clarity, and detail associated with imagined events, the greater the likelihood that they will be confused for actually experienced events.” (Zaragoza 50).

Sensory activity is greater for true memories than it is for false memories. Regions within the medial temporal lobe (as seen on ERPs and fMRIs) seem to be involved in false memory formation, and regions within the prefrontal cortex seem to be involved in memory monitoring processes resulting in the reduction of false memories. (Bernstein & Loftus 2009, 371; Schacter & Slotnik 2004)

Gamma waves best distinguish true from false memories. Researchers using surgically implanted electrodes monitoring electrophysiological activity across five different frequency bands (delta, theta, alpha, beta, and gamma), asked subjects to study and then recall lists of words. Brain waves in the gamma band showed the most distinct differences between words remembered correctly and incorrectly. (Sederberg et al 2007).

Ekman’s microexpression research seems promising, but how do you catch a liar who is unaware that he is lying? Memory researchers have backed up Paul Ekman’s groundbreaking research on correlation between facial expressions and lying. (Porter & Brinke 2008). But Bernstein and Loftus note that this approach is not much help when the liar is not consciously deceitful. (Bernstein & Loftus 2009, 371).

The idea behind **criteria-based content analysis** is that false statements are inherently different from and differentiable from true statements. The technique involves the scoring of memory reports using 19 cognitive and motivational criteria that are present or absent in the report (e.g., logical structure, unusual details, spontaneous corrections). These criteria have had some success in differentiating true from false memory reports; however, the differences are

relatively small when controlled-laboratory experiments are examined. (Bernstein & Loftus 2009, 372).

III. OLDER ADULTS ARE MORE SUSCEPTIBLE TO FALSE MEMORIES

Older subjects are more susceptible to misleading post-event suggestion. (Cohen & Faulkner, 1989; Schachter 1997b). A natural interpretation of such results is that the elderly fail to remember whether their memory for the suggested information came from the postevent period or from the event itself. (Kester 556). Groups (such as the elderly) that show poorer veridical memory also show greater false memory. (Kester 556; Watson 2001).

The **mirror effect**, which tends to decrease false memory for the young, does not appear to do so for the elderly. (Benjamin 2001). For young subjects, multiple exposures to highly related (and thus easily confused) source material increases true memory and decreases false memory. For old subjects, multiple exposures increases both true and false memory, suggesting that the inability to attribute memories to likely sources and thereby set appropriate decision criteria leads them to be prone to false memory. (Kester 556-557).

“Taken together, these data suggest that older adults exhibit higher levels of false memories than younger adults do and that older adults’ subjective experience of memory (in the form of confidence judgments) is less well attuned to their actual level of accuracy.” (Jacoby, 50).

The elderly suffer disproportionately from an inability to remember the context of the material that they have learned. (Kester et al. 554). Elderly subjects exhibit source memory problems by performing worse than young ones on 1) “**false-fame**” tasks, where subjects are asked to evaluate the fame of names, some of which had been previously viewed, and 2) **exclusion tasks**, in which subjects are required to endorse only one subset of previously studied items. (Kester 555).

Older adults are usually more likely than younger adults to accept false information, showing a higher probability for errors in recognition tasks. This age-related susceptibility has been found in memory for word-lists, sentences, fragments of prose, drawings, photographs, faces, complex scenes and TV news. (Aizpurua, 310-11). Compared to younger adults, older

adults systematically show a greater tendency to accept false actions as real, demonstrating a less accurate recognition of event information. (Aizpurua, 324). When asked to provide specific details of a given event, older adults were relatively less able to correctly determine the perpetrator of the action. (*Id.* at 326).

Mechanisms proposed to underlie increased false recognition in older adults include an overreliance on semantic gist, and deficits in memory for item-specific information such as poor memory for the source. *Id.* at 311. Neuropsychological studies have revealed that source memory ability is related to prefrontal cortex and medial temporal lobes, and that these areas are affected by normal aging. (Aizpurua, 311). *However*, as a result, recent studies have suggested that not all older adults are equally susceptible to false memories. Susceptibility is correlated with older adults' abilities as assessed on tests intended to measure frontal lobe functioning. (Meade 449).

“Older adults with poor frontal functioning are generally more susceptible to false memories across a variety of paradigms, and older adults who score high on tests of frontal functioning often show levels of veridical and false responding equal to that of young adults[.]” (Meade 449-50).

IV. THERE ARE SEVERAL COMPETING FRAMEWORKS EXPLAINING THE MECHANISMS OF FALSE MEMORY ACQUISITION AND RETRIEVAL

It is important to be aware that our understanding of how all this works is still far from complete. The prevailing framework today appears to be “source-monitoring.”

The Source-Monitoring Framework (SMF).

Source Memory. The capacity to accurately remember the origin of our knowledge allows us to evaluate the relevance of that knowledge for a given task or situation. The source monitoring framework proposes that false memories occur because of misattribution or confusion of the sources of information. Based on the source-monitoring framework, researchers predicted that once the subjects misattributed the source of the false memories at the initial testing session, the rates of long-term decay of such false memories would be the same as those for true (veridical) memories. (Zhu 2012, 302).

Normal source attribution reflects the conditions under which the memory was acquired. If a memory contains a great deal of visual detail, an individual would likely attribute this memory to an event he or she saw.

Source confusion errors increase when there is an overlap in the memory characteristics from two different sources. For example, imagining words spoken in another person's voice increases people's tendency to confuse what they imagined they heard the person say with what they actually heard the person say. (Zaragoza, 44). In real life, there is this kind of contextual overlap when co-witnesses talk about what they have just seen (content overlap) right after a crime event (temporal overlap), and this discussion takes place at the scene where the crime took place (environmental overlap). (Gabbert 40-41).

Endurance experiment supports source-monitoring framework. "We reasoned that once a person has a memory, then this memory lasts regardless of the source of the memory." (Zhu 2012, 302). Zhu et al. tested this presumption in their 2012 study of distorted memories after 1.5 years. "Taken together, our study presented evidence that the false memory briefly introduced in an experimental setting seemed to have similar strength of memory trace as true memory. These results are consistent with the source-monitoring framework. In other words, once the initial misinformation was misattributed, its resultant false memory may be similar in strength to true memory strength." (Zhu 2012, 306).

Other Frameworks

Researchers have also explored: **The Activation-Monitoring Framework, Fuzzy Trace Theory** and **The Distinctiveness Heuristic**. See Brainerd & Reyna 2005 for descriptions of these distinct theories.

V. RESEARCHER RECOMMENDATIONS FOR DEALING WITH FALSE MEMORY IN LEGAL CONTEXTS

Obviously, false memory research could have huge implications for the law, which courts and legal scholars have only begun to explore. Given that as yet there is little confidence in our capacity to determine reliably whether a *particular* memory is true or false, the researchers merely caution courts to exercise skepticism and seek corroborating evidence regarding suspicious memories. Many popular assumptions regarding what separates true from false

memories are wrong, and researchers are just beginning to gather evidence of indicators that could separate true from false memories.

A. Repressed Memories

The “repressed memory” debates of the 1990s resulted in strong admonitions from the scientific community against admitting evidence of recovered memories without substantial external corroboration.

“Scientists are in agreement that the accuracy of recovered memory testimony cannot be determined without corroborating evidence. Without corroborating evidence, the testimony is too unreliable to be admitted. With corroborating evidence, the testimony is unnecessary.” (Reagan 320).

Researchers further urge courts that if they do choose to go forward with admission of repressed memory evidence, then juries should be carefully instructed as to the possibility that such memories may be false.

“If a court does decide to admit such evidence into trial, we would encourage judges to consider cautionary jury instructions that explain to jurors that there is no credible scientific support for repression and that there are many suggestive techniques that can lead people to create false memories.” (Berkowitz & Loftus 22)

In the criminal law context, researchers recommend that law enforcement take special care at crime scenes to avoid generation of false memories resulting from various forms of witness contamination. “[I]t is important for the police to get independent testimony from acquaintances as soon as possible after the event. In court, it is important that the types of relationships held among different witnesses are considered.” (Gabbert, 39)

The **Self-Administered Interview**, or SAI is a recall tool, currently in booklet form, designed to obtain high-quality information from witnesses quickly and efficiently at the scene of an incident or shortly afterwards. It’s currently in operational use by some police forces in the U.K. The booklet is designed to facilitate gathering memories from as many witnesses as possible before contamination can occur (and also before memories have had much time to weaken. There is also evidence that such tools strengthen and protect memory for a witnessed incident such that forgetting is minimized. (Gabbert 42)

B. Leading Questions

Of course, courts have long recognized the danger that “leading questions” may taint witness testimony. However, in recent years, the legal profession has begun to consider how a sufficiently subtle line of questioning may actually generate false memories. See Mazzara, Jack J., *Leading Questions on Direct and Cross-Examination*, 92 MICH. BAR J. 36, 37 (2013) (“Leading questions on direct examination present two dangers. The first is that suggestive questions may supply ‘a false memory for the witness—that is to suggest desired answers not in truth based upon a real recollection.’ [citing *US v. Durham*, 319 F.2d 590, 592 (CA 4, 1963)] The second is that the examiner may use a friendly witness to parrot the lawyer’s view of the evidence.”).

A number of courts have pondered the issue:

- ***United States v. Durham*, 319 F.2d 590, 592 (4th Cir. N.C. 1963).** The essential test of a leading question is whether it so suggests to the witness the specific tenor of the reply desired by counsel that such a reply is likely to be given irrespective of an actual memory. The evil to be avoided is that of supplying a false memory for the witness. 3 Wigmore, Evidence § 769 (3d ed. 1940); see also *De Witt v. Skinner*, 232 F. 443, 445 (8th Cir. 1916).
- ***Green v. United States*, 348 F.2d 340, 341 (D.C. Cir. 1965).** The trial court may permit leading questions where, for example, the witness has forgotten some events or is ignorant or even reluctant to testify. 2 But this discretion must be exercised with great caution to avoid the "evil * * * of supplying a false memory for the witness." *United States v. Durham*, 319 F.2d 590, 592 (4th Cir. 1963). Where, as here, the court (a) conducted no inquiry to determine why the prosecutor asked the leading questions, and (b) gave no reason for permitting such questions, there is no adequate assurance that the court exercised any discretion.
- ***United States v. McGovern*, 499 F.2d 1140, 1142 (1st Cir. Mass. 1974).** The evil of leading a friendly witness is that the information conveyed in the questions may supply a "false memory". *United States v. Durham*, 319 F.2d 590, 592 (4th Cir. 1963). 3 J. Wigmore, Evidence § 769 et seq. (Chadbourn rev. 1970). In spite of this danger, however, leading questions sometimes must be tolerated if what the witness knows is ever to become available: the witness' memory may be temporarily exhausted; the witness may be disoriented or incapable of concentration; the witness may misunderstand what the questioner wants to know. On those and other occasions some degree of leading,

skirting the fine line between stimulating an accurate memory and implanting a false one, may be allowed; because the circumstances vary from case to case, and because the trial judge is best situated to strike a practical and fair balance, he has extensive discretion over the phrasing of questions. J. Wigmore, *supra* at § 770.

- ***Porter v. State*, 386 So. 2d 1209, 1211 (Fla. Dist. Ct. App. 3d Dist. 1980).** Professor Wigmore's treatise contains a humorous account of an "after dinner trial" at Old Bailey which illustrates the vice of the leading question. The defendant's trial, including the verdict and imposition of a seven-year sentence, lasted two minutes, fifty-three seconds. The prosecution's case consisted of a question to the pickpocketing victim, "I think you were walking up Ludgate Hill on Thursday 25th, about half-past two in the afternoon and suddenly felt a tug at your pocket and missed your handkerchief, which the constable now produces"; and a question to the constable, "Were you following the [victim] on the occasion when he was robbed on Ludgate Hill, and did you see the prisoner put his hand into the [victim's] pocket and take this handkerchief out of it?" Both witnesses answered "Yes, sir," and the trial was over. 3 Wigmore, *Evidence* § 769 (Chadbourn rev. 1970) at 156.

C. Memory Conformity Between Eyewitnesses

"[M]emory-conformity effects are often driven by informational influences. People conform to another person's version of events when that person is perceived as more knowledgeable, more confident, and/or more credible." (Gabbert 40). The consequences "can be very serious in a criminal investigation, as they have the potential to lead to inaccurate testimony, biased evidence and false corroboration between witnesses." (*Id* at 41).

In everyday life, one of the most common ways to encounter PEI is when individuals who have shared the same experience discuss this with one another. Exposure to PEI that is inconsistent with a person's own memory can affect the ability to subsequently report details of the originally encoded event. (Gabbert et al., 2012, 36). "When witnesses discuss their memories, their accounts of the witnessed event can become similar, and hence, seemingly corroborative." *Id.* "[I]nvestigators and jurors may subsequently attach a false corroborative value to any consistencies between witness statements obtained or any evidence given in court thereafter, when the evidence may be contaminated if the witnesses had discussed their memories before being interviewed by the police." *Id.* at 37.

- **Oklahoma City bombing.** One of three employees working in the body shop on the day when Timothy McVeigh rented the truck used in the bombing claimed with some confidence that McVeigh was accompanied by a second man. Initially, the other witnesses gave no description of the alleged accomplice. However, they too later claimed to remember details of a second person. After a costly manhunt, the FBI concluded that this accomplice did not exist. A few months later, the witness who had been so confident admitted he may have been recalling another customer. The other two witnesses admitted that they had discussed their memories with the first. (Gabbert, 36).
- **Relationships and susceptibility.** Relationships between co-witnesses may also affect susceptibility to each other's influence. "We expect that there is a larger cost of disagreeing when one knows the other person. It may also be that people think their acquaintances have better memories than strangers... Thus, the more prepared we are to accept another person's judgments and value his or her opinions, the more we become subject to his or her influence. (Gabbert, 38).
- **Bystanders are more susceptible and trusted less.** People believe bystanders have worse memories than those directly involved with an interaction. Likewise, bystanders can be more susceptible to memory conformity effects than people who interact with a target person. (Gabbert 40).
- **Stronger belief in one's own memory reduces memory conformity.** "Stronger beliefs in one's own memory inoculate a person from memory-conformity effects, and stronger beliefs in another person's memory can increase the influence of that person's memory report. Supporting this, research has found that the overt confidence with which individuals make their assertions to each other can operate systematically as a cue that promotes conformity." (Gabbert 39)

D. Admission Standards for Prior Bad Acts Evidence in Light of False Memory Research

In a 2013 law review note, Jason Tortora argues that states should adopt *Huddleston's* lower admissibility standard for bad acts evidence specifically to reduce the introduction of false memories into witness testimony. "Adopting Huddleston would reduce the pressure on prosecutors and witnesses to provide details that are simply not within the powers of recollection for the witness. In addition, providers of continuing legal education should create and encourage attendance at lessons that review best practices for witness preparation based on current understandings of memory." (Tortora at 1536)

In *Huddleston v. United States*, 485 U.S. 681 (1988), the Supreme Court held that under FRE 104(b), a trial court should examine all of the available information and submit the prior bad acts evidence to the jury if the court concludes that a reasonable juror would be able to find any necessary conditional fact by a preponderance of the evidence. *Huddleston*, at 690. Importantly, a trial court is not to consider the credibility of the evidence when in considers the evidence's admission. *Id.* Requiring trial courts only to screen prior bad acts evidence under a minimal standard of proof instead of having them perform a preliminary fact-finding subsequently rippled through the states and created a stark contrast with states that continued to apply a higher standard of evidence. Jason Tortora, *Reconsidering the Standards of Admission for Prior Bad Acts Evidence in Light of Research on False Memories and Witness Preparation*, 40 Fordham Urb. L.J. 1493, 1504-1505 (2013).

The policy goal underlying the exclusion of prior bad acts evidence is to avoid prejudice. However, a preliminary fact-finding that requires a higher standard of proof for the commission of the acts presents a risk of introducing false testimony through witness preparation. (Tortora at 1530). If a witness has adopted a false memory and believes it to be true, "in the absence of demonstrably more reliable evidence ... opposing lawyers will remain unable to discredit such testimony [on cross examination] because the witness sincerely believes the testimony is true." John S. Applegate, *Witness Preparation*, 68 Tex. L. Rev. 277, 309 (1989).

"[E]ven the most scrutinizing attorney may be vulnerable to a witness who describes a false memory with as much confidence as a memory of an actual perception, yet with even more detail... Given that witnesses have a great deal of confidence in false memories, and that they report false memories with more, albeit non-sensory, details than they do actual memories, the risks of juries being swayed by falsehood are enormous. Even if people are able to prefer genuine memories to false memories, evidence suggests that repeated retrieval of generated or false memories may diminish that preference." (Tortora, 1528-1529). Furthermore, people are susceptible to "memory hardening," whereby once-unclear memories can become solidified in their recollections through repeated retrieval. (Tortora, 1535).

Best practices to minimize the risk of prejudicing witness memory: "For example, beginning by asking witnesses open-ended questions gives them a chance to provide all of the information they can recall and it gives the attorney the chance to create a starting point against

which future changes in testimony can be measured against to detect distortions.” (Tortora, 1529). “Another solution may be for prosecutors to take careful note of any changes in a witness’s testimony. If testimony changes as a result of the interview in potentially substantive ways, a lawyer should ‘prep it back to the way it was.’ Recording the witness’s initial account can aid in this process.” Tortora, 1536.

VI. SCIENTIFIC STUDY OF MEMORY

The scientific investigation of memory began a little more than a century ago with the work of Hermann Ebbinghaus, who conducted experiments on himself to test recall of learned lists of novel items after various intervals. (Ebbinghaus 1913/1885.) Experts started testifying in the courts regarding eyewitness memory at around the same time (Munsterberg 1908), and such expert testimony has subsequently become common in most states. (Weaver 2006.)

In the early 1970s, research and theorizing about memory was based almost exclusively on studies of memory for lists of words or sentences. (Zaragoza, 35.) Elizabeth Loftus reinvigorated the field with studies “providing clear evidence that suggestive interviews can lead to profound errors in eyewitness testimony... Her work established that scientific research on memory and suggestibility can and should inform the courts.” (*Id.*)

In the 1990s, the newly emerging field of trauma studies, created in response to greater understanding of victimization of women and children, clashed with the established fields of eyewitness memory and misinformation research. (Laney & Loftus 2013, 137.) There was a flood of litigation based on **repressed memories** of traumatic childhood sexual abuse, allegedly recovered through psychotherapy and hypnosis. Everyone recalls the Ramona case in this context. A young woman claimed that she had been molested between the ages of 5 and 16 by her father—including numerous times with the family dog—and that memories of this abuse were buried in her unconscious until dredged up in the course of treatment. (*Ramona v. Superior Court* (Cal. App. 1997) 66 Cal. Rptr.2d 766.)

The false memory research group argued that “decades of research has demonstrated that human memory can be extremely malleable,” and that “there is a very real risk that the techniques that practitioners use to uncover supposedly repressed memories of trauma could actually be creating false memories in patients’ minds.” (Laney & Loftus 2013, 138.) The

psychology community heatedly debated the legitimacy of repressed memory while courts struggled with issues of admissibility and tolling limitations.

By the end of the 1990s, most psychologists and courts agreed that there was scant evidence for the recovery of traumatic memories, forgotten but “stored in the unconscious mind in pristine condition for many years.” (Berkowitz & Loftus, 19.) Nevertheless, leading investigators, including Loftus, have argued that False Memory Syndrome (FMS) is a likely explanation for why people *think* they repressed memories.

In the past two decades, many researchers have explored how **false memories** could be implanted through suggestion and other techniques. Meanwhile, the law has now begun to turn from the largely settled repressed memory debate to contend with the related, but distinct challenge of determining whether a specific memory is true or false.

VII. THE REPRESSED MEMORY DEBATE

A. Recovered Memories in the Courts

In 1992, the False Memory Syndrome (FMS) Foundation began its Legal Survey project to track the response of courts and legislatures to the rising tide of litigation based claims involving the alleged recovery, usually during psychotherapy, of long-repressed memories of incest and child abuse. By July 1998, the FMSF Legal Survey contained well over 1,800 records of litigation related to repressed memory claims.

“The history of this phenomenon bears the hallmarks of an early rush to judgment followed by a more measured response, as courts, legislatures, clinicians, memory researchers, and many professional organizations reacted to growing concerns about the reliability of memories recovered in therapy.” (Lipton 1999)

Data collected early in 1993 indicated that the number of new filings of "repressed memory" lawsuits was growing exponentially. A number of states had recently amended their statutes of limitations to allow adults to sue for childhood sexual abuse many years after the abuse allegedly occurred. Juries were being asked to consider uncorroborated testimony of recovered memories that had been allegedly repressed for years, and often decades. There was very little case law from appellate courts addressing how trial courts should handle the novel evidentiary questions posed by repressed memory claims. Defendants who felt wrongly accused

had few resources with which to defend themselves in the face of this new kind of "evidence." Many juries apparently accepted the notion that a recovered repressed memory must be true. However, within a few years, the enthusiasm for repressed memory testimony had largely collapsed:

“The picture is very different today. At the time of this writing (January, 1999), few new repressed memory claims are being filed. A substantially larger percentage of repressed memory claims are now being dropped or dismissed rather than going to trial. Courts have increasingly found repressed memory testimony to be unreliable and therefore inadmissible. A growing number of jurisdictions are making it more difficult for plaintiffs to bring repressed memory claims, citing the suggestive circumstances under which "repressed memories" are often "recovered" and the lack of any reliable scientific basis for the notion that memories can be repressed and later recovered intact. In the last decade, clinicians, memory researchers, and professional organizations have issued guidelines recommending the avoidance of suggestive therapy techniques. In recent years, psychotherapy clients injured by repressed memory therapy have begun to file malpractice claims against their therapists and many have won substantial awards. State agencies have also become involved, bringing criminal fraud charges and de-licensure proceedings against some therapists who have engaged in repressed memory therapy.” (Lipton 1999)

B. Current State of the Debate

Berkowitz and Loftus claim that “[t]here is virtually no credible scientific support for the notion of repression. In other words, there is no evidence to suggest that highly traumatic childhood memories can be unwittingly banished from the conscious mind and stored in the unconscious mind in pristine condition for many years, only to be recalled later.” (Berkowitz & Loftus, 19). Dalenberg and Arzoumanian claim that “it is more consistent with the current scientific body of research to acknowledge the complexity of recovered memory of childhood trauma.” (Dalenberg & Arzoumanian 29). However, they acknowledge scientific consensus:

“(a) that recovered memories, like continuous memories, are sometimes true and sometimes false, (b) that they have no special protection against or susceptibility to distortion, and (c) that they must be considered on a case-by-case basis in the context of various factors.” (Dalenberg & Arzoumanian 24).

Furthermore, Dalenberg and Arzoumanian acknowledge the importance of the research of Elizabeth Loftus on false memories.

“These anecdotes should raise concerns in litigators and therapists about the source of a memory that is newly discovered/recovered, leading to investigation of these sources; but they should not lead to the rejection of the memory without that investigation.” (Dalenberg & Arzoumanian 26).

Although they raise some doubts as to the strength of the findings of false memory research, they acknowledge that scientific evidence clearly supports the conclusion that:

“Alleged continuous or recovered memories may or may not have been distorted by suggestion. Recovered memory evidence, like any eyewitness evidence, should be viewed in the context of the nature of the recovered memories and the circumstances of the memory recovery, with appropriate weight given to the presence or absence and strength of suggestive influences.” (Dalenberg & Arzoumanian 29).

C. Statements By Professional Organizations in the Mid-1990s:

The **American Psychological Association** expressed skepticism regarding the existence of repression itself and strongly cautioned against court reliance on recovered memory reports alone. (Reagan 289) “At this point it is impossible without other corroborative evidence, to distinguish a true memory from a false one.” (APA, *Questions and Answers About Memories of Childhood Abuse*, 1995). “Research has shown that over time memory for events can be changed or reinterpreted in such a way as to make the memory more consistent with the person’s present knowledge and/or expectations.” (*Id.*)

The **American Medical Association** identified the existence of repression as considerably controversial and declares recovered memory reports to be unreliable without corroboration. (Reagan 291). “The AMA considers recovered memories of childhood sexual abuse to be of uncertain authenticity, which should be subject to external verification.” (AMA, *Council on Scientific Affairs, Memories of Childhood Sexual Abuse*, 1994).

In its thirty-three page report on Recovered Memories in 1995, the **British Psychological Society** endorsed the existence of repression and concluded that reported recovered memories are likely to be as accurate as ordinary memories. This society’s report was the most accepting of repression theory. (Reagan 292).

D. Non-Repression Explanations for Why People *Think* They Repressed Memories:

As scientists increasingly viewed repressed memory claims with skepticism, they offered a variety of significant explanations as to why a person might come to believe that they had repressed memories:

- **Memory Never Encoded.** Not all “problems” of remembering are due to failures to retrieve stored information. Some experiences may not be remembered because they were not entered into memory in the first place. “Not everything that is experienced ends up in permanent memory.” (Ornstein, 1027).
- **Child was too young at time of abuse to interpret the event** as traumatic child sexual abuse (Clancy 2009)
- **“Forgot-it-all-along” Effect.** An adult may claim that she repressed her memories of child sexual abuse, but she may have forgotten that she had actually remembered the abuse in the past. (Schooler 1997), “It is important to remember that deliberate avoidance is not the same as unconscious repression.” (Berkowitz & Loftus, 21).
- **False Memories .** “[R]ecovered memories of child sexual abuse may sometimes be a product of suggestion. Whether the suggestion(s) comes from a therapist or another source (e.g. media), real-life cases and research studies demonstrate that many suggestive techniques can lead people to create false memories.” (Berkowitz & Loftus, 21).

This last hypothesis, that subjects under certain conditions may have formed memories that they genuinely believed to be true, but which were, in point of fact, false, became a subject of significant further research by Elizabeth Loftus and her colleagues.

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