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# INVITED REVIEW

# The fallibility of memory in judicial processes: Lessons from the past and their modern consequences

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The capability of adult and child witnesses to accurately recollect events from the past and provide reliable testimony has been hotly debated for more than 100 years. Prominent legal cases of the 1980s and 1990s sparked lengthy debates and important research questions surrounding the fallibility and general reliability of memory. But what lessons have we learned, some 35 years later, about the role of memory in the judicial system? In this review, we focus on what we now know about the consequences of the fallibility of memory for legal proceedings. We present a brief historical overview of false memories that focuses on three critical forensic areas that changed memory research: children as eyewitnesses, historic sexual abuse and eyewitness (mis)identification. We revisit some of the prominent trials of the 1980s and 1990s to not only consider the role false memories have played in judicial decisions, but also to see how this has helped us understand memory today. Finally, we consider the way in which the research on memory (true and false) has been successfully integrated into some courtroom procedures.

***Keywords:*** False memories; Childhood memories; Memory evidence; Eyewitness identification; Forensic interviewing; Expert witnesses.



> The science of memory is as central to the law as biology is to medicine. (Brainerd, 2013, p. 547)

When memory serves as evidence, as it does in many civil and criminal legal proceedings, there are a number of important limitations to the veracity of that evidence. This is because memory does not provide a veridical representation of events as experienced. Rather, what gets *encoded* into memory is determined by what a person attends to, what they already have stored in memory, their expectations, needs and emotional state. This information is subsequently integrated (*consolidated*) with other information that has already been stored in a person's long-term, autobiographical memory. What gets *retrieved* later from that memory is determined by that same multitude of factors that contributed to encoding as well as what drives the recollection of the event. Specifically, what gets retold about an experience depends on whom one is talking to and what the purpose is of remembering that particular event (e.g., telling a friend, relaying an experience to a therapist, telling the police about an event). Moreover, what gets remembered is reconstructed from the remnants of what was originally stored; that is, what we remember is constructed from whatever remains in memory

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following any forgetting or interference from new experiences that may have occurred across the interval between storing and retrieving a particular experience. Because the contents of our memories for experiences involve the active manipulation (during encoding), integration with pre-existing information (during consolidation), and reconstruction (during retrieval) of that information, memory is, by definition, fallible at best and unreliable at worst.

This fallibility of memory includes not only the omission of details from the original experience, but extends to errors of commission including the creation of *memory illusions*. Memory illusions can be as simple as misremembering whether one saw a Stop sign or a Yield sign at an intersection to misremembering entire experiences such as being lost in a shopping mall as a child or even being abducted by a UFO. Such illusions can emerge spontaneously in an individual, being created endogenously, or can arise due to the suggestion of another person, being created exogenously. Although the source or origin of these memory illusions might differ, because their memorial consequences are essentially the same, we will use the term *false memory* to refer to both types of memory illusion.

This view of memory has emerged over the past few decades of intense scientific research about memory processes, much of which was inspired by memory researchers interacting with the judicial system. That is, when memory researchers serve as memory experts in the courtroom, new translational questions emerge about the nature of memory particularly as it pertains to memory accuracy for traumatic events. As well, questions arise as to how well people involved in forensic settings understand how memory works. Numerous studies have shown that police, judges, jurors and others involved in the legal system have a number of naïve beliefs about memories, ones that contradict scientific research (e.g., Benton, Ross, Bradshaw, Thomas, & Bradshaw, 2006; Magnussen, Melinder, Raja, & Stridbeck, 2010; Rubin & Bernstein, 2007). For example, there is the belief that the more specific details a complainant can remember (e.g., verbatim conversations, the clothing people were wearing, the day of the week the event happened, what they ate for breakfast that day) the more accurate the memory (see Bell & Loftus, 1988). Of course, what the scientific study of memory shows is that quite often rather than being seen as a sign of the veracity of that memory such details are a harbinger for scepticism (e.g., Howe, 2013a, 2013b).

This disconnect between the science of memory and the beliefs held by those involved in judicial processes can lead to fundamental miscarriages of justice, many of which can be found on the Innocence Project websites in the USA (http://www.innocenceproject.org/) and the UK (http://www.innocencenetwork.org.uk/). In many of these cases, convictions were obtained on the basis of memory evidence (e.g., faulty eyewitness identifications). Of course, in many legal cases, decisions to lay charges in the first place often hinges on memory evidence educed from police interviews and subsequent convictions can also hinge on this interview evidence. When such evidence is viewed through the veil of naive beliefs about memory, and memory experts are not in place to provide testimony about how memory actually works, then police and triers of fact are making decisions about the weight of memory evidence without actually understanding how memory works.

Of course, the science of memory is an ongoing project, but our current understanding of recollective experiences is that they are fragmentary, contain amnesic gaps, information is often out of order, contain guesses and often contain incorrect details. Sometimes the incorrect nature of these details are known to the rememberer although oftentimes they are not, having been produced and inserted into the narrative in an automatic fashion, outside of conscious awareness (Conway, Howe, & Knott, in press; Howe, 2013a). Research from the past 40 years has taught us what we understand about these fundamental attributes of false memory and suggestibility.

Importantly, research on memory (true and false) is now being successfully integrated into some courtroom procedures and today we see signs that the law is beginning to keep pace with science. Many of these advances, both in our understanding of memory and its successful integration into some forensic settings, are the result of some landmark decisions that emerged in cases from the 1980s and 1990s. The focus of this review is to consider the consequences of false memories in legal proceedings, examining the nature of false memory with a look at lessons from these cases and their modern day consequences. In this review, we consider memory and suggestibility in three forensic contexts including children as eyewitnesses, historic sexual abuse (HSA) and eyewitness (mis)identification.

## CHILDREN AS EYEWITNESSES

The degree to which heightened levels of suggestibility may affect children's ability to accurately report what they have witnessed has been the focus of scholarly attention since the turn of the twentieth century. However, these issues became particularly important, at least in the USA, during the 1980s and 1990s as the number of children involved in legal proceedings for sexual abuse increased dramatically (see Ceci & Bruck, 1993, 1995). This was the result of a large shift in society's recognition of, and sensitivity to, problems of abuse suffered by children. This led to important changes in legal proceedings not only in the USA, but in several countries across the Western world that allowed children to provide uncorroborated testimony in cases of violence and abuse. In fact, summaries of statistics from the National Center on Child Abuse and Neglect in America (Poole & Lamb, 1998) showed that the number of investigations of child sexual abuse quadrupled from the late 1970s to the 1990s. Indeed, Ceci and Bruck (1993) estimated that in the early 1990s over 13,000 children testified each year in sexual abuse cases.

With such allegations often there is little forensic evidence. Sexual victimisation of children typically occurs in private and usually involves only two people, the victim and the perpetrator. Of course, depending on the nature of the sexual abuse, there may be physical signs that abuse has occurred. However, more often, such signs are not present (McGough, 1993). As Brainerd and Reyna (2005, p. 294) pointed out:

> Even acts of sexual abuse that involve penetration of the vagina or rectum may fail to leave any reliable evidence. Vaginal and rectal tissue may heal and may not be noticeably damaged by penetration. Moreover, when tissue damage is present, this is not in itself reliable evidence of sexual penetration because these injuries can occur in other ways. As a rule, damage to vaginal or rectal tissue is only a reliable indicator of sexual penetration when it is accompanied by bodily fluids, tissue, or hair from the perpetrator.

Because of the frequent absence of physical evidence, forensic investigators rely on children's memory reports from (police, social worker) interviews as evidence in such cases. Although researchers in this field uphold the statement that most cases that end up in the legal system involve true claims of sexual abuse, a number of sensationalised "day care abuse" cases from the 1980s and 1990s led to fundamental concerns regarding the reliability of children's testimony and the interview techniques and strategies used to elicit information from children in forensic situations. As we will see below, fantastical claims of ritualistic abuse, pornography, cults and long-term abuse of multiple victims were reported in instances where little medical evidence could be found, and where no adult eyewitnesses could corroborate. Nevertheless, such claims were believed by health professionals, police, prosecutors, and the family and friends of those involved. At the time, the prosecutors made the argument that the children would not lie about sexual abuse, whereas the defense argued that the claims and reports made about the abuse were a result of repeated suggestive interviewing by not only the police, but the children's parents, social workers and therapists who were in contact with the children. Although we now have scientific evidence to support this claim, at the time there was little direct evidence to suggest this could be the case. As Ceci and Bruck (1995) stated, because of this lack of evidence and common belief that the children would not be able to invent stories of sexual abuse, many of these cases ended in convictions.

Today we know, of course, that eliciting such evidence from children can be controversial and that the reliability of this memory evidence depends not only on the style of questioning but also on the types of questions children are asked. Because of these concerns, memory development researchers took a special interest in the interviewing techniques used to elicit children's memory reports and, ultimately, how children's reports can be moulded by suggestions implanted by adult interviewers (for a review, see Ceci & Bruck, 1995). Experimental exploration of these techniques has led to important insights regarding child suggestibility and forensic interview techniques for children (Ceci & Bruck, 1993, 1995; Poole & Lamb, 1998). The culmination of this research resulted in a considerable revision of what constituted appropriate questioning of child witnesses (Ceci & Friedman, 2000). Today, the preferred interviewing strategy with children is the one developed by the National Institute of Child Health and Human Development (NICHD; see Lamb, Orbach, Hershkowitz, Esplin, & Horowitz, 2007). Here, there is not just a specific structure to the timing and sequence of how a child should be interviewed, but also recommendations for what *not* to do.

To understand how we came to this protocol for questioning children, we look back at two of the key legal cases that highlight just how susceptible children can be to suggestive pressure during interviews. We then discuss the ensuing research that has documented the suggestive and coercive procedures that we now know can substantially increase the risk of children's susceptibility to making false allegations.

## The McMartin Preschool case

The McMartin Preschool case was the first case of its kind to receive national media attention in the USA (for a detailed history see Butler, Fukurai, Dimitrius, & Krooth, 2001). In 1983, seven teachers, including the owner of the preschool, Peggy McMartin Buckey, and her son were accused of child abuse and satanic ritual abuse involving several hundred children over a 10-year period. Among the more bizarre allegations, the teachers were accused of kidnapping children and flying them to an isolated farm where the children saw animals tortured and were forced to engage in group sex. The main and only supporting evidence came from the investigative interviews of the children, conducted by a Los Angeles social service agency under contract to the prosecutor's office (Wilkerson & Rainey, 1990). The investigation began in 1983 and ended in the early 1990s. It became one of the longest and most expensive trials in California history. All charges were eventually dropped against the five teachers without going to trial. Peggy Buckey and her son Raymond were tried but later acquitted and all charges were dropped.

## The Wee Care Nursery case

In 1988, Kelly Michaels (*State v. Michaels*) was accused of sexually abusing 20 preschool children at the Wee Care Nursery in Maplewood, New Jersey. It began when a former 4-year-old pupil of Michaels had his temperature taken at the paediatrician's office and remarked "That's what my teacher does to me at school" (Manshel, 1990, p. 126). The paediatrician advised the mother to inform the state's child protective agency who interviewed the child two days later. During the interview, the child inserted his finger into the rectum of an anatomical doll. Two other boys were reported by the child to have the same thing happen to them. When questioned, the boys denied this had happened, but one boy did say Michaels touched his penis. Following these initial allegations, the Wee Care Nursery School sent out a letter to parents informing them of an investigation regarding serious allegations. A meeting with a social worker followed this, where the parents were told of the common occurrence of child sex abuse in children. She urged the parents to examine the children for any signs of abuse, including genital soreness, nightmares, bed-wetting and notable changes in behaviour. Soon many more allegations arose (Ceci & Bruck, 1993).

Michaels was accused of raping and abusing these children over a seven-month period during school time. Among the many allegations against Michaels, she was accused of licking peanut butter off children's genitals, playing the piano in the nude and raping them with knives, forks, spoons and Lego blocks (Ceci & Bruck, 1993). None of these alleged acts were ever noticed by other members of staff at the school and none of the parents noticed any physical signs. A jury in the Superior Court of New Jersey convicted Michaels of 115 counts of aggravated assault, sexual assault, endangering the welfare of children and terroristic threats. In 1993, the Appellate Division reversed the convictions based, in part, on an amicus brief (a written brief by a "friend" of the court, someone who is not a party to the case but who offers information bearing on the case such as a legal opinion or an expert or learned treatise) by a committee of concerned scientists that questioned the reliability of the interviewing techniques used with the 20 child complainants. The court held that, "courts must provide a remedy where the record demonstrates that an accuser's testimony is founded upon unreliable perceptions, or memory caused by improper investigative procedures if it results in a defendant's right to a fair trial being irretrievably lost" [see *State v. Michaels*, 264 N.J.Super. 579, 631-32, 625 A.2d 489 (App. Div.1993)]. The Supreme Court of New Jersey affirmed the reversal of the judgement of Conviction [see *State v. Michaels*, 136 N.J. 299, 642 A.2d 1372 (1994)], and on 1 December 1994, the Essex County Prosecutor's Office dismissed all charges against Michaels.

The McMartin and Wee Care Nursery cases are the most widely documented in the scientific community surrounding child eyewitness testimony. The repeated interviewing, the suggestive

and coercive nature of the questioning and the length of the interrogations are among the factors in these cases that ultimately led to many false allegations. Indeed, the transcripts of interviews from these cases highlight how the dynamics of a conversation or interview can be so powerful as to lead children to produce graphic and believable statements of events that never happened to them. In the amicus brief submitted to the Supreme Court of New Jersey, Bruck and Ceci (1995) demonstrated that these problems were rife in children's interviews and were related to children's suggestibility. Further, they cited specific instances in the interviews from the Michaels case where interviewing techniques were considered to be so faulty that they will have substantially influenced the reliability of children's testimonies leading to reports that were seen as mere reflections of the interviewers' suggestions. Although a complete assessment of these transcripts can be found in a reprinted version of the amicus brief (Bruck & Ceci, 1995), we will briefly highlight some key examples that demonstrate those factors that influence children's susceptibility to suggestion from the interview transcripts of both the Kelly Michaels and McMartin cases (Schreiber et al., 2006).

To begin, we have seen from previous studies important evidence that interviewers' beliefs about an event can influence their style of questioning and, in turn, the accuracy of a child's testimony. For example, White, Leichtman, and Ceci (1997) provided interviewers with reports of a scripted event that had been acted out with preschool children. The event involved physical touching, carrying out unusual actions and acting or observing another child's actions. Unknown to the interviewers, some of the events described in the report were incorrect. All children were interviewed twice, once after a month and again after two months had elapsed. The interviewer was asked to conduct an interview to elicit the most factually accurate report from the children. Results showed that the interviewer's questioning was biased to the details provided in the report of the event. Furthermore, younger children agreed more often than older children to questions based on incorrect information. Children agreed more readily to unusual (e.g., children had put marbles in the researchers ear) incorrect events, and younger children's reports became more inaccurate with misleading information over time. Many would also make inaccurate elaborations even after they had originally correctly rejected queries about events that did not happen. For example, when asked, "Did you kiss the researcher?" a child might rightly answer "No" but then comment "but the researcher kissed me."

The effect of interviewer bias and the failure to test alternate explanations for children's behaviour and answers can be seen in the interviews from children in the Michaels case (Bruck & Ceci, 1995). There are many instances where the interviewer persisted with a particular line of inquiry (using repeated leading questions, bribes and threats) even after the child denies the event occurred, or after the child provides a bizarre or inconsistent statement that should be followed up. Because the interviewers held preconceived biases, and believed that the major objective was to get children to admit that they had been sexually abused, the interviewers did not consider that such statements might show that the children were confused. Moreover, the interviewers made no attempt to make sense of what the children were saying; that is, whether the children were just pretending, telling a joke or repeating something that had been said to them previously. We see evidence of such a bizarre dialogue below in an interview with one of the Michaels children:

> Interviewer: Do you think that Kelly was not good when she was hurting you all?
> Child: Wasn't hurting me. I like her
> Interviewer: I can't hear you, you got to look at me when you talk to me. Now when Kelly was bothering kids in the music room
> Child: I got socks off
> ---
> Interviewer: Did she make anybody else take their clothes off in the music room?
> Child: No
> Interviewer: Yes
> Child: No
> ---
> (Michaels Interview, Bruck & Ceci, 1995, p. 276)

A range of suggestive techniques has been identified in the transcripts from the McMartin and Michaels cases. This category can cover a large range of suggestive influences. Schreiber et al. (2006) highlight five kinds of techniques: (1) reinforcement, (2) repetition of questions, (3) co-witness information (peer pressure from other children), (4) inviting speculation and (5) introducing new information. *Reinforcement* can take a positive or negative form. Positive reinforcement involves praising the child for something they have said or something they could say that will please the interviewer:

> Interviewer: So I bet if you guys put on your thinking caps, you can help remember it. Now let's make a test of your brain and see how good your memories are.
> (McMartin Interview No. 107, pp. 32–33, 38)

A negative reinforcement or consequence occurs when a child's answer is criticised or disagreed with. This indicates to the child that the statement is inadequate and dubious. *Repetition of questions* can also be considered as a form of negative feedback, as the child sees that the previous answer given was unacceptable. This is usually associated with choice questions and research has shown a reduction in accuracy of children's reports using repetition (Poole & White, 1991, 1995). The McMartin and Michaels interviewers frequently used repeated questions when a child denied abuse or when the child's answer was inconsistent with what the interviewers believed. In many exchanges, the children would at first consistently reject the suggestive questions, but with repetition, the child would change their answers:

> Interviewer: When Kelly kissed you, did she ever put her tongue in your mouth?
> Child: No
> Interviewer: Did she ever make you put your tongue in her mouth?
> Child: No
> Interviewer: Did you ever have to kiss her vagina?
> Child: No
> Interviewer: Which of the kids had to kiss her vagina?
> Child: What's this?
> Interviewer: No that's my toy, my radio box. Which kids had to kiss her vagina?
> Child: Me
> (Michaels Interview, Bruck & Ceci, 1995, p. 280)

We know from previous research that reinforcement (both positive and negative) can have a profound effect on children's behaviour and has considerable influence when used in child interviews. In a controlled laboratory-based study, Garven, Wood, and Malpass (2000) provided evidence for this effect. Here, children (5- to 7-year-olds) were visited in their classroom by a young man known as Paco Perez. A week later the children were interviewed about the visit using leading questions that were either mundane ("Did Paco break a toy while he was visiting?") or fantastic ("Did Paco take you somewhere in a helicopter?"). Half of the children were further reinforced with praise for answers that included false allegations regarding Paco and mild negative feedback for answers that did not implicate Paco. Reinforced children (35%) made more false accusations against Paco than non-reinforced children (12%). Interestingly, for fantastic questions, the false accusation rate was 52% for reinforced children versus 5% for non-reinforced children. Furthermore, when interviewed a week later without reinforcement or leading questions, the children reinforced at the previous interview continued to make accusations at about the same rate as previously.

Research has shown that co-witness information is a form of "social proof" that leads to conformity pressure to go along with other child witnesses (Leichtman & Ceci, 1995) and can be seen throughout the transcripts from the day care cases:

> Interviewer: You see all the kids in this picture? Every single kid in this picture has come here and talked to us. Isn't that amazing? … These kids came to visit us and we found out they know a lot of yucky old secrets from that old school. And they all came and told us the secrets. And they're helping us figure out this whole puzzle of what used to go on in that place.
> (McMartin Interview No. 107, pp. 16–17)

> Interviewer: All the other friends I talked to told me everything that happened. 29C told me. 32C told me … And now it's your turn to tell. You don't want to be left out, do you?
> (Michaels Interview, Bruck & Ceci, 1995, p. 283)

Parents had also told their children that other children had named them as victims. Bruck and Ceci refer to Child 1C who finally disclosed his "abuse" to his mother but only after she had told him that others had mentioned him as a participant.

In a similar vein, the Michaels and McMartin children were continually asked to speculate whether a particular event could have happened or indeed asked to pretend that an event had happened. Research has shown that such techniques lead to errors in children's recollections due to failures of source monitoring. Inviting speculation may have profound effects on the accuracy of later recall because it is a form of self-generated misinformation. Research shows that when children are asked to "picture in their head" a particular event, false assent not only occurs, but increases across multiple sessions and continues even when the children are informed that the interviewer asked them to imagine events that did not really happen (e.g., Ceci, Loftus, Leichtman, & Bruck, 1994). Evidence of inviting speculation occurred frequently in the day care interviews,

with children often been asked to imagine how certain instruments could be used to abuse the children, and asking the children to show on anatomical dolls where their teacher may have touched them and other children in their class:

> Interviewer: Why don't you show me how you think a little girl can be hurt by the fork? (Michaels Interview, Bruck & Ceci, 1995, p. 292)

Although with age, children become less susceptible to misinformation, introducing new information can increase false allegations at all ages. Schreiber et al. (2006) conducted a quantitative analysis of instances of new information in the McMartin and Michaels cases as well as a set of Child Protective Services (CPS) interviews. These were 100 sexual abuse interviews from the CPS and considered as "normal" interviews that created a comparison group. An interviewer question or statement only received a rating for introducing information if it (1) introduced new material that was sexual, violent or negative in content, (2) was contradictory or substantially inconsistent with the child's previous statements or (3) referred to unusual and highly specific events or ideas (e.g., being flown away from school in a helicopter) not previously mentioned by the child. For example:

> Interviewer: How about Naked Movie Star? You guys remember that game?
> Child: No.
> Interviewer: Everybody remembered that game. Let's see if we can figure it out.
> (McMartin Interview 107, p. 32)

While just under 20% of the statements and questions from the McMartin and Michaels interviews involved new information, only 3% of statements in the CPS interviews contained new information or information not consistent with the child's statements.

Although considerable research in the misinformation field has examined the effect of single instances of implanted misinformation, if children are repeatedly given misinformation in a series of interviews, it can have serious consequences on the accuracy of their later reports (Andrews & Lamb, 2014; Bruck & Ceci, 1995). Misinformation not only becomes incorporated into children's subsequent reports but also tends to increase fabrication rates that do not always directly mirror the content of the misleading information. For example, Bruck, Ceci, Francoeur, and Renick (1995) interviewed children about an event that happened approximately 1 year earlier. Children visited a paediatrician's office where a male paediatrician gave each child a physical examination, an oral polio vaccine and an inoculation. During this visit, a female research assistant also talked to the child about a poster, read them a story and gave them some treats. They were re-interviewed four times over a one-month period. Some of the children were asked misleading questions that suggested the roles were reversed and that the research assistant completed the examination and gave them the inoculation and vaccine. Other children acted as controls and received no misleading questions regarding the research assistant and paediatrician. In the final interview, children were asked to freely recall what happened during the visit to the paediatrician. Children in the control group provided highly accurate information, whereas more than half of the children in the misled group reported that the female research assistant gave them the physical examination. Interestingly, of these children, 45% also included non-suggested but inaccurate details (e.g., reported that the assistant had checked their ears and nose). Although there is no clear figure of the number of times children in the day care cases were exposed to repeated (mis)leading questions, children were questioned by their parents, by therapists, members of the prosecutors' office leading up to the trial and by the prosecution and defense attorneys at the trial. When suggestions are implanted, not only can they become incorporated into the report but are used in highly productive ways to distort reality, something that is highly likely to have occurred in the day care cases discussed here.

We have referred to a substantial number of suggestive interview techniques that have been shown to have considerable impact on the accuracy of children's reports. However, there are several other related factors that ultimately led Bruck and Ceci (1995) to conclude that the conditions under which the children were interviewed were "unsafe." For example, young children are sensitive to the status and power of their interviewers. If a young child is being interviewed by someone they perceive to be an authority that child will be unlikely to challenge something that has been said by that person. Bruck and Ceci (1995) state that this power differential is one of the most important factors in the susceptibility to suggestion in children. Research has shown this fact to be true (see Ceci & Bruck, 1993) and the Michaels interviews show repeated reference to the status and trustworthiness of the

interviewer, referring to their connection with law enforcement:

> I'm a policeman, if you were a bad girl, I would punish you wouldn't I? Police can punish bad people
> ---
> I'm going to introduce you to one of the men who arrested Kelly and put her in jail.
> (Michaels Interview, Bruck & Ceci, 1995, p. 286)

Bruck and Ceci (1995) also highlight the (mis)use of anatomically detailed dolls during the Michaels interviews. Dolls are often used by professionals working with children to help cue recall, overcome language problems and to provide a way to communicate if they are shy or embarrassed. Excessive preoccupation with the genitalia or distress shown when they are undressed is believed to show signs of abuse (Mason, 1991). However, research has shown that dolls are suggestive and can encourage sexualised play even if the child has not been abused (e.g., Gardner, 1989; Terr, 1988). Ceci and Bruck (1993) found that after a routine examination with a paediatrician (some of which included a genital examination), 3-year-old children were inaccurate when reporting how and where they were touched. Children who were not touched demonstrated with dolls that they were touched, whereas some of the children that were touched falsely showed that penetration had occurred. Children also demonstrated a number of other bizarre behaviours. When asked what the doctor did with a stethoscope, some children suggested it was used on their genitals. When asked, "How he might use a spoon?" a small number of children inserted it into the genital or anal opening of the doll.

The use of anatomical dolls seems significant in the Michaels interviews. Bruck and Ceci (1995) reported that anatomical dolls were shown to children in 24 of the 39 interviews before sexual abuse was reported by the child. Many suggestive aspects of the interviews involved sexualised questioning in the context of demonstrations with the dolls. For example, children were asked to speculate about how silverware could have been used:

> Interviewer: Why don't you show me how you think a little girl can be hurt by the fork?
> And
> Interviewer: Why don't you show me what Kelly did with the big wooden spoon.

Often, as shown above, the children resisted these suggestions, but sometimes after much repetition, the children responded by poking the silverware into the genitalia or buttocks of the doll:

> Interviewer: Can you think of a way somebody might have used this to hurt little girls?
> Child: (indicates the tummy)
> Interviewer: Where else do you think a little girl could have gotten hurt with a wooden spoon?
> Child: The belly button.
> Interviewer: Where else do you think a little girl might get hit with a wooden spoon? How do you think Kelly used this fork to hurt little girls?
> Child: Belly button.
> Interviewer: Where else?
> (finally after many more persistent questions)
> Child: Bottom.
> (Michaels Interview, Bruck & Ceci, 1995, pp. 292–293)

Note here the similarities with the paediatrician study when children were asked what the doctor might do with a spoon. Professionals are now cautious of the use of anatomical dolls with young children as their use promotes sexualised behaviour and false reports in non-abused children.

Further factors such as interview length and types of questioning have also been linked to reliability issues in forensic interviewing of children and false memory development (see Ceci & Bruck, 1993, 1995; Poole & Lamb, 1998). Interview length concerns not only the measure of temporal length of the interview but also the number of utterances per interview. Interview length becomes a concern if young children show signs of fatigue or wandering attention (e.g., Home Office, 2002). Published guidelines for child forensic interviews also emphasise the importance of allowing children to talk at length and describe in their own words, the experiences in question (Home Office, 2002; Poole & Lamb, 1998). Often, however, the interviewer can be seen to do considerably more talking than the child. In fact, the ratio of interviewer words to child words has been used as a rough indicator of suggestive and unskilful interviewing (Underwager & Wakefield, 1990). In a quantitative analysis of interview length and ratio of utterances, Schreiber et al. (2006) found that the McMartin interviews lasted approximately 1 hour and 14 minutes, whereas the Michaels interviews lasted approximately 23 minutes. In both cases there were significantly more interviewer compared to child words (ratio = 4.60 and 4.67, respectively). Guidelines for interviewing children typically recommend that the interviewer utilise open-ended ("Tell me what happened") or free narrative questions where possible (American Professional

Society on the Abuse of Children, 2002; Home Office, 2002; Poole & Lamb, 1998). They are more likely to lead to accurate accounts of an event and reduce opportunity for suggestion. However, young children are not always capable of providing detailed narratives so guidelines also indicate that open-ended questions can be followed up with yes/no questions ("Did it happen more than once?"), choice questions ("Was it night time or day time?") or focused/specific questions ("Where did it happen?"). However, such questions should be used sparingly and should be of a non-suggestive nature. Unfortunately, in child forensic interviews such questions are often overused and used in a suggestive manner. Schreiber et al. (2006) reported that the majority of questions in the McMartin and Michaels interviews were of the yes/no form followed by focused/specific, with only around 10% of the questions being free recall/open narrative.

We have presented a number of features that, when present in interviews or interactions with young children, may greatly compromise the accuracy of their reports. Many of these features, as well as others, were highlighted after the widely publicised day care cases and the need for a systematic change was called for when it came to the investigative interviewing of children. This systematic change came in the form of interviewing protocols and the procedures that should be used when interviewing children. We now take a closer look at the development of these protocols.

Expert professional groups have offered recommendations regarding the most effective ways of conducting forensic or investigative interviews with children (e.g., American Professional Society on the Abuse of Children, 1990, 1997; Home Office, 1992, 2002; Jones, 2003; Lamb, 1994; Orbach, Hershkowitz, Lamb, Sternberg, Esplin, & Horowitz, 2000; Poole & Lamb, 1998). Such recommendations all state that the interview should be conducted as soon as possible after the alleged event by interviewers who introduce as little information as possible while encouraging as much information as possible from the child using open-ended questions to elicit narratives of the event. Before substantive details of the event are discussed, the interviewer should explain their role, the purpose of the interview and set "ground rules" (describe only events that "really happened," use "don't know," correct the interviewer if they are wrong and ask for clarification if they do not understand a question). Interviewers are urged to use open-ended questions as the norm, only use recognition prompts or yes/no and forced choice questions later in the interview, and only when needed to elicit undisclosed forensically relevant information (Lamb et al., 2007). Research has shown that open-ended questions are much more likely to elicit accurate information than that elicited using more focused recognition responses (Lamb & Fauchier, 2001; Orbach & Lamb, 1999, 2001). This is likely because open-ended questions force the child to recall information from memory, whereas more focused prompts, provided by the interviewer, often only require the child to recognise information. Interviewers are advised not to use yes/no or forced choice questions because we have seen how suggestive they can be.

However, despite this research and the expert-endorsed recommendations, such interviewer techniques were seldom followed. Lamb et al. (2007) reported that descriptive studies of forensic interviews from the USA, UK, Canada, Sweden, Finland and Israel consistently showed little use of open-ended prompts, and that interviewers, even if they had been trained in proper procedures, frequently deviated from these recommendations, usually being unaware they had done so.

Because forensic interviewers often have difficulty adhering to recommended interview practices in the field, Michael Lamb and colleagues at the NICHD developed a structured interview protocol designed to translate professional recommendations into operational guidelines (Lamb et al., 2007; Orbach et al., 2000). The structured NICHD Protocol provides explicit instructions to guide interviewers through all phases of the investigative interview, from the initial introductory phase, the rapport-building phase that accustoms children to the open-ended interview style while building a relationship with the interviewer, to the substantive phase which identifies a series of open-ended prompts to identify the target, and finally to the directive questioning phase to cover crucial details that are still missing (see Table 1 for a breakdown of these phases).

The findings obtained in independent field studies in four different countries (e.g., Cyr, Lamb, Pelletier, Leduc, & Perron, 2006; Lamb, Orbach, Warren, Esplin, & Hershkowitz, 2006; Orbach et al., 2000) demonstrate the effectiveness of the NICHD Protocol. When forensic investigators employ the structured NICHD Protocol, they enhance the accuracy and quality of

**TABLE 1**
Phases of the NICHD Protocol adapted from Lamb et al. (2007)

| | |
|---|---|
| Phase I: Introduction | The interviewer introduces him/herself, clarifies the child's task (the need to describe events in detail and to tell the truth), and explains the ground rules and expectations (i.e., that the child can and should say "I don't remember", "I don't know", "I don't understand", or correct the interviewer when appropriate). Examples are provided to ascertain whether the child understands these rules.<br>*'And if I say things that are wrong, you should tell me. Okay?'*<br>'So if I said that you are a 2-year-old girl [when interviewing a 5-year-old boy, etc.], what would you say?' |
| Phase II: Rapport building | The interviewer aims to create a relaxed, supportive environment for children and to establish rapport between children and interviewer. The interviewer asks a series of questions to get to know the child better.<br>'*Tell me about things you like to do*.' |
| Phase III: Training in episodic memory | Children are prompted to describe a recently experienced neutral event in detail. This "training" is designed to familiarise children with the open-ended investigative strategies and techniques used in the substantive phase while demonstrating the specific level of detail expected of them<br>'*A few [days/weeks] ago was* [holiday/birthday party/the first day of school/other event]. *Tell me everything that happened on* [your birthday, Easter, etc.].'<br>*And then what happened*?<br>'*Earlier you mentioned* [activity mentioned by the child]. *Tell me everything about that*.' |
| Phase IV: Substantive interview | This stage consists of a number of sub stages that include the transition to the substantive issues:<br>'*Now that I know you a little better, I want to talk about why* [you are here] *today*.'<br>Followed by open-ended questions related to the allegations<br>'*Tell me everything about that*.'<br>'*Then what happened*?' or '*Tell me more about that*.'<br>Once the child has provided a narration of the allegation using open-ended prompts the interviewer can move on to elicit information that has not been mentioned by the child. For example:<br>'*When you told me about the time in the basement, you mentioned that he took off his trousers. Did something happen to your clothes*?' [Wait for an answer.] [After the child responds, say:]<br>'*Tell me all about that*.'<br>'*I see* [I heard] *that you have* [marks/bruises] *on your* [————]. *Tell me everything about that*.'<br>The interview closes after the child has been asked if they have any questions. The interviewer finishes by asking a neutral topic question such as where they are going after they leave today. |



information elicited from alleged victims of all ages. Research has shown that when using the protocol at least three times more open-ended questions are used and there is an approximate 50% drop in the number of option based and suggestive prompts in comparison to similar interviews not using the protocol. The protocol is also effective with young children with about half of the informative and forensically relevant details and more than 80% of the initial disclosures of sexual abuse being provided by preschoolers in response to free recall prompts. These findings show that interviewers should only introduce information if essential information is still missing after free recall and directive prompts have been exhausted because these alternatives are more likely to elicit inaccurate information and their introduction may contaminate any additional information provided.

The NICHD Protocol is informed by current research into child forensic interviewing and remains a "work-in-progress" (Hershkowitz, Lamb, & Katz, 2014; Pipe, Orbach, Lamb, Abbott, & Stewart, 2013; for recent, comprehensive review, see Lamb, Malloy, Hershkowitz, & La Rooy, in press). Nevertheless, the structure of the protocol provides trained interviewers with a more universal and useable set of guidelines that can be easily adhered to. The end result is a protocol that can elicit accounts that are more likely to be accurate and less likely to be challenged in court. If experienced interviewers can follow guidelines like the structured protocol and continue to review their interviews with other experienced interviewers then even children as young as 4 years of age can provide accurate and forensically usable information about their experiences when interviewed (Lamb et al., 2007).

## HISTORIC SEXUAL ABUSE

So far we have focused on factors that can influence both the accuracy and fallibility of

children's memory for recent events. However, what we know about memory and the inchoate beliefs about memory can be damaging, especially in cases of "historic" sexual abuse (HSA). We refer here to cases of HSA in which, typically, an adult recalls abuse that took place years and even decades earlier, usually when they were a child or a young teenager. As with many cases of sexual abuse, in HSA cases memory is often the only evidence. Other evidence such as social service records, medical records, reports from teachers and other professionals is often lacking, incomplete or unreliable.

The evidence in these cases consists of a witness statement given by the complainant to the police. An initial free recall account is followed up by a series of detailed questions about specific details of the event, for example, what were they thinking and feeling, what clothes were they wearing, what clothes others (e.g., the accused, other witnesses) were wearing, what the weather was like, what day of the week it was, what time of day it was, what the furniture in the room was like, position of body parts, conversations, and so on. As the witness is repeatedly asked to recall these details, the police officer strategically summarises what is being said at convenient points in the developing narrative. The outcome of this interview process is an elaborate, fluent and detailed account of what the complainant believes to be an accurate narrative of their memory for an event (or set of events) that transpired years earlier. Often the resulting witness statement contains considerable implausible details, such as what clothes the witness was wearing when they went to bed 35 years earlier, aged 5 years old—details that adults simply cannot remember (Wells, Morrison, & Conway, 2014).

By way of an example, Conway (2013) refers to a legal case in which he acted as an expert memory witness. The complainant made a witness statement at the age of 20 regarding her repeated abuse by her father between the ages of 3–13 years. The statement contained a series of memories of acts of sexual abuse with the detailed and vivid memory of a rape by multiple assailants in her father's hardware store. The details were convincing enough to the jury to elicit a guilty verdict, leading the father to receive a 14-year prison sentence. Conway acted as an expert witness when the case went to the Appeals Court. In his report he highlighted a number of concerns, one of which was the fluent narrative that contained rich detail provided by the complainant about events allegedly occurring before the age of 8 years. Conway refers to the earliest memory provided by the compliant:

> I remember standing in the garden looking at the back of the house—it was July just before my third birthday. The garden was full of rubbish and weeds and the back of the house was shabby and in disrepair with cracked paint peeling off the windows, he [her father] never kept anything in good shape.

A 2- to 3-year-old would not be able to have such a rich memory for a relatively ordinary event. The use of words such as "shabby" and "disrepair" are adult concepts, and it is highly unlikely to have any memory for an event before her third birthday. The complainant also recalled a time marker "July", but children typically have a poor ability to record such details (Thompson, Skowronski, Larsen, & Betz, 1996). The typical defense against this argument is that the rememberer has the image in their mind from the time of the event and is now describing it in their own "adult" terms. However, this argument has its limitations. Remembering what one cannot understand at the time and remembering stories where comprehension is low, is subject to distortion, condensation and error (Bartlett, 1932).

Other accounts from expert witnesses provide equally unusual detail. Howe (2013b) observes a vivid memory from a witness statement that reports an event from when the complainant was 3 years old:

> I was upstairs and I was playing in the spare room, and I was a bit upset. I was wearing my favorite pink dress and I remember him coming up to me … and he just picks me up and he just sat me on his lap and gave me a really big squeeze. He was wearing jeans and a t-shirt and would just sit there with his legs straight down in front of him. When he picked me up he would sit me facing the same way, he just pulled me really close in to him … he had his arms around my waist. I remember feeling uncomfortable.

It is important to note here that neither Howe (2013b) nor Conway (2013) claim that adults who have experienced trauma in childhood cannot remember these events, because they do, particularly if these events are still viewed by the person as salient or life-changing experiences. Indeed, adults who recall documented HSA experienced some 12–21 years earlier were able to accurately recollect core features of these experiences. However, these narratives are typically sparse

on peripheral information and contain reconstructive errors (Alexander et al., 2005).

The expert memory witnesses' role here is to inform the jury of the scientific facts about how memory works. In particular, that such reports of memory do not conform to what we know about memory. Memories with fluent narratives would be considered as exceptional and unusual. Such detail would be rarely seen in adult recall of either positive or negative experiences from childhood (Wells et al., 2014). Instead, childhood memories are fragmentary, contain amnesic gaps, information is often out of order, contain guesses, unconscious inferences and often contain incorrect details. Rarely is the incorrect nature of these details known to the rememberer. This is because more often than not, the brain (e.g., via reconsolidation processes—see Howe, 2013a) automatically adds in plausible details, outside of conscious awareness (Wells et al., 2014). This process of "adding in" of many other types of details is simply part of the complex memory construction process. Nevertheless there is a powerful misconception in society generally that the more details one can recall and the more specific they are, the more likely it is for that memory to be accurate. Indeed, a polished, fluent and detailed account that typically results from a police interview is considered thorough evidence for the prosecution. Research contradicts this, however, and in fact the greater the detail the greater the likelihood of error (Luminet & Curci, 2009).

Moreover, we know that early memories are more fragile than memories formed in later childhood and adulthood (e.g., Howe, 2011), and that peripheral, episodic details deteriorate more rapidly than core components. Thus, it is often the case that as an adult, we are left with quite vague and contextually poor recollections of the past (Strange & Hayne, 2013). Indeed, when we consider the development of our memory system and the reconstruction process itself, we can see the obvious difficulties we face when remembering events from our childhood. Memories formed before 4 or 5 years of age are poorly remembered, often fragmentary and not well preserved for future use (Howe, 2011; Howe, Courage, & Rooksby, 2009). The more mature autobiographical memory system does not develop until after the age of 5–7 years (Howe, 2011, 2013a), but stable adult-like autobiographical memories are rarely seen before the age of 8–10 years, with recall from this period only possible if the event is distinctive and memorable. Thus, unlike memory in childhood for childhood events (which can often be accurate at that time—see the previous section in this review), adults' memory for childhood events can be quite fragmentary and often decontextualised, depending on the age at which the event(s) took place.

What adults can remember from childhood is also reliant on the developments that occur in the semantic or conceptual components of memory (Howe, 2011). Young child's knowledge base is not as well developed as that of older children and adults. Therefore when we recall an event from childhood, we expect that the language and concepts associated with the memory correspond to that person's knowledge base at the time the memory was encoded. This becomes particularly relevant when referring to memories of childhood sexual abuse. In our current adult worldview, such an event would evoke the concept and feeling of disgust, but such a concept is not believed to have developed until approximately 5 years of age (Widen & Russell, 2013). Indeed, the more complex concepts, including those related to emotion (both positive and negative), did not appear until later in childhood which was reflected in the age of earliest memories associated with that concept (Morrison & Conway, 2010).

There are several other factors to consider in the developing stability and longevity of autobiographical memories. With age, we become more efficient at encoding, storing and retrieving information that allows for the binding of information into more coherent memories (Newcombe, Lloyd, & Balcomb, 2012). The emergence of the cognitive-self around the age of 18–24 months allows events to be encoded, stored and retrieved as personal, ones that have happened to "me" (Howe & Courage, 1997). Finally, language development allows us to share our past experiences with others (e.g., Nelson & Fivush, 2004). Conversations with parents can help restructure and integrate personal experiences and enhance retention of autobiographical events. However, such conversations with others (e.g., peers, parents, teachers) can also fundamentally change children's memories of events they have experienced.

## Is there a special case for repressed memories?

Research has shown us that all memories, regardless of whether they are for traumatic or

mundane events that occur in childhood, adolescence or adulthood are subject to decay, forgetting, interference and other memory mechanisms that inevitably lead to constructive errors and memory distortion. This becomes particularly important when we consider the common misbelief that memories for stressful and traumatic events can be protected via some "special memory mechanism". For example, allegations of repressed and recovered memories of childhood sexual abuse typically rely on repressive or dissociative mechanisms that render painful material inaccessible to consciousness (e.g., Briere & Conte, 1993; Elliot & Briere, 1995). The belief is that when these recollections do return, such events are presumed unlikely to be forgotten in "ordinary" ways, being protected from the ravages of time and immune to the normal laws of memory. However, others have stated that there is no scientific evidence for the existence of these special memory mechanisms and instead caution the use of suggestive memory recovery techniques to "unlock" repressed memories. Such caution is based on a long history of research and scientific data supporting the premise that human memory is highly suggestible and malleable (see Ceci & Loftus, 1994). Based on this evidence it is plausible to believe that false memories may be inadvertently created by risky therapeutic methods used in many of the recovered memory claims (e.g., hypnosis, guided imagery; Ceci & Loftus, 1994).

Such advocates of recovered memories claim that adults who were abused as children, but have complete amnesia of the abuse, will demonstrate a variety of symptoms as a result of the abuse (Bass & Davis, 2008; Dolan, 1991; Fredrickson, 1992). Typically authors that list such symptoms as a "self-diagnosis checklist," provide no information regarding the scientific basis of the CSA link to such symptoms. Bass and Davis (2008) list 74 characteristics associated with sexual abuse. The list includes such attributes as relationship difficulties, feeling dissatisfied with family relationships, sexual dysfunction, trouble expressing feeling, and feeling different. Dolan (1991) believes that when a client is exhibiting symptoms indicative of abuse, it is the role of the therapist to assist the client in recalling the repressed abuse. Similar to Bass and Davis, the symptoms Dolan describes include a wide range of problems. These include dreams of being pursued, sleep disturbances, eating disorders, substance abuse, compulsive sexuality, sexual dysfunction, chronic anxiety attacks, depression, difficulties with relationships, distrust of others, guilt, impaired self-esteem, self-destructive behaviours, and personality disorders. Unfortunately, these attributes, so general as they are, could apply to any number of behavioural and psychological problems, or indeed, to some extent be applied to everyone.

Kihlstrom (1999) states that although it may be true that abuse victims may display many of these signs and symptoms, it does not follow that everyone who displays these attributes is an abuse victim. However, when patients come to therapists, they are looking for answers to explain any behavioural or psychological problems they are experiencing. If the therapist concludes that the patient is a victim of abuse, then with the recovered-memory techniques that quickly ensue, it is not surprising if reports of abuse arise. If a criminal or civil claim is subsequently filed, the problem the court faces is one of knowing whether the report reflects a real experience or an iatrogenic false memory. Because a memory is not triggered it is reconstructed (Bartlett, 1932; Kihlstrom & Barnhardt, 1993), whether the recollection is reconstructed from a historically accurate event is the key question that needs to be addressed before a decision can be made about an alleged perpetrator's guilt or innocence.

We have seen that the absence of a mature autobiographical memory system and its subsequent emergence and development in later childhood (after the age of 5–7 years) has been well documented in both behavioural and neurological studies (Howe, 2011, 2013a). Before this age we typically refer to a period of infantile and childhood amnesia where memories are poorly formed and typically forgotten. In fact, Howe (2013a) states more stable, adult-like autobiographical memories are rarely seen before the age of 9–10 years, and even then, recalling events from this period will only be possible if they are particularly distinctive and memorable. However, by some twist of logic, self-help guides (e.g., Bass & Davis, 2008) and therapists take the very fact that someone cannot remember their abuse to be evidence that they were abused. Bass and Davis make no reference to childhood amnesia or the maturation of brain structures that allow for the long-term recollection of autobiographical memories. Instead they make claims such as this:

> If you don't remember your abuse, you are not alone. Many women don't have memories, and some never get any memories. This doesn't mean they weren't abused. (p. 81)

> If you are unable to remember specific instances … but still have a feeling that something abusive happened to you, it probably did. (p. 21)

It is important to note here that prominent critics of memory-recovery work such as Loftus, Freyd, and Lindsay do not assert that all recovered memory reports are false. Indeed there are many cases where memories of CSA emerge after long periods of forgetting. Instead, such critics claim that there is no scientific evidence for a special repression mechanism and that memory-recovery work can lead to iatrogenic false memories. It is not implied that all accounts of recovered CSA are false, or that all memory-recovery techniques will always inevitably lead to the formation of false memories (their research alone shows this is not the case), but that the creation of false memories do occur, and the false beliefs of these events can be held confidently (Lindsay & Read, 1994; Loftus, 1993).

Today we have a clearer understanding of the uncertainty of recovered memory techniques and their use to "unlock" recovered memories of abuse. Official statements by the American Psychological Association, Board of Trustees (1993) have been made regarding uncorroborated recovered memories of CSA. They clarify the need to be aware of the issues of false accusations while not discrediting the reports of patients who have indeed been traumatised by actual previous abuse. Basic clinical and ethical principles should guide the psychiatrist's work in this difficult area. Such statements emphasise that care must be taken to avoid prejudging the cause of the patient's difficulties, or the veracity of the patient's reports. A strong prior belief by the psychiatrist that sexual abuse, or other factors, are or are not the cause of the patient's problems is likely to interfere with appropriate assessment and treatment. Clinicians should not exert pressure on patients to believe in events that may not have occurred. Clinicians need specialised training to treat patients who report the emergence of memories during specialised interview techniques (e.g., hypnosis, guided imagery).

As Rogers (1992, 1994) noted, valid claims may arise in therapy, but typically in these cases the therapist did not use intrusive and suggestive techniques and the patient will not have been placed into influential group treatment until the abuse had been fully documented. Thus, medical records must be carefully examined in any court case. The overwhelming issue is that there is no litmus test to distinguish between true and false memories (see Bernstein & Loftus, 2009; Schacter, Chamberlain, Gaesser, & Gerlach, 2012). Therefore, when a memory is uncovered in therapy, it is the role of the therapist to verify empirically, any uncovered event. Because of the lack of consensus in the scientific community for the theory of repression and the inability to determine truthfulness of a specific repressed memory allegation without corroborative evidence, repressed memory claims present special equitable and evidentiary problems for the courts (Amicus curiae: *Minnesota Supreme Court, Doe 76C v. Archdiocese of St. Paul and Minneapolis and Diocese of Winona,* 2011), something we turn to next.

There was a surge in cases involving claims of recovered memories when courts and legislatures in many states created legal mechanisms for both criminal and civil actions based on recovered memories (Loftus & Rosenwald, 1995). In cases involving claims of recovered memories, one party aims to prove the existence of repressed memories, while the other party provides a counterclaim, denying the abuse occurred and argues that memories recovered in therapy should be inadmissible in court. Here the question has been, which party has the sustainable claim to scientific knowledge (Underwager & Wakefield, 1998). Taub (1999) provides a full review of the False Memory Syndrome Foundation (FMSF) Legal Survey, but here we highlight some of the prominent historical cases based on claims of recovered memory.

## Paul Ingram

In 1989, defendant, Paul Ingram (*State of Washington v. Ingram*) received a 20-year prison sentence after he pled guilty to the sexual and ritual abuse of his two daughters. The sisters asserted that years earlier they had been repeatedly raped and that at least 25 human babies, some born to them, had been sacrificed in rituals in the Ingram's back yard. Police failed to locate the burial grounds for the alleged ritual sacrifices. Furthermore, medical examination of the daughters failed to yield any evidence of sexual activity or of childbearing. Yet Paul Ingram, a deputy sheriff, and a member of a Christian church, believed that his children would not lie. Although Ingram insisted he could not remember ever doing anything he was accused of, he worked with the detectives, pastor, and therapist to visualise the attacks and eventually reported

having flashbacks and images of abusing his two daughters. Dr. Ofshe, a social psychologist, interviewed Mr. Ingram at length and was able to show how he had been persuaded to produce a false confession through the use of long interrogations using visualisation exercises and suggestion, eventually coming to believe in and accept the things he could not remember doing. However, Ofshe's report was not made available to Ingram to use in the trial and, after pleading guilty, Ingram was charged with six counts of rape in the third degree. Ingram tried without success to withdraw his guilty plea and remained in prison until released in 2003 after serving his sentence.

According to the FMSF Legal Survey, civil lawsuits represent 86% of all repressed memory cases in the US. Of the civil suits that have been resolved, approximately 13% have gone to trial. Between 1995 and 1998 only 8% of civil cases have been resolved at trial (10 in favour of plaintiffs and 4 in favour of defendants). During that same period, 70% of the repressed memory lawsuits were either dropped by the complainant or dismissed by the courts due to the inadmissibility of repressed memory testimony. Two such cases highlighted in the legal survey are presented below.

## Joan Borawick

In 1992, Borawick (*Borawick v. Shay*), a 38-year-old Connecticut woman sued relatives who, she claimed, had sexually abused her when she was a child. Claims included rituals where she was drugged at the age of 3, then sexually abused and forced to take part in ritual acts involving drinking the blood of a dead pig. The appellant initially claimed that the memories returned to her spontaneously, but other court records showed that the alleged abuse was reported during a hypnotic session with her unlicensed therapist. In 1996, the case was dismissed by the US Second Circuit Court on the grounds of suggestible hypnosis techniques used to recover the memory, the far-fetched uncorroborated allegations, and the lack of qualifications and accurate record keeping of the therapist. Taub (1999) states that following this case the court proposed that certain factors be considered at a pretrial evidentiary hearing before choosing to admit posthypnotic testimony and that it is the responsibility of the party seeking to admit the testimony to persuade the court that the evidence is admissible. These factors include: to be aware of the aim or subject of the hypnotic session, to be aware of any possible suggestions from the hypnotist, seek a record of the hypnosis session if available, and show corroborating evidence.

## Cherese Franklin

In 1992, Franklin began treatments with a psychologist, Dr. Laurie Hoover after experiencing panic attacks. Using a variety of recovered memory techniques including guided imagery, writing with the nondominant hand, trance-work, relaxation, communicating with metaphorical "inner children," and journal writing Franklin began to "recall" previously repressed memories of abuse. At first Franklin believed the abuser had been her father but later became convinced that Stevenson, a cousin 7 years her senior, committed the abuse. She filed this action against him (*Franklin v. Stevenson*). Despite Stevenson originally requesting that the trial court exclude any evidence and testimony from either the expert witnesses or Franklin herself, the judge denied this motion, and the jury returned a verdict against Stevenson. In 1999, a Utah District Court judge reversed a jury verdict in favour of the plaintiff and dismissed the claim, drawing a parallel between hypnotic suggestion and communicating with an "inner child." This, along with the other techniques used, was seen to be like hypnosis, inherently unreliable for recovering memories. Indeed, on cross-examination in this case, Stevenson elicited concessions from Franklin's expert witness, Dr. Bessel van der Kolk, regarding the lack of scientific support for the memory techniques used with Franklin. Dr. van der Kolk testified as follows:

> Q. Is there any scientific literature, any studies that you are aware of that have been done that show that asking a question with one hand and answering the question with the non-dominant hand is a mechanism by which you can recover an accurate memory of the past? Are there studies?
> A. It's interesting that you ask the question, actually, because this great Frenchman who knew more about trauma than anybody else, Pierre Jenet … in 1889 in his book … actually wrote about that very phenomenon.
> Q. Did his study deal with the issue of validating the accuracy of the recovered memory, Doctor?
> A. No, he didn't.

> Q. Thank you. And are you aware of a single study as of 1996 that has validated this as a reliable technique for recovering memory, Doctor?
> A. Not to my knowledge.
> Q. Thank you.
> Q. Do you believe that there is any scientific evidence to suggest that I could ask myself [a question] and I could answer that question with my nondominant hand and expect that I'm really getting the truth?
> A. Is there any scientific evidence? I'm not aware of any studies specifically done on non-dominant handwriting to support or disprove that. It is a common clinical technique.
> (Taken from: http://law.justia.com/cases/utah/supreme-court/1999/franklin.html)

Unfortunately, these case examples show that under certain circumstances memories for childhood experiences can be grotesquely distorted. The ability to create false memories for childhood experiences has been supported by extensive laboratory based research. We can distort original memories by exposing people to misleading information (for a review, see Loftus, 2005). For example Wade, Garry, Read, and Lindsay (2002) used doctored images depicting false events from an adult's childhood. Through guided imagery exercises (not unlike those used in recovered memory therapy), participants were asked to think about the photograph depicting them on a hot air balloon ride (which they had never taken). They found that 50% of participants created complete or partial false memories for this event.

Although doctored images are very explicit forms of misleading information, misinformation can also be very subtle, demonstrating that although misleading information can be presented unintentionally, it can still have devastating effects on what we remember about a past event. Such studies have been criticised for implanting memories for mundane events that do not replicate the emotionally traumatic events of child abuse. Although ethically we could not implant false memories of child sexual abuse, memory distortions have been demonstrated for more negative and traumatic experiences from childhood. For example, Porter, Yuille, and Lehman (1999) interviewed participants about highly emotional and stressful events from their childhood (serious animal attack, a serious indoor or outdoor accident), some of which were true and some false. Using guided imagery and repeated retrieval attempts, 26% of participants reported a complete false memory and another 30% recalled aspects of the false experience. Other studies used similar method to elicit false memories of nearly drowning as a child and being rescued by a lifeguard (Heaps & Nash, 2001), or having to go to hospital at the age of 4 after being diagnosed with low blood sugar levels (Ost, Foster, Costall, & Bull, 2005). Often initial interviews elicit little detail, but with repeated questioning across successive weeks, participants are able to provide a detailed recollection, including thoughts at the time into the narration:

> I was living in [place name] at the time. It must have been on a Sunday because my dad was there. He was always around on a Sunday … I don't remember much about the hospital except I know it was a massive, huge place. I was 5 years old at the time and I was like 'oh my God I don't really want to go into this place, you know it's awful' … but I had no choice. They did a blood test on me and found out that I had a low blood sugar. (Ost et al., 2005, p. 710)

Taken together these studies show the power of this strong form of suggestion. It has led many participants to believe or even remember in detail events that did not happen. Akin to the false iatrogenic memories recovered in therapy, these findings from laboratory-based studies show that false memories are often a fusion of imagined, real, and suggested information. However, as we have cautioned earlier, there is no reliable test to distinguish between a more or less accurate memorial reconstruction versus one which contains numerous distortions versus one that is a complete fabrication. The major concern for the more suggestive memory-recovery techniques is the ease with which memories can be distorted.

## Repressed memories or implanted false memories for childhood experiences?

We have seen that memories for entire events that did not happen can be created. Although we should not create false sexual abuse memories in controlled laboratory conditions, there is an abundance of evidence demonstrating the ease with which false memories can be implanted for both mundane and negative events. In the courtroom, the problem is that there is no way to know the difference between the retrieval of a real memory and the convincing false belief in a created memory (Spiegel & Scheflin, 1994). It is likely that many cases of recovered memories can be both accurate and illusory (Lindsay, 1999). We have seen that the many techniques used over the years to aid memory recovery risk the creation of

false memories for events that never happened. In many cases, without independent corroboration, it can be difficult to trust memory. It is also likely that different approaches to recovered memory work vary in their likely risk to produce iatrogenic false memories. Yet science has not been able to give us a definitive answer to which approaches pose substantial risk and those that do not (Lindsay, 1999). What research does exist encourages the use of a "case-specific focus" (Alison, Kebbell, & Lewis, 2006, p. 416) regarding each circumstance that leads to the recovery of a memory for child abuse.

Although it is impossible to postdict the accuracy of recovered memory claims, Lindsay (1999) does consider some important factors to help assess the plausibility of these claims. These include: (1) how the recovered memory experience came about (with greater confidence in a memory that was not recovered using suggestive memory work), (2) the likelihood the event could be forgotten (happened early in life, happened a small number of times, common form of abuse), and (3) at least some evidence in support of the claim. Recovered memories that appear relatively implausible should be treated with caution. A more implausible claim would include reports of abuse that is bizarre and extreme (e.g., satanic ritual abuse), said to have happened numerous times over the period of many years, said to have happened during infancy, and to have emerged via extensive memory-recovery work, and with no supporting evidence. In cases where recovered memories do appear in court, an expert memory witness should be called upon. Although no memory expert will be able to discern the truth or falsity of an allegation, they will be able to inform the courts regarding the effects of any suggestive techniques used to recover the memory, how memory may have been influenced, and the need for caution when considering the credibility of that memory. Although each case should be evaluated on its own merits, implausible claims such as those listed above where the abuse is only recalled after extensive intrusive memory techniques, should be treated with scepticism.

Despite this leap forward in the scientific understanding of the foibles of cases involving repressed/recovered memories, therapists' experiences of, and beliefs about, cases of recovered memory, satanic abuse, dissociation, and false memory still shows a considerable gap in understanding between the scientific and professional fields. In an online survey published in 2013 (Ost, Wright, Easton, Hope, & French, 2013), Chartered Clinical Psychologists and Hypnotherapists agreed overwhelmingly with the existence of false memories (over 80%). However, both groups reported a belief in cases of satanic abuse and repressed memories, with approximately one third reporting that such cases could "usually" or "always" be taken as essentially accurate.

Worse, this scientist-practitioner gap may be more even larger than Ost et al.'s study suggests. For example, when clinical psychologists, psychoanalysts, neuro-linguistic programmers, internal family systems therapists, hypnotherapists, and other types of therapists were asked whether they believed that traumatic memories are often repressed, the majority of them agreed (range 60% to 90%; Patihis, Ho, Tingen, Lilienfeld, & Loftus, 2014). When asked if repressed memories could be accurately retrieved in therapy, again the majority of these practitioners agreed (range 47% to 78%). What these recent surveys show is that a number of therapists hold beliefs that scientists would view as controversial, especially in light of the last 20–30 years of research. One hope is that this review will not just raise awareness of this gap but reduce the size of this gap. Perhaps by publicising what the science of memory has taught us over the last few decades, we can popularise what is known about the risks and realities not just about recovered memories, but about memory more generally.

## EYEWITNESS (MIS)IDENTIFICATION

Next, we turn briefly to memory errors associated with eyewitness (mis)identification using a prominent case example to begin. On 18 September 2003, Calvin Willis was released from prison after serving over 21 years for a crime he did not commit. In 1982, Willis was tried and convicted for the rape of a 10-year-old girl in Shreveport, Louisiana. In June 1981, an intruder entered a home where three girls—aged 10, 9 and 7—had fallen asleep. Two of the girls had fallen asleep on the couch, the third in bed. The intruder carried the 9-year-old to the bed, where her 7-year-old sister was sleeping. The 10-year-old victim awoke and saw a man standing above her, naked except for a cowboy hat. The attacker choked her and banged her head against the wall. The victim was able to escape and ran from the intruder, but was caught in the front yard. She was kicked in the stomach and lost consciousness. Her two younger

sisters heard the noises but remained in the bedroom. Their mother did not return to the house until the morning.

What led to the conviction of Calvin Willis? When the police began their investigation, the interviews of the three girls produced inconsistencies in their statements. The 9-year-old girl could not identify the perpetrator's face but described his shoes, which were shaped like cowboy boots. At trial, the girl identified Willis by his boots, although her testimony of what the boots looked like differed from the boots Willis was arrested in two days after the crime. She testified that she did not see the attacker's face. The 7-year-old girl had been asleep but awoke when she heard the victim's cries and the attacker's threats to kill her. She identified the voice as that of Calvin Willis, whom she had spoken with once. One police report said the 10-year-old victim did not see her attacker's face. Another report—which wasn't introduced at trial—said she identified Calvin Willis, who lived in the neighbourhood. The girl's mother testified that Willis had been in her house before, he was known to wear a cowboy hat, she had seen him in boots similar to those described by her daughter.

The police testimony also differed with regard to the photographic evidence. An investigator testified that she showed the victim a lineup that included Willis's photograph because the victim had said that Calvin was the attacker. Her mother provided the last name of Willis. The victim's mother testified that Willis's name did not come up before the lineup. Upon further questioning, however, she testified that the victim had said Calvin did it before they were taken to the police station and that he had been wearing a cowboy hat and cowboy boots. The victim testified that she was told to pick the men in the photographic lineup that did not have a full beard. She also testified that she did not pick anyone from the lineup and that Willis's picture was not part of the array. The victim never made an in-court identification of Willis but stated that Calvin was standing about her when she awoke. Willis was convicted by a jury and sentenced to life in prison.

In 1998 his case was accepted by the Innocence Project and a post-conviction DNA test of the rape kit and a pair of boxers left at the scene of the crime excluded Willis as the perpetrator of the rape that occurred in 1981 and ultimately led to his sentence of life without the possibility of parole (see "Innocence Project—Calvin Willis", 2003).

Eyewitness testimony that directly implicates an alleged perpetrator is compelling evidence in any trial and a single witness's identification can often be enough to obtain a conviction. However, eyewitness misidentification is the single greatest cause of wrongful convictions. The Innocence Project is a non-profit legal clinic founded in 1992 by Barry C. Scheck and Peter J. Neufeld in association with the Benjamin N. Cardozo School of Law at Yeshiva University. The project is a national litigation and public policy organisation dedicated to exonerating wrongfully convicted people through DNA testing. An eyewitness report published by the Innocence Project (Innocence Project, 2010) stated that over 230 people, serving an average of 12 years in prison have been exonerated through post-conviction DNA testing in the USA alone. Of those wrongfully convicted over 75% involved eyewitness misidentification (179 people). The report highlights a number of worrying statistics. For example, of those 179 individual cases, 38% were based on multiple eyewitness misidentifications of the same innocent suspect. Fifty-three percent involved cross-racial misidentifications. In 50% of the misidentification cases there was no further corroborating evidence and the eyewitness testimony was the central evidence used against the defendant. Of most ill fate, in 36% of these cases the real perpetrator was identified through the post-conviction DNA test, and in just fewer than 50% of these cases, they had gone on to commit additional crimes of rape and murder.

However, eyewitness testimony is still among the most prevalent and persuasive evidence used in the courtrooms:

> The U.S. legal system currently allows conviction of criminal charges based solely on the testimony of a single eyewitness. It is therefore of considerable importance to ask whether the eyewitness accuracy is sufficient to warrant a conclusion of guilt "beyond a reasonable doubt" (Davis & Loftus, 2012, p. 2).

Scholars in this field have long recognised the weaknesses of eyewitness testimony. Much research has examined the limits of human memory and the conditions under which distortions can be made. Based on this research we can inform the legal system regarding some basic limits of performance and we can aid conditions in which maximum accuracy does not surpass that of guessing. It is important to understand the limits

of memory, not only the factors that affect suggestion, but also factors that affect our perceptual capacities. The end goal is to understand the conditions that lead to the most accurate eyewitness testimony. However, as Davis and Loftus (2012) state, there is much evidence to suggest that even under the best conditions, eyewitness accuracy may still not be sufficient enough to allow convictions based solely on the testimony of one or more eyewitnesses.

So where does this leave the legal system? Many scholars argue that the best option is to allow an expert witness to testify to the factors that can affect an eyewitness's ability to perceive and remember. However, a recent advancement in the recognition of weaknesses in eyewitness testimony comes from a decision in New Jersey. This case involved a defendant named Larry Henderson who was accused of participating in a New Year's Day shooting. Following a delay of approximately two weeks, a surviving witness identified Henderson from photos and Henderson was convicted. However, as it turned out, the initial identification of Henderson occurred after the investigating officers engaged in persuasive behaviour. Worse, earlier in the day the witness had consumed large amounts of wine, champagne, and crack cocaine, making the identification even more suspect.

When Henderson appealed his conviction (New Jersey Supreme Court, 2011) the decision received national attention. In essence, like the case discussed above, the ruling showed a sophisticated appreciation of problems with (eyewitness) memory. This decision led to changes in how evidence adduced through suggestive influences is treated in the courtroom. Specifically, if a judge decides to admit such testimony at trial, then the jurors must be provided with instructions that will guide them on how to interpret that eyewitness evidence (the specific New Jersey instructions were drafted by the Committee on Model Criminal Jury Charges can be found on the Internet at: www.judiciary.state.nj.us/criminal/ModelCrimJuryChargeCommHENDERSONREPORT.pdf). Inspired by the New Jersey decision, in Pennsylvania Elizabeth Loftus and her colleagues took these instructions a step further and drafted jury instructions that considered the problems with memory testimony much further (the full set of Pennsylvania instructions can be found at: www.dauphincounty.org/government/Court-Departments/Officesand-Departments/Court-of-Common-Pleas/Documents/Turgeon/Model-Eyewitness-Identification-Jury-Instructions.pdf).

These are still, however, isolated cases. The legal system in general has yet to find a satisfactory mechanism for educating jurors. Many of the eyewitness instructions given by judges are still ineffective: they contain ambiguous and confusing language, they are given at the end of trial as part of a long list of other legal instructions, and in many cases, they reinforce jurors' flawed assumptions about eyewitness accuracy (Sheehan, 2011). Encouraging recent research has shown the benefit of providing eyewitness instructions before the eyewitness testifies, and providing model instructions, which attempt to convey scientific and legal principles that are meaningful and comprehensible to lay jurors (Sheehan, 2011).

As of the writing of this review, a draft of a report on eyewitness identification has just been published (National Academy of Science, 2014). In this report, there are 11 recommendations concerning best practices for the law enforcement community when it comes to understanding the science of eyewitness identification. These range from implementing double-blind lineup and photo array procedures (Recommendation 2) to using scientific framework expert testimony (Recommendation 8) and clear and concise jury instructions (Recommendation 9) when eyewitness identification plays an important part in a trial. We continue to hope that such best practice techniques infiltrate the judicial system and become policy for future court cases involving eyewitness testimonies.

## THE ROLE OF MEMORY EVIDENCE IN JUDICIAL DECISIONS

Finally, there are an increasing number of cases in which scientific research on memory has been effectively integrated into the courtroom. Expert testimony is being sought in more and more HSA cases, testimony that has helped the triers of fact interpret the memory evidence that has been heard (e.g., Brainerd, 2013; Conway, 2013; Howe, 2013a, 2013b). In a recent case heard in the Royal Courts of Justice, Queen's Bench Division [(2013) EWHC 3560 (Comm); Case No. 2011 Folio 1267] between Gestmin v. Credit Suisse, Mr. Justice Leggatt dealt directly with issues to do with human memory. Specifically, he stated in his decision (section on "Evidence based on recollection") that:

15. An obvious difficulty which affects allegations and oral evidence based on recollection of events which occurred several years ago is the unreliability of human memory.

16. While everyone knows that memory is fallible, I do not believe that the legal system has sufficiently absorbed the lessons of a century of psychological research into the nature of memory and the unreliability of eyewitness testimony. One of the most important lessons of such research is that in everyday life we are not aware of the extent to which our own and other people's memories are unreliable and believe our memories to be more faithful than they are. Two common (and related) errors are to suppose: (1) that the stronger and more vivid is our feeling or experience of recollection, the more likely the recollection is to be accurate; and (2) that the more confident another person is in their recollection, the more likely their recollection is to be accurate.

17. Underlying both these errors is a faulty model of memory as a mental record which is fixed at the time of experience of an event and then fades (more or less slowly) over time. In fact, psychological research has demonstrated that memories are fluid and malleable, being constantly rewritten whenever they are retrieved. This is true even of so-called "flashbulb" memories, that is memories of experiencing or learning of a particularly shocking or traumatic event. (The very description "flashbulb" memory is in fact misleading, reflecting as it does the misconception that memory operates like a camera or other device that makes a fixed record of an experience.) External information can intrude into a witness's memory, as can his or her own thoughts and beliefs, and both can cause dramatic changes in recollection. Events can come to be recalled as memories which did not happen at all or which happened to someone else (referred to in the literature as a failure of source memory).

18. Memory is especially unreliable when it comes to recalling past beliefs. Our memories of past beliefs are revised to make them more consistent with our present beliefs. Studies have also shown that memory is particularly vulnerable to interference and alteration when a person is presented with new information or suggestions about an event in circumstances where his or her memory of it is already weak due to the passage of time.

19. The process of civil litigation itself subjects the memories of witnesses to powerful biases. The nature of litigation is such that witnesses often have a stake in a particular version of events. This is obvious where the witness is a party or has a tie of loyalty (such as an employment relationship) to a party to the proceedings. Other, more subtle influences include allegiances created by the process of preparing a witness statement and of coming to court to give evidence for one side in the dispute. A desire to assist, or at least not to prejudice, the party who has called the witness or that party's lawyers, as well as a natural desire to give a good impression in a public forum, can be significant motivating forces.

20. Considerable interference with memory is also introduced in civil litigation by the procedure of preparing for trial. A witness is asked to make a statement, often (as in the present case) when a long time has already elapsed since the relevant events. The statement is usually drafted for the witness by a lawyer who is inevitably conscious of the significance for the issues in the case of what the witness does nor does not say. The statement is made after the witness's memory has been "refreshed" by reading documents. The documents considered often include statements of case and other argumentative material as well as documents which the witness did not see at the time or which came into existence after the events which he or she is being asked to recall. The statement may go through several iterations before it is finalised. Then, usually months later, the witness will be asked to re-read his or her statement and review documents again before giving evidence in court. The effect of this process is to establish in the mind of the witness the matters recorded in his or her own statement and other written material, whether they be true or false, and to cause the witness's memory of events to be based increasingly on this material and later interpretations of it rather than on the original experience of the events.

21. It is not uncommon (and the present case was no exception) for witnesses to be asked in cross-examination if they understand the difference between recollection and reconstruction or whether their evidence is a genuine recollection or a reconstruction of events. Such questions are misguided in at least two ways. First, they erroneously presuppose that there is a clear distinction between recollection and reconstruction, when all remembering of distant events involves reconstructive processes. Second, such questions disregard the fact that such processes are largely unconscious and that the strength, vividness and apparent authenticity of memories is not a reliable measure of their truth.

22. In the light of these considerations, the best approach for a judge to adopt in the trial of a commercial case is, in my view, to place little if any reliance at all on witnesses' recollections of what was said in meetings and conversations, and to base factual findings on inferences drawn from the documentary evidence and known or probable facts. This does not mean that oral testimony serves no useful purpose—though its utility is often disproportionate to its length. But its value lies largely, as I see it, in the opportunity which cross-examination affords to subject the documentary record to critical scrutiny and to gauge the personality, motivations and working practices of a witness, rather than in testimony of what the witness recalls of particular conversations and events. Above all, it is important to avoid the fallacy of supposing that, because a witness has confidence in his or her recollection and is honest,

> evidence based on that recollection provides any reliable guide to the truth.

This very important decision highlights not only the importance of understanding the (un)reliability of memory generally, but also the role it plays in courtroom testimony. As well, this decision indicates that research on memory has made some real inroads into at least some courtroom proceedings. However, there is still considerable work left to do in order to get memory expertise into the many courtrooms where such evidence is needed in order that the triers of fact can determine the proper weight to give memory evidence when determining guilt or innocence.

## CONCLUSION

We have reviewed a number of areas in which the judicial system relies heavily or solely on memory evidence. This is by no means an exhaustive review as there are many other cases where the judiciary relies on people's memories to educe whether a crime has or has not occurred. What we did review revealed that there are still gaps between what the science of memory tells us about the reliability of memory, what clinical practitioners believe, and what triers of fact need to know about memory in order to give proper weight to memory evidence.

The good news is that there are some serious inroads being made, ones that are reducing these gaps, especially in the legal arena. The hallmark cases that we have reviewed here from the 1980s and the 1990s have stimulated considerable research whose results have advanced not only our understanding of memory generally, but also of memory in a forensic context more specifically. What these advances show is that understanding the implications of the shortcomings of memory is of mutual benefit to both scientific and forensic communities. When we align the two we are able to advance our understanding of the development and capability of memory but also support practitioners to develop new techniques and protocols for examining memory in forensic fields. However, there are still considerable gaps in what we have recently discovered in the scientific study of memory and the beliefs still held about memory in other more applied fields, including the legal community. Our hope is that the relationship between the scientific community and other professions continues to develop so that what becomes known about memory, might become better disseminated and influence policy changes, procedures, and practices in important forensic contexts.

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