The British Academy

Legal aspects of memory

A summary of scientific evidence issued by the Psychology and Law Sections of the British Academy

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Introduction

Misconceptions about memory can lead on the one hand to accepting testimony that may not be reliable, and on the other to rejecting testimony when there is little justification for questioning its reliability. There has been a rapid advance in relevant memory research, which has identified aspects of the person and the situation that may impact reliability, as well as methods of assessing memory, collecting more reliable testimony during investigations, and eliciting more reliable testimony in court. The primary purpose of this report is to summarise the research (whether based on empirical studies or clinical/forensic observations) for judges, magistrates, lawyers, police officers, and others involved in the law or criminal justice system, so that they are better aware of the relevance and extent of current psychological knowledge. Secondarily, the report may assist psychologists and professionals from other disciplines to identify areas where their expertise may be helpful to the legal system.

Evidence given orally by an individual (termed a witness) has traditionally been the main way in which facts are proved in the courts. Today in both England & Wales and in Scotland the evidence may often be provided in writing. Either way, the role of the witness who is not an expert witness is to speak to relevant facts within that person's knowledge or recollection, i.e. their memory. The witness's opinions or beliefs about, or inferences from, the facts being spoken to are not relevant: for example, that the car driver was to blame for the collision that killed a cyclist. It is the job of the court to decide that. It is, however, legitimate to ask a witness about any impressions he or she may have had about the facts at the time they happened: for example, their estimate of the speed at which the car was travelling.

The British Academy has many of the foremost experts in both psychology and the law among its members. This collaboration between the Psychology and Law Sections of the Academy has made it possible to produce an interdisciplinary report that reflects the needs and concerns of the legal system, as well as being an authoritative summary of the science. Members have sought out a number of specialists on aspects of the psychology of memory of direct relevance to the law from outside the Academy to join them in designing, contributing to, and reviewing the report. The exercise has been very substantially assisted by advice from legal practitioners and academics (see Appendix A for a full list of contributors and reviewers).

Chapter One outlines the key concepts psychologists employ to describe the processes of remembering and forgetting. It also gives examples of the relevance of these concepts in court cases, and provides a very brief introduction to the types of memory error which may arise. Key concepts are summarised in a glossary (Appendix B).

Chapter Two depicts how memory typically develops, matures, and then declines in later life. Nowadays, the courts are hearing the evidence of witnesses from across the lifespan, from the very young to the elderly; the characteristics of witness memory at different ages are a matter of significant concern for the courts.

Chapter Three outlines productive and counter-productive strategies for securing reliable information from witnesses. In recent years psychologists have worked with the police to develop standardised interviewing protocols which maximise evidential content, while minimising the risks of suggestion and misinformation. Other issues discussed include recent findings from research on: the influence of intoxicants; the effects of high levels of stress on memory

accuracy and completeness; and the reliability of adult accounts of childhood events, a feature of 'historical' abuse cases.

Chapter Four is devoted to the topic of eyewitness identification. Psychologists have explored how accuracy of identification can be influenced by the circumstances of the encounter and the characteristics of the observer. They have used these insights to assist police in developing novel identification procedures, and this chapter summarises their main conclusions and recommendations.

Chapter Five illustrates the range of neurological conditions and psychiatric disorders that can impact on memory performance. Topics include traumatic brain injury, dementia, and witnesses with learning disabilities and autistic spectrum disorders. The expert's role, in part, is to advise on the nature of the underlying condition(s). One implication of research is that the courts need not dismiss testimony from witnesses with such conditions, but rather ensure that their examination at court is conducted in a way most likely to maximise accuracy.

Chapter Six focuses primarily upon the testimony of defendants[1] in criminal proceedings. It begins by outlining what is known concerning reliable and unreliable cues to deception in suspects' statements and the interview techniques most likely to detect misleading accounts. Occasionally, defendants will claim no memory of having committed an offence, or alternatively admit to an offence of which they are entirely innocent. Considerable research and numerous case studies have been undertaken to aid understanding of both these phenomena, and the implications for the courts are summarised.

Finally, Chapter Seven describes the role of the psychological expert at court. As illustrated in earlier chapters, psychologists have begun to undertake a wider range of roles. In complex cases where there is scientific evidence of direct relevance to the potential reliability of the testimony of a witness or defendant, suitably qualified psychologists may have a useful role to play in advising the police or lawyers for the prosecution or defence. Where organic brain damage is suspected in a witness, the court can direct that a detailed neuropsychological assessment be commissioned from a suitably qualified neuropsychologist. Likewise, where there are concerns over a defendant's mental capacity or fitness to plead, a referral for an expert report may also be desirable.

Overall, the summary demonstrates the existence of, and expert consensus around, a specialised body of knowledge and understanding in the field of memory research which may be relevant to witness evidence before a court. Evidence from memory experts may be of assistance to the court provided, of course, that it does not usurp the fact-finding duty of the court or, where the facts of the case are being determined by a jury, appear to be an attempt to sway its views on matters within its sole province. In the past, expert evidence on memory research has not always been found to match these requirements. It is hoped that this summary may help remove such difficulties in the future, as well as providing some food for thought by those charged with keeping court procedures abreast of the relevant scientific research.

Questions are also raised about reliance on the memory of a witness quite possibly some considerable time after the events under review in the court. This involves what the document terms an individual's episodic long-term memory which is, however, 'the most fallible' of the various human memory systems. Thus, it may be asked whether more reliable recollections may be those recorded nearer the time in question and then put before the court in that recorded

[1] The equivalent term in Scotland is 'the accused' or 'the panel', but the English Law term 'defendant' will be used in this report.

form. Understanding the way in which humans regulate their memories, including the process of forgetting, is another important insight raising questions about how to assess witness testimony. Similarly, the summary's identification of the development, maturity and decline of memory across the human lifespan has implications for the way in which, for example, the evidence of a child or of an elderly person might be assessed.

The court process is only the end of a much longer one beginning once it was realised that an incident might have legal implications, be they criminal, civil or, perhaps, both. An official or adviser dealing with the party raising the matter (e.g., police officer, social worker, solicitor) may first need to assess that party's credibility before deciding what further steps to take or going on to consider the relevant evidence that might be provided by other witnesses. This summary thus has a role to play in informing such initial steps in a case. In particular, retrieval of memories by a party or a witness should take place as soon as possible after the event, while inconsistency of recall is not necessarily an indication of lack of veracity. This may also be especially important in the formation of a text where evidence-in-chief is to be given in writing.

There are other questions about how the most reliable evidence can be obtained at this early stage of any dispute. The summary outlines the strategies most likely to be helpful in this regard as well as identifying those likely to be counter-productive. The example of eyewitness identification procedures also shows how the employment of appropriate techniques and procedures can lead to more reliable forms of evidence for use in court later. The summary also explains the various neurological conditions and psychiatric disorders that impact on the memory performance of a witness, but indicates techniques that can enhance the accuracy of the memories of the victims of such conditions and disorders. For these and other reasons this document will be, it is hoped, a useful tool in the armoury of those engaged in the process of assessing witness evidence in a disputed matter upon which they are called to advise at its outset or, ultimately, judge in its conclusion.

Further reading

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Chapter One. Overview of memory

1.1 Introduction to memory concepts

Types of memory

Human memory is not a unitary faculty but rather comprises an alliance of several systems, each of which performs a different function. There are three systems of central importance. Working memory provides the capacity to hold information in mind. Episodic long-term memory allows us to remember specific episodes or events and distinguish them from other earlier or later events of a similar kind. Semantic memory holds our knowledge of the world. Each of these interacting systems will be described, with particular attention to those aspects most likely to be important within a legal context.

Any memory system whether biological or artificial must have three stages. The first, termed encoding, involves feeding the information into the memory system. This is followed by the need to preserve or store the memory. Finally, information must be accessed and retrieved at the appropriate time. Whether memories are retrieved after minutes, hours or years, the same encoding process will have been involved. It is encoding that is most vulnerable to age or disease and causes problems with recent memory while leaving memories from long ago, encoded when young and healthy, less affected.

Working memory

This can both hold and manipulate information, capable for example of remembering a telephone number while keying in the digits. It is also involved in more flexible activities such as the mental arithmetic task of multiplying 27 by 9. A similar situation occurs for visual working memory which can simply keep a visual scene in mind or perform a more complex task such as viewing a room and envisaging potential alterations. Both of these temporary memory systems depend crucially on an attentional control system capable of selecting and manipulating information. All these components have limited processing capacity and operate over relatively brief periods (seconds). Good temporary verbal storage capacity helps people to learn new words in either their first or subsequent languages, while occupations such as engineering or architecture are likely to depend on its visual equivalent. The capacity of the attentional control component is closely related to general intelligence. Working memory is also required for encoding into episodic long-term memory.

Episodic long-term memory

This allows us to recall individual episodes or events, for example meeting a friend yesterday and distinguishing that meeting from many other earlier encounters. This system is therefore crucial for the capacity of an eyewitness to testify. It is, however, the most fallible of the memory systems. This is because retrieving an individual event among a lifetime of potentially similar events presents a major challenge that typically depends on combining and retaining information regarding what occurred, where it occurred, and when.

Of course, much of this information will be lost through forgetting. However, learning and forgetting involve different processes. Consequently, an amnesic patient may have difficulty acquiring information but forget that information at a normal rate.

Gaining access to a memory will depend on retrieval cues, reminders based on information recorded at the time of learning. These involve associating the learned event with the context experienced at the time. This can involve features such as the time and place or associated thoughts and emotions, with each serving as a potential link to the remembered experience. The more you noticed of an event the better the chance of later recall. However, later identifying that particular incident will depend on retaining features that are specific to that experience. This in turn will depend on your background knowledge. Hence a car enthusiast may notice and remember different features of a road traffic accident compared with a non-enthusiast.

We tend to focus our attention and remember what we regard as important. This is a major advantage of human memory over computer memory, as it allows us to discard the vast amount of detail and repetition that we are constantly experiencing. It does, however, present a potential problem in a situation where recall of detail is necessary or even crucial, as may occur in a trial. If a witness is pressed too strongly in questioning, they are in danger of filling in the gaps in memory with information from general knowledge, from other situations, or indeed from information introduced by the questioner.

Semantic memory

This term refers to the immense amount of knowledge of the world that we accumulate as we grow up. Much of education is concerned with acquiring semantic memories to supplement what we learn from social interaction and from directly experiencing the world around us. Unlike episodic memory for individual events, it gradually accumulates throughout life, and is less vulnerable to the effects of age or trauma than episodic memory. Hence, the number of words we know, for example, tends to gradually increase as we get older although it becomes harder and slower to gain access to them.

Other memory terms

Implicit memory refers to information acquired and stored through skills, habits or emotional associations. In contrast to explicit and direct memory for facts or events, implicit memory is reflected through action as in performing a skill. As we learn, performance becomes faster, more accurate, or more reliable. Implicit memory is not unitary and may reflect a range of different underlying learning systems, from motor skills such as riding a bicycle to a child's acquisition of grammar.

Finally, there are two types of memory whose names reflect the function they serve rather than their basic structure. The term 'autobiographical memory' refers to the memories built up about our own lives. It can be seen as a specific component of both semantic memory and episodic long-term memory, an aspect that is of course of particular personal and emotional significance. The other term, 'prospective memory', refers to remembering to do something at a particular time, for example to call your partner at 2 pm this afternoon. It is an important function, but one that is dependent on a combination of episodic long-term memory and working memory rather than a separate basic system.

Forgetting

If our memory systems stored every detail we experience, they would require massive capacity and result in a major retrieval problem. Forgetting is a way of coping with this, with detail forgotten extremely rapidly. Semantic and implicit memory cope by simply adding the new information to the old with each new experience making a slight modification. This is not feasible for episodic memory where it is important to distinguish one remembered episode from other potentially similar episodes. The solution to this problem is selective forgetting, the capacity of memory to select automatically those features that are most likely to be of future importance and discard less important detail. Inability to remember an event may reflect failure at any of the three stages of memory, namely encoding, storage, and retrieval.

Encoding

We encode automatically whatever is in the focus of attention. Longer and more focused attention leads to better recall than a brief glance and central features are more likely to be encoded than detail. Level of attention will depend on motivation, expectations, and background knowledge. A barman who knows that a customer is prone to anger would be more likely to notice his beginning a fight and act to prevent it. Memory of what has been encoded can be strengthened by deliberately bringing it back to mind since retrieving a memory can serve as an additional learning episode. Note, however, that any errors introduced during retrieval will also be strengthened by rehearsal, the act of reprocessing the encoded information either by verbal repetition or by maintaining it through continued attention.

Storage

Forgetting typically increases with time elapsed since encoding, at first rapidly and then more gradually. This forgetting pattern is helpful since the likelihood that episodic information will currently be useful also generally declines with the passage of time. Information provided yesterday is more likely to be still relevant than that encoded a year or a decade ago. In general, the durability of a memory will be greater if it forms part of an integrated and meaningful episode in which the features are mutually supported. In our bar fight example, a coherent sequence of an argument between two known enemies leading to an insult, shouting and a blow will be better remembered than an incoherent fight erupting between strangers. In either case, details such as the clothing of the two fighters are more likely to be forgotten than the gist of the event, that a fight took place.

Retrieval

Information retained in memory cannot always be reliably retrieved when we need it. The probability of successful retrieval will depend on the method of questioning. The simplest method, termed free recall, simply involves remembering as much of the incident as possible in any order. It depends, however, on the strategy adopted by the rememberer and their willingness to report features for which they are less confident. There is a relationship between confidence and accuracy, but it is far from perfect and even very confidently held memories may sometimes be wrong.

Different ways of accessing the event may lead to different details becoming available, particularly when events are complex. Lack of consistency when questioned at different times

does not therefore always imply lack of veracity. Unsound inferences about apparent unreliability, based on lack of consistency, have sometimes been noted when police or prosecutors are assessing the testimony of sexual assault victims pre-trial, or when immigration officials are assessing the testimony of asylum seekers whose cases later appear before immigration courts. Furthermore, the tendency for retrieval errors to persist means that consistency is not always a sign of accuracy. It is therefore important that the first recall occurs as soon as possible and is conducted with care.

Retrieval strategy can be less problematic with cued recall in which the questioner explicitly asks about features they regard as relevant. This is, however, more open to distortion by the encouragement to recall details that have not in fact been encoded. In our bar fight example, this might arise from a question such as 'Who struck the first blow?' when the witness did not in fact see the beginning of the fight.

Recall requires you to directly access the relevant information and then convey it to the questioner. This may be difficult, as when being asked to describe the face of an unfamiliar person. In this situation, recognition of an individual from a line-up may be used. Recognition depends crucially on the selection from a set of alternatives and is open to a number of other well-studied potential sources of error that will be discussed later.

In general, it is important to bear in mind that forgetting will occur, particularly of detail. While methods of optimising retrieval accuracy are available, repeated questioning will itself influence recall. However careful the questioning, errors will routinely occur, as detailed in the following section.

When memory fails

Forgetting is a necessary part of avoiding memory overload. However much you remember of an event, some forgetting is inevitable and, if pressed, errors in recall will occur, of which these are particularly common:

Guessing

Working memory and its attentional control systems have a limited capacity, which means that crucial aspects of an encountered situation may never reach long-term memory. This can occur because attention is directed elsewhere, as when a driver involved in an accident is conducting a conversation on a mobile phone, or indeed simply directing attention to one aspect of a scene and not focusing on the crucial incident such as another car overtaking. If the relevant information has not been encoded, then any attempt to pressure the witness to recall will lead only to a potentially misleading best guess.

Filling in the gaps

As time elapses, information and particularly detail will inevitably be lost from episodic memory. If similar situations have been experienced before, this loss of information could result in increasing reliance on semantic memory to substitute the gaps with something that might be expected from those previous episodes. Repeated recall attempts will tend to exacerbate this problem, as errors made initially will become more strongly established and held with increasing certainty. It is therefore important to optimise the initial report and minimise sources of error. A number of methods of achieving this will be discussed in section 3.1.

Bias

People's attitudes and beliefs will influence both how they experience an event and how they retrieve the memory of that event. Supporters of rival football teams have been shown to observe, report and remember more fouls by the opposing team. Such bias can be much more deep-seated and pernicious in the case of strongly held religious or political beliefs. The process of recall has an important element of reconstruction based on existing knowledge and beliefs. Hence a talk on evolution would be likely both to be interpreted and subsequently recalled quite differently by an evolutionary biologist and someone advocating creationism on religious grounds.

Suggestibility

People differ in the extent to which they are open to influence by others, particularly authority figures. Willingness to agree with an interviewer can potentially lead to miscarriages of justice. In the extreme this may take the form of false confessions. Suggestibility can be a particular issue when interviewing young children or people with particular psychiatric or neuropsychological problems (see sections 3.2 and 6.3).

Further reading

Baddeley, A., Eysenck, M.W. & Anderson, M.C. (2020), *Memory* (Routledge). https://doi.org/10.4324/9780429449642. An advanced text of which Chapter 1 provides a more extensive summary of the field.

Brewin, C.R. & Andrews. B. (2019), 'Memory accused: Research on memory error and its relevance for the courtroom', *Criminal Law Review*, 9: 748-763.

1.2. Memory concepts, memory disorders, and memory errors

Memory issues and memory disorders are potentially relevant at each stage of the criminal legal process: fitness to plead and to stand trial, the trial process itself and presentation of evidence (by the defendant and witnesses for the defence and prosecution), and at sentencing. They can also be critical in civil cases involving matters such as medical negligence and family disputes. This section will provide some case examples of how the memory concepts discussed in the previous section may give rise to issues on which expert evidence may assist. Psychologists should note that it is for the court (jury or judge) to determine the veracity or otherwise of a memory; the expert's role is simply to advise on scientific knowledge.

Working memory

On occasion, finance officers charged with fraud in drawing up accounts have claimed they have developed difficulty holding numbers in their head, and manipulating them, sometimes in association with other cognitive complaints and/or clinical depression and anxiety. In such cases, a careful evaluation of working memory is required within a more general neuropsychological evaluation to help determine whether or not an underlying cognitive deficit could have been the basis of erroneous accounting.

Episodic long-term memory

Many cases, criminal and civil, hang on the accuracy or reliability of episodic long-term memory. Cases occur in which witnesses report gaps in memory, partial or complete, or a loss of detailed or peripheral recall around a critical incident, for example in committing or being the victim of an offence, or in being involved in a road traffic accident, an accident at work, or a failed hospital procedure. A full medical and neuropsychological evaluation may be required.

Retrograde amnesia refers to loss of memories from before, and post-traumatic amnesia to loss of memories following, a head injury. An evaluation of the extent of each can be critical to determining whether claims of amnesia appear consistent with the nature of the injury and any neuroimaging and residual neuropsychological findings. For example, in a case concerning a road traffic accident, the extent of a driver's retrograde amnesia resulting from acceleration-deceleration forces might potentially explain why the driver could not recall what he saw as he came round a bend at speed and killed people in a stationary vehicle. By contrast, in many compensation cases for accidents at work, the reported duration of retrograde/post-traumatic amnesia often greatly exceeds what would be expected from the nature of the injury.

The pattern and reliability of long-term forgetting can be an issue in criminal cases prosecuted or reviewed at appeal many years after the alleged offence – such as historical sexual offences and certain military or other criminal offences. Many psychological studies of very long-term forgetting have tested retention of school or university syllabuses or of emotional ('flashbulb') events such as the assassination of a public figure, and the question arises about how relevant such studies are to the phenomena being scrutinised in court. The effects of stress or emotion on memory also complicate such evaluations. Furthermore, retrieval of potentially critical memories after very prolonged delays is sometimes presented as 'fresh evidence' in criminal appeals.

As described in section 1.1, the constructive nature of memory makes it vulnerable to errors, which can be of omission (leaving something out) or commission (inclusion of inaccuracies). Source memory errors refer to the confusions in remembering when, where, or from whom something was learned, and source forgetting refers to failing to remember this information. Source memory errors are common, and may lead to mistakes in witness statements or evidence in the witness box. For example, source memory errors, combined with suggestibility, misattribution, or perceived pressure to recall, can contribute to false confessions.

Occasionally, various uncommon syndromes of episodic memory need to be considered. Examples include: confabulation (for example, a patient with alcoholic Korsakoff syndrome who gave a very incoherent account of how his wife had died in their home a few days earlier); delusional memory (for example, a psychotic man who gave a bizarre and paranoid account of what had happened at his trial); or pseudologia fantastica, a rare disorder in which people tell a web of fantasies about themselves almost compulsively (for example, a man who among many other fabrications made repeated false confessions to offences, including implicating himself and two others of being involved in a homicide).

Semantic memory

This is specifically impaired in semantic dementia, but semantic memory impairment arises much more commonly alongside episodic memory disorder in Alzheimer or vascular dementia. In such cases, the accused may not fulfil the criteria for fitness to plead or stand trial, and this will need to be evaluated by a full neuropsychological assessment. In recent years, claims of actual

or incipient dementia have arisen in cases of alleged fraudsters and war criminals, and people charged with child sexual abuse many years after the alleged event.

Semantic memory issues occasionally arise in younger people – for example, a young man who was held on Death Row in Texas, but assessed by a UK expert on behalf of the London-based 'Death Penalty Project'. State prosecutors had claimed that he was 'mentally competent' to be executed. However, his school reports were available and these included some results of psychological testing. His semantic memory (knowledge), in terms of both formal test performance and his school work and formal tests, clearly indicated that he was at or near the 'intellectual disability' range.

Implicit memory

This is less commonly an issue in the courts. However, in the case of *R v Padola*[2] (Padola was charged with killing a policeman), the defendant had struck his head on a door during his arrest and claimed episodic memory loss. He nevertheless retained pre-existing knowledge of aerodynamics and other skills, and this was used to argue that he was malingering. This was an erroneous inference by the court (on the advice of Crown-appointed psychiatric experts): we now know that preserved implicit or semantic knowledge of aerodynamics would be expected alongside (genuine) episodic memory loss.

Further reading

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[2] *R v Padola* [1960] 1 Q.B. 325.

Chapter Two. Memory through the lifespan

The capacity of our memory is limited during both childhood and old age but for different reasons. Before the age of 3 years, children are typically not able to recall even significant events such as the birth of a sibling. Beyond this point retention gradually improves, with memory for an unusual event after a year increasing from 67% at age 5 to 90% in 8-year-olds, while other studies have shown some retention of an interactive event, such as a visit to a museum, up to six years later.

This improvement reflects a number of factors. One is the gradual maturation of the brain, a process that continues up to and indeed beyond adolescence. A second factor is a continuing build-up of semantic memory, knowledge of the world that allows experiences to be better understood and related to existing knowledge. The lack of a firm understanding can not only reduce memorability but can also make a child more suggestible and susceptible to influence from misleading information purveyed by sources including legal investigators, carers, and defendants. The capacity of children to reliably recall events increases gradually with age, and it is certainly the case that even young children can potentially serve as effective witnesses. However, considerable variability occurs at all ages with capacity potentially changing following growth spurts, making chronological age only a rough guide rather than a clear indicator of the reliability of their testimony.

Variability also characterises the effect of old age on memory. Episodic long-term memory, the capacity to remember a specific event – what happened where or when – is most susceptible to change with ageing. Remembering an observed event will typically rely on episodic memory as well as on semantic memory, general background knowledge which declines much less with age. It is important to stress, however, that many other factors will influence episodic memory and that individuals vary greatly in the effects of ageing, making age per se an unreliable guide to accuracy.

Parties to court proceedings will need to bear this variability in mind in decisions on whether to call complainants and other witnesses of a particularly young or advanced age. In criminal proceedings both groups come under the legal category of vulnerable witnesses, and their testimony at court can be supported through Special Measures available at the discretion of the presiding judge or magistrates. These include the use of pre-recorded investigative interviews[3] as evidence-in-chief and, and for children under 18, the possibility of pre-trial recorded cross-examination (under Section 28 of the Youth Justice and Criminal Evidence Act 1999 in England and Wales),[4] together with the appointment of an intermediary to assist complainants and witnesses with communication difficulties.[5] Also, judges now have discretion through pre-trial Ground Rules Hearings to give directions as to the appropriate questioning of vulnerable witnesses and defendants at trial. These may include limits on the number and types of question that counsel may ask, and explanations to the jury about any restrictions placed on cross-examination.

[3] Conducted according to *Achieving Best Evidence in Criminal Proceedings* (2022) – see section 3.1.

[4] See also Section 271I of the Criminal Procedure (Scotland) Act 1995, and article 16 of the Criminal Evidence (Northern Ireland) Order 1999.

[5] Registered Intermediaries in Northern Ireland also assist vulnerable defendants, unlike their counterparts in England & Wales.

Further reading

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Chapter Three. Witness testimony

3.1 Principles of effective interviewing

Given the importance of witness testimony in many court proceedings, it is essential that such testimony is as complete and accurate as possible. The witness's first spontaneous account of an event is likely to be the most accurate, but also incomplete: interviewers will need to expand upon this information to gain a comprehensive account, but training is required to minimise inadvertent distortion through inappropriate questioning.

Police officers in England and Wales interviewing both adult suspects and complainants are trained to use the PEACE interview technique.[6] This involves five discrete stages: Planning and preparation; Engage and explain; Account, clarification, and challenge; Closure, and Evaluation. Before any questioning, interviewers are taught to build rapport with the witness, to ensure that the interview is a two-way conversation, with witnesses feeling free to use their own words and express uncertainty if they do not know the answer to a question.

For interviewing children, and vulnerable or intimidated adult witnesses, officers employ the interview procedure described in *Achieving Best Evidence in Criminal Proceedings*,[7] often abbreviated to ABE. This, too, uses a staged approach, beginning with rapport building and then eliciting a free narrative account. This is followed by questioning designed to clarify and develop the narrative, and then by a summary and closure phase.

Unless questions are carefully phrased, overall accuracy can be reduced. Some types of question are more likely than others to produce misleading answers. Investigators are taught to use open questions ('Tell me more about…', 'What happened next?') that encourage witnesses to provide answers in their own words. Closed questions ('Were his eyes brown or blue?') encourage guessing, as do specific questions ('What colour were his trousers?'). Leading questions (for example 'What happened on the bed?' when the witness has only mentioned entering the bedroom) should be avoided.

Systematic surveys show that, despite training, investigators continue to ask too few open questions, mainly using specific and forced-choice questions and even some leading questions. Such strategies shorten interview time but increase the risk of misleading accounts. Another effective interview protocol sometimes used by police is the Cognitive Interview (CI), which combines the rapport elements of the PEACE interview with questioning techniques known to increase accurate information. One important technique in the Cognitive Interview is context reinstatement: witnesses are encouraged to mentally revisit the circumstances surrounding the key event prior to recall. Research suggests that, compared to traditional police interviewing methods, the CI yields more detailed information from witnesses, but the time taken to administer limits its use by officers under operational conditions. With these limitations in mind, abbreviated and witness-administered versions of the CI are currently under development.

[6] The interview is known by the acronym PRICE in Scotland.
[7] Ministry of Justice. The 4th edition (2022) can be downloaded from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1051269/achieving-best-evidence-criminal-proceedings.pdf

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3.2 Suggestion and misinformation

Witness accounts are often fragmentary and incomplete and therefore vulnerable to suggestion and misinformation. It is important that witness statements are taken at an early stage; delays in securing statements can only lead to a further deterioration in the person's memory and more opportunities for the original memory to be contaminated. Suggestion may occur through the investigative and prosecution process, and misinformation may be encountered by talking to other witnesses or reading accounts of the event in newspapers or social media. Research demonstrates that incorrect details from such sources can contaminate or change the witness's account.

Witness interviews need to be conducted in a way that minimises the risk of such distortion. Established police interview protocols, such as PEACE, ABE, and the Cognitive Interview, all emphasise the importance of enabling the witness to give their own account of events and avoiding the use of closed or leading questions driven by the interviewer's belief as to what must have, or is likely to have, occurred. They also lay emphasis upon reassuring the witness that 'don't remember' is an acceptable and honest response. Without such reassurance, direct questions can lead to compliance by the witness, particularly when the questioner is perceived as a powerful figure such as a police officer. Presumptions can also be conveyed more subtly through the choice of language. In one celebrated experiment, witnesses to a vehicle collision who were questioned about one vehicle having 'smashed' into another reported its speed as significantly higher than those who heard more neutral terms ('contacted' or 'hit'). In a further experiment, participants in the 'smashed' group who were re-questioned a week later were likely to recall the collision as more serious than those in the 'hit' group. The choice of verb had apparently amended their memory of the severity of the accident itself: it seems that access to an original memory of an event cannot easily be divorced from the information conveyed or implied by the interviewer.

Are some individuals more vulnerable to the effects of misinformation than others? Young children, the learning disabled, and elderly witnesses appear to be generally more suggestible to leading questions (see also section 6.3 on 'False confessions'), particularly when describing a single unfamiliar incident, as opposed to a familiar and repeated event. The more complete and detailed the original memory, the more resistant it is likely to be to misinformation effects, a factor to be borne in mind when dealing with historical allegations.

Can original event memories be recovered, cleansed of any misinformation that may have accumulated? Hypnosis was at one time thought to be an answer, but it became clear that memories 'recovered' through this procedure were unreliable: witnesses were more, not less

suggestible. Context reinstatement instructions (see section 3.1) on the other hand can assist witnesses in gaining access to more detailed and reliable memories.

Are there any methods to distinguish reliable accounts that are free from the influence of suggestion or fabrication? One technique in use for analysing the statements of children is CBCA (Criteria-Based Content Analysis), which is in use in a number of European countries, though not in the UK. Statements are assessed for the presence of up to 19 features which are believed to be associated with truthfulness, including the amount of detail reported, spontaneous corrections, and relevant details not understood. Many of these criteria are intuitively plausible and their diagnostic value has been supported by research.

However, CBCA evidence needs to be treated with caution, particularly when tendered by experts not fully trained in its use. First, the quality of the initial interview is key; it must include the minimum of leading or closed questions and afford the child the maximum opportunity to provide an account in their own words. Second, any analysis must take account of developmental factors. Irrespective of their accuracy, children's accounts increase in length and complexity with age, and currently there are no accepted norms as to how many criteria should be fulfilled at what age for a statement to be judged reliable. Third, any assessment should never be considered in isolation, but in the context of the totality of the case, including medical and circumstantial evidence and the statements of other witnesses and the accused. Until these issues are resolved, it is unlikely that CBCA will be used with any regularity in family courts in the United Kingdom.

Further reading

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Loftus, E.F. (2005), 'Planting misinformation in the human mind: A 30-year investigation into the malleability of human memory', *Learning and Memory*, 12: 361-366. https://doi.org/10.1101/lm.94705

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3.3 Effects of intoxication with alcohol and other drugs

A complainant, suspect, or eyewitness may have been under the influence of alcohol or other psychoactive drugs around the time that key events of a case occurred, and this can have significant impacts upon the accuracy and completeness of their testimony. These impacts are principally on the encoding of new memories but may also affect storage.

There are many hundreds of psychoactive drugs, all of which interfere with how our brain cells communicate with each other. Some are prescribed as medicines, and others are taken for their mood effects (for example, a 'high'; to relax). Drugs are sometimes given covertly to facilitate a crime such as rape or theft. Many drugs impair our ability to encode and store new memories to an extent that depends upon the dose. These include benzodiazepines (sleeping pills and tranquillisers), some types of antidepressants (anticholinergics such as amitriptyline), esketamine, cannabis, and alcohol. The effects of cannabis vary with the strain and strength, increasing with tetrahydrocannabinol (THC) content, and moderated somewhat by cannabidiol content.

In most court situations, witnesses are asked to recall information that is stored in their episodic long-term memory, which is most prone to drug impairment. Implicit memory and semantic memory are generally unaffected by drugs. Psychoactive drugs do not only affect memory. Most also alter mood, some alter perception, and some stimulate or sedate. Drugs can impair concentration so that certain details of events are ignored; some 'disinhibit' our behaviour so that we say or do things which are not typical of our normal selves. All these factors are relevant in evaluating witness testimony.

Generally, the larger the dose of a drug, the greater will be its amnesic effects. Each drug has its own timeline as it is absorbed, distributed, metabolised, and then eliminated from the body. Its memory effects will also vary with time. For a tablet containing 2 mg of the benzodiazepine lorazepam, episodic memory impairment will peak 1.5 to 5 hours after consumption and then subside. If the same drug is given intravenously, snorted, or inhaled, it will be more rapidly absorbed in the brain with the peak occurring within minutes.

If someone has been taking a drug daily for months, the brain will adapt to the drug's presence and memory impairment will be less compared to a person who has taken just a single dose. Older people generally show greater impairment due to changes with age in how drugs are metabolised. Weight and gender are also important: a heavy man is likely to show less memory impairment than a light woman. And like alcohol, an empty stomach can increase how rapidly drugs are absorbed by the brain.

Alcohol 'blackouts' are gaps in memory and reflect the amount and speed of alcohol consumption. Alcohol disrupts memory consolidation, which can impair an alcohol-intoxicated witness's ability to form a complete long-term memory of relevant events. The amount and type of information alcohol-intoxicated witnesses remember can vary, but the accuracy of the information recalled may be unaffected, particularly if witnesses can freely report their memories. Like sober individuals, witnesses who are acutely alcohol-intoxicated during a crime are more likely to be accurate in remembering important, compared to less relevant, information. Alcohol consumption can also strengthen memories for events witnessed immediately prior to intoxication. Severe and prolonged over-consumption can lead to disorders like Wernicke–Korsakoff syndrome, causing profound and long-lasting effects upon memory function.

Further reading

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Curran, H.V. (2006), 'Effects of drugs on witness memory', in Heaton-Armstrong, A., Shepherd, E., Gudjonsson, G. & Wolchover, D. (eds), *Witness testimony: Psychological, investigative and evidential perspectives* (Oxford University Press), 77-89.

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3.4 Memory for emotional and traumatic events

Events that produce negative emotions at the time, such as being a victim of or witnessing a crime, are often associated with better memory for some important details of the event but

poorer memory for background information that is of less relevance. 'Flashbulb memories' are memories of the circumstances in which a person learned of a significant public event such as a terrorist attack that happened elsewhere. There is evidence that people often remember details of how they heard of such events, but also that they may be over-confident of their memories of when they did so and where they were.

One reason emotional events tend to be recalled better is that thoughts and images of the event often come spontaneously to mind afterwards, thereby strengthening the memory. The memory may also be strengthened by being deliberately thought about or told to others. Although the amount of detail that can be recalled decreases over time, this may plateau after some months or years, after which little further information is lost.

Traumatic events are sometimes defined as events that cause very high levels of fear, helplessness, or horror. Studies show that there tends to be better recall than for an everyday event but only for selected aspects and only if the event becomes part of the person's life story. As with all memories, errors may be present. As well as their autobiographical memories of what happened, people who develop post-traumatic stress disorder (PTSD) often experience powerful involuntary images that focus on selected moments of the event ('flashbacks'). During flashbacks they feel as though the event is happening again vividly in the present. There is often intense emotion and their awareness of their current surroundings may be disrupted. Although flashbacks are thought to usually correspond well to what the person experienced, there are numerous recorded examples of flashbacks that contained additional, imagined elements (for example when there was a head injury that interfered with memory encoding). Another symptom of PTSD is an inability to recall significant aspects of the traumatic event, and detailed investigations of clinical narratives show that they may be disorganised or fragmented, particularly at those moments when emotions were at their most extreme. Performance on general tests of memory and concentration tends to be impaired, but this does not generally interfere with the ability to provide an account of the traumatic event.

Further reading

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3.5 Adult memory for childhood events

Knowledge of this area may be important when there are allegations of historical offences (typically, sexual offences) said to have been committed many years previously when the complainant was still a child. Most adults have no clear verbal memory for events that occur before the age of around 3 years, although this is an average figure and there is considerable variability depending on gender, education, culture, mental development, and the nature of the event. Most people can recall a small number of fragmented memories with a few details from between the ages of 3 and 6. Childhood events that are repeated, distinctive, or traumatising are better recalled than others. Studies of young adults' verified memories for distinctive events that occurred before the

age of 5 have shown that recall of details can be substantially accurate, and that people can tell the difference between their own memories and those that originate elsewhere. So while adults' early childhood memories may be limited this does not necessarily detract from their accuracy. The gist of the event(s) is more likely to be correct than specific details.

The term 'recovered memory' refers to recall of an event (often from childhood) that the person says they had forgotten ever occurred. Professional bodies and memory researchers are in general agreement that such memories may be accurate in whole or in part, or may be entirely false. There is no agreement about the mechanisms that underlie memory recoveries. Therefore, criticisms made by some psychologists of hypothetical mechanisms such as unconscious repression do not rule out the possibility that traumatic events can be forgotten and then recalled later for other reasons.

Although there is no evidence that recovered memories are in general any less accurate than continuous memories of which the person has always been aware, a widely-held opinion is that there is more scope for unreliability. One reason is because memory recovery may only occur after a therapist has suggested that the person has been abused. The other reason is because such memories do not always come back to mind as normal autobiographical memories complete with information about where the event took place, who was present, etc. Research and clinical observations indicate that they may initially come back with little if any autobiographical context, but only in the form of a dream or of quite limited sensory images. As a result it is common for people to question whether their experiences do correspond to actual events. A context may then be pieced together over time based on further recall or inferences derived from what the person knows about their early life or what they are told by others. The resulting account may be given with great confidence, even though what has actually been remembered (as opposed to imagined, inferred, or suggested by others) is much more limited.

If recovered memories form an important part of a complainant's evidence, it may be appropriate to seek an expert review of factors that are relevant to their reliability. Factors to be taken into consideration include: (1) whether the complainant's description of their memory is consistent with scientific findings about what, given their age and the nature of the event, could reasonably be expected to be remembered and the way it is remembered; (2) whether there have been suggestive influences on the memories, such as inappropriate therapeutic practices; (3) whether the source of the memories is clear or whether they have their origin in dreams or hallucinations; (4) whether the memory has been pieced together with the help of inferences about what probably happened or contains elements that are acknowledged as the products of imagination.

Although some of these factors could be considered by a jury based on their general knowledge of their own and others' memories, there are likely to be circumstances in which an expert report may be deemed as meeting the necessity test set out in the Criminal Practice Directions and Family Procedure Rules. For example, complainants' accounts often contain little if any information about whether or not a memory was recovered, what the circumstances were, how detailed the memory was initially, and how much it was later elaborated. To elicit such information requires careful and knowledgeable questioning. Familiarity with specific therapeutic techniques may also help to describe in more detail the situation that was present prior to memory recovery. For example, even if no suggestion was present, therapies involving a degree of free association may have produced mental images or thoughts that the patient interpreted as corresponding to actual memories. Such a report should not offer an opinion as to the veracity of the allegations, but present relevant information that might otherwise never come to the jury's attention.

Further reading

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Chapter Four. Eyewitness identification

4.1 Situational factors influencing the accuracy of eyewitness identification

The identification of a suspect by a witness is frequently important evidence in securing a successful prosecution. However, numerous miscarriages of justice based on mistaken identification underline the care with which such evidence should be handled at court. Following a review by Lord Devlin (1976)[8] on identification evidence in criminal cases, new procedures were introduced judicially in England.[9] These required judges in their summing-up to warn juries of the special need for caution in identification cases and to review the particular circumstances in which the identification took place.[10] These are neatly summarised by the judicial mnemonic ADVOKATE, which provides a useful, if not exhaustive, guide to the situational factors which can influence subsequent identification accuracy:

A – amount of time suspect under observation
D – distance between witness and suspect / incident
V – visibility including time of day and lighting
O – obstructions blocking the view of the suspect
K – known suspect from before
A – any reason to remember the suspect?
T – time lapse between first and later identification
E – errors or discrepancies in description and appearance

There is robust evidence from experimental research which supports the importance of all but one of these factors having an influence upon identification accuracy. The one exception concerns the quality of a witness's initial description of a suspect. While gross differences, such as the race or gender of the suspect, should certainly cause concern, minor discrepancies between description and suspect appearance can often arise, particularly if a witness has been repeatedly pressed to remember detail during earlier interviews. Verbal recall and visual identification appear to draw upon different cognitive mechanisms.

What is less well understood is how these factors interact with each other. For instance, a familiar person can readily be identified at distances and in visibility where identification of an unfamiliar person would be highly problematic. Nor are the precise limits known for any of these circumstances as to when the chances of an accurate identification shade into an unreliable

[8] Report to the Secretary of State for the Home Department of the Departmental Committee on Identification Evidence in Criminal Cases (chair Lord Devlin), ordered by the House of Commons to be printed 26 April 1976 (accessible at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228523/0338.pdf).
[9] *R v Turnbull* (1976) 63 Cr. App. R. 132.
[10] A model jury direction can be found at 15.1-15.6 of the: Crown Court Compendium – June 2022 – Courts and Tribunals Judiciary.

outcome. In these circumstances, the current judicial guidance which urges extreme caution about bringing prosecutions on the basis of identification evidence alone seems well founded.[11]

Further reading

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4.2 How do witness factors influence eyewitness identification?

The ability to observe an unfamiliar individual and later select them accurately through a formal identification procedure is a surprisingly demanding task and prone to error. People vary greatly in their relative competence: some are habitually poor at recognising the faces of others, the extreme form of which is reflected in the clinical condition of prosopagnosia. A few show great prowess at recognising other people, despite changes in age and appearance: so-called super recognisers. More generally, the amount of personal detail stored in memory as a result of a casual interaction can be limited, as illustrated by *change blindness*: around two-thirds of people who talk briefly to a stranger fail to notice if, after a brief interruption, this person is replaced by another bearing only a passing resemblance. In addition to individual ability, other factors can influence identification performance, including the characteristics of the witness, the circumstances of observation, and excessive delay between the incident observed and later identification.

As regards the *characteristics of the witness*, age, but not gender, appears to influence identification accuracy. In experimental research involving different-age witnesses observing a staged crime, children and the elderly show a greater tendency to select someone during an identification procedure, irrespective of the accuracy of their identification. While the standard police instructions (PACE Codes of Practice: Code D Annex A[11])[12] emphasise that the suspect may or may not appear in the video identification images, this may be insufficient to curb the tendency to choose. People of all ages are generally more accurate at identifying suspects from their own ethnic grouping. There is some evidence that this can be ameliorated by prolonged contact with other ethnic groups (shopkeepers for instance, in multi-ethnic areas), but it remains a very robust effect.

Concerning the *circumstances of observation*, many confrontations with an offender will induce high levels of stress for the complainant, which can impair the ability subsequently to identify the culprit. If a weapon is involved, the complainant's attention can become focused upon it, to the detriment of taking in the appearance of the perpetrator: the weapon focus effect. Similar disruption to the normal process of observing faces can be caused by the wearing of dark glasses or masks (including anti-viral masks): the upper features of the face are generally more important for recognition purposes than lower features.

[11] Similar guidance is offered in Scotland: see jury manual.pdf (judiciary.scot) at p. 21.1; and in Northern Ireland, see BenchBook.pdf (judiciaryni.uk) at p.104.

[12] The Northern Ireland equivalent is PACE Code of Practice D Annex B [16]. For Scotland see the draft Code of Practice on the conduct of identification procedures involving persons suspected or accused of committing offences, Appendix D, para. 35 (live parades) and para. 30 (video parades).

Mistakes in identification can occur through a process of unconscious transference: a suspect in an identification process is selected on the basis of a vague familiarity, but this stems not from the offence but from another entirely innocent context, perhaps a workplace interaction or previous social contact. Careful scrutiny of the totality of evidence (including forensic evidence) can guard against this outcome.

Finally, *excessive delay between the offence and later identification* can impair the memory of witnesses, particularly if there is no attempt to mentally rehearse the appearance of the offender in the interim. Degraded memories can be further impaired by scrutiny of other faces through exposure to 'mugshot' albums or the processes involved in compiling a facial composite.

Further reading

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4.3 Identification procedures

The police in the UK have long used identification parades (e.g., VIPER, PROMAT) to help establish the identity of an unknown offender. Miscarriages of justice can occur when the suspect selected by an eyewitness in an identification parade is innocent. Common reasons for misidentification include the police using suggestive language, exposing the eyewitness to the suspect's image multiple times, or 'unfair' identification parades. An unfair parade is when the suspect stands out from the other parade members. One example is a suspect with a distinguishing feature, such as a tattoo on their face. If the other people in the parade do not have that same feature, witnesses are more likely to pick the suspect – guilty or innocent.

Despite these potential problems, suspect identifications are powerful evidence against the defendant. Misidentifications highlight the need for formal protocols and strict adherence to administering the parade procedure. Most identification parades today are administered virtually rather than in person. This practice has many advantages, including speed. The shortened time between the crime and the parade allows investigators to tap into a witness's memory before it is subject to contamination and forgetting. Parade members, known as 'foils', are selected from an extensive database of people who can match most suspects. Police can also replicate any distinguishing characteristic (for example, face tattoo) on every parade member, which minimises bias and allows for the creation of fair parades.

The parades in England and Wales are typically videos of nine people: at least eight foils and the police suspect. In Scotland, according to the Lord Advocate's guidelines (2007; 2022), there must be at least five other people in addition to the suspect. Videos show a person from the shoulders up, first looking directly at the camera, then moving their head to one side and then the other to provide profile views, before reverting to a front view. Each person's video is shown twice.

Before administering the parade, the police officer instructs the eyewitness that (1) the person who committed the crime may or may not be in the parade, (2) any member can be viewed any number of times at their request, and (3) the decision should be withheld until the parade has cycled through twice. In addition to the instructions, PACE Code D (and its Scottish equivalent) dictates the information that the administering officer must record (including the decision, the instructions given, the attendees). The eyewitness then confirms the report is an accurate representation.

Not all suspect identifications are of equal value. There are indicators of accuracy, including the most researched one, confidence. Identifications made with high confidence on the first opportunity at a parade are typically highly accurate and higher in accuracy than those made with lower confidence. An eyewitness who makes a suspect identification with low confidence effectively signals a guess response. Confidence is even indicative of accuracy when factors that make identification more difficult are present, including short exposure durations, high-stress conditions, long retention intervals, the perpetrator and eyewitness are of different races, etc. However, confidence that is expressed later (for example at court) is much less strongly related to accuracy.

At present, confidence levels are not routinely measured in the UK when identification parades are first administered. But because confidence is indicative of accuracy, this is a missed opportunity to increase the efficacy of police investigations and improve trial outcomes. Identification procedures do not prohibit asking witnesses how confident they are in the accuracy of their identification (they even require it when the police stage a confrontation between suspect and witness). Training officers to administer identification parades could include a standardised procedure for collecting expressions of confidence as part of the formal report.

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Chapter Five. Conditions that may impair memory

5.1 Psychiatric disorders

A variety of psychiatric disorders can have effects on memory performance. Schizophrenia is a syndrome diagnosed in the presence of certain specific hallucinations and delusions and/or so-called 'negative' symptoms such as apathy, loss of motivation, social withdrawal, inappropriate affect, and loosening of associations. A memory disorder with the pattern of an amnesic syndrome has been described in schizophrenia. Changes are sometimes seen on MRI or CT scan imaging in the medial temporal lobes of the brain, structures that are critical to new memory formation. However, these imaging changes are not specific to schizophrenia, and should be interpreted very cautiously in court. The negative symptoms of schizophrenia may be associated with damage to the frontal lobes of the brain, and these can also affect memory performance. Semantic memory loss (see sections 1.1 and 1.2) has also been reported.

Occasionally, the delusions in schizophrenia take the form of delusional memories, and these can distort recollection of an offence or past legal proceedings. Confabulation, such as occurs in brain injury, has also been reported in schizophrenia, although this may reflect underlying delusions and/or other factors.

Clinical depression can range from severe and incapacitating to mild or minor. The former may be accompanied by psychotic symptoms, and may be part of a recurrent bipolar disorder in which depressive and manic states both occur. When depression is severe or moderately severe, memory and cognitive function may be so seriously affected that it can become difficult to determine whether a person is just suffering from clinical depression or from an underlying degenerative dementia. This occurs most commonly in the elderly, but it also arises in younger people in forensic settings, leading lawyers to raise questions about fitness to plead (and stand trial) or mental capacity.

Other important findings in acute clinical depression are that there is a shift towards recalling unpleasant ('negatively valenced') memories from the past, and that the retrieval of autobiographical memories tends to be less specific, i.e. lacking in detail. The latter has important implications for the presentation of evidence in court, because someone in the witness box may produce memories lacking in detail as a result of depression (and the stress of the situation), or be hesitant in autobiographical memory retrieval, and this might be mistakenly construed by a jury as evidence of dishonesty or unreliability. Moreover, there is a substantial body of research showing that individuals with depression are no worse than others in remembering details of significant aversive or emotional events in their lives (see section 3.4). Depression is not grounds for assuming that someone is inaccurate in their recall.

In the 'manic phase' of bipolar disorder, the patient is agitated with elated and irritable mood, excessively rapid ('pressure' of) speech, 'flight' of ideas (i.e. an excess of disjointed, poorly connected ideas), behavioural disinhibition, and overactivity. This phase is more commonly associated with offending than is severe depression. Any memory problem during or after an acute episode of mania is likely to reflect the lack of attention that typically accompanies it. It may be hard to recall events that occurred during an altered mood state once mood is normal again.

An anxiety disorder, whether reflecting a short-term change or a long-term condition, may also adversely affect performance on memory tasks. However, there is no evidence that anxiety impairs how well people recall significant adverse events in their lives. Post-traumatic stress disorder was discussed in section 3.4.

ECT (electro-convulsive therapy) is less commonly used in the management of depression and bipolar disorder than in the past, but can give rise to gaps in memory, faster forgetting, and there are some reports of lasting difficulties in autobiographical memory retrieval. Some antidepressants (especially those with known anticholinergic effects),[13] antipsychotics, and some anxiety-reducing agents can also affect memory performance.

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5.2 Traumatic brain injury

Everyday memory loss

People with traumatic brain injury (TBI) may experience different types and severity of memory difficulties. These may interact with other symptoms, for example, concentration difficulties and excessive fatigue. Interviews by clinicians regarding memory problems with a view to preparing medico-legal reports should cover the likely main aspects, as described in section 7.2 below. Difficulties in such functioning can result in subtle disability, but in more severe injury the extent of memory difficulties starts to impinge fully on very basic activities of daily living. Normally, earlier life and childhood memories are relatively intact. Unusual patterns of retrograde amnesia may have a psychological origin.

Loss of memory around the traumatic brain injury

The extent of memory loss may give a guide to the severity of brain damage. Loss of memory from the period leading up to the injury (retrograde amnesia) and immediately after the injury (post-traumatic amnesia or PTA) can be determined by carefully distinguishing between what the person knows happened from other sources and what they specifically remember.

The extent of PTA can vary from no memory loss to islands of preservation, or complete memory loss for an extended period. It should be noted that just after the accident a person can appear to be orientated and purposeful, but later have impaired memory for events around this period, due to lack of memory consolidation. Caution is needed in interpreting PTA if a person has been medicated and sedated for prolonged periods.

Knowledge of the length of PTA (hours, days, or weeks of memory loss until relative recovery) contributes to the formal grading of severity of brain damage, along with other indicators such

[13] Drugs suppressing acetylcholine at neuronal (synaptic) junctions.

as loss of consciousness, immediate disorientation, and neuroradiological evidence. Various grading scale methods are used to integrate this information: most commonly used are the Russell criteria and the Mayo Clinic criteria.

Whilst PTA predicts severity of TBI, it is known that outcomes can be variable and not fully predictable, and that the approximate association (correlation) between the two is moderate in size. Retrograde amnesia has been shown not to predict the severity of TBI.

Neuropsychological assessment

As described in section 7.2, a specialist neuropsychological assessment is required to ascertain current memory impairment, tailored specifically for people with traumatic brain injury. Interview reports about current symptoms following TBI and neuropsychological performance may not be fully consistent, due to lack of insight. In mild cases, neuropsychological testing can suggest normal functioning even if the person reports difficulties in memory in everyday life. This may be due to aspects such as poor everyday concentration, and excessive fatigue, impacting on functioning outside the structured clinical assessment setting.

Outcome

The characteristics of memory impairment should be formulated by a clinical neuropsychologist to help determine likely disability and can provide the basis for suggested rehabilitation.

Further reading

Canty, A.L., Shum, D.H.K., Levin, H.S. & Chan, R.C.K. (2014), 'Memory impairments after traumatic brain injury', in Levin, H.S., Shum, D.H.K. & Chan, R.C.K. (eds), *Understanding traumatic brain injury: Current research and future directions* (Oxford University Press), 71-98.

Ponsford, J.L., Spitz, G. & McKenzie, D. (2016), 'Using post-traumatic amnesia to predict outcome after traumatic brain injury', *Journal of Neurotrauma*, 33: 997-1004. https://doi.org/10.1089/neu.2015.4025

5.3 Neurological disorders and dementia

Clinical disorders of memory can be transient (giving rise to a discrete episode of amnesia) or they can be persisting. They can involve a specific memory disorder (as in the amnesic syndrome) or implicate other cognitive dysfunctions as well (as in degenerative dementias).

Neurological causes of a transient amnesia include: toxic confusional states (delirium arising from metabolic, endocrine, or drug-induced toxicity), head injury, an epileptic seizure, acute cerebral hypoxia and ischaemia (lack of oxygen and/or blood supply to the brain), hypoglycaemia (low blood sugar), an alcoholic 'blackout' (a memory gap occurring at very high blood alcohol levels), the transient global amnesia (TGA) syndrome, and transient epileptic amnesia (TEA). As discussed in section 6.2, offences occasionally occur during seizures, hypoglycaemia, or a parasomnia (sleep disorder).

Persisting memory disorders include: the amnesic syndrome, which primarily affects episodic long-term memory; semantic dementia, which implicates semantic memory; and Alzheimer or vascular dementia, which affect both episodic and semantic memory (see sections 1.1 and 1.2).

An amnesic syndrome can be caused by a variety of different disorders. These include: an encephalitis (brain inflammation), either viral (such as that caused by the herpes simplex virus) or autoimmune (for example voltage-gated potassium antibodies); severe hypoxia/ischaemia (following, for example, an anaesthetic accident or a hanging attempt); thiamine depletion, as in the alcoholic Korsakoff syndrome; a severe head injury; and certain types of stroke or deep midline tumours.

What these disorders all have in common (except for semantic dementia) is disruption of certain deep midline structures of the brain thought to be critical to memory formation. This disruption gives rise to anterograde amnesia, the failure to encode, store, and retrieve new memories. Consistent with this, there is a common neuropsychological pattern in most cases of amnesic syndrome with relative preservation of working and implicit memory and a severe deficit in episodic memory. Where an extensive retrograde amnesia occurs (i.e. for memories which preceded the onset of a brain injury or disease), there is usually additional cortical pathology.

There are many types of dementia, including Alzheimer, vascular, Lewy Body and Parkinson's dementia, Fronto-Temporal Dementia (FTD), Huntington's disease, and others. Quite often it is the non-memory features of a dementia that bring a person to legal attention: for example, frontal-executive features in Huntington's or the behavioural variant (bv) of FTD (for example, a man who scratched all the expensive cars in his neighbourhood; or a fatal accident caused by an elderly bus driver). The type of dementia (and the evidence for it) as well as its effects on memory should be stated in an expert report for court. Across UK jurisdictions, amnesia per se does not in itself affect criminal responsibility, but a neurological memory disorder may well affect fitness to plead, or to stand trial, or mental capacity to make a specific decision. Neurological disease may also be a mitigating factor at sentencing.

Further reading

Kopelman, M.D. (2002), 'Disorders of memory', *Brain*, 125: 2152-2190. https://doi.org/10.1093/brain/awf229

Cope, T.E., Isaacs, J.D. & Kopelman, M.D. (2020), 'Memory disorders and dementias', in Agrawal, N., Faruqui, R. & Bodani, M. (eds), *Oxford textbook of neuropsychiatry* (Oxford University Press), 277-308. https://doi.org/10.1093/med/9780198757139.003.0025

5.4 Learning disabilities

Children and adults with learning disabilities have difficulties with thinking and reasoning, and with activities of day-to-day living. They often have additional co-occurring conditions such as autism or Down syndrome. Learning disabilities are common, with an estimated prevalence in the general population of 1%. They are linked with increased risk of abuse and victimisation, making it imperative to understand witness skills in this vulnerable group.

Remembering an event

In experimental studies of witnessed events, children and adults with learning disabilities can provide a good range of accurate forensic detail in interviews, albeit with lower recall levels than peers without learning disabilities (of the same chronological age). Research on children is

extensive, revealing the importance of the level of learning disability. Those with mild learning disabilities (IQ levels 55-70) can sometimes provide accounts that are as full, accurate and detailed as chronological age peers in response to open questioning (e.g. 'Tell me everything you can remember'). When questions are more focused, their recall tends to be lower and less accurate, although still not below developmental level (mental age). Children with moderate learning disabilities (IQ levels 40-55) may recall less information in response to all question types, although they still recall accurate and useful details. Studies disagree about whether children with moderate learning disabilities reach mental age-appropriate levels of performance or fall below them. Such research is absent for adults.

Suggestibility

In experimental studies incorporating leading and misleading questions about witnessed events, adults and children with learning disabilities are more suggestible compared to chronological age peers. The more extensive research on children indicates that those with mild learning disabilities are not more suggestible than expected based on mental age. However, those with moderate learning disabilities can be more suggestible than mental age level. Overall, suggestibility is an area of vulnerability, so suggestive questions should be avoided.

Changing responses to repeated questions

If focused questions are repeated within interviews or across interviews after short delays (for example two weeks), the likelihood of children with learning disabilities changing their responses is higher than would be expected given their mental and chronological age level. This is an area of vulnerability, although research remains limited.

Acquiescence and response to cross-examination

Always agreeing with a questioner may be a vulnerability in those with learning disabilities, particularly with yes/no style questions. There is limited research on cross-examination in children with learning disabilities, but what there is suggests they are comparable to typical children in respect of changing their answers when challenged. Poor understanding of legal terminology is an additional vulnerability but has only been assessed in adults.

Recommendations for interviewers and advocates

Tailor interviews to developmental level, and use an intermediary to facilitate communication (intermediaries are available for witnesses/victims and can be available for suspects/defendants).

Recommendations for the interview

Follow statutory advice (Achieving Best Evidence in Criminal Proceedings, 2022) and consider issues raised by research on those with learning disabilities. For example: ensure thorough preparation; use clear and simple language; use one idea per sentence; use short sentences; use the same words for the same things/the person's own words; adopt a supportive manner; use slower speech; allow extra time for thinking and responding; avoid double negatives; keep patient when waiting for and listening to responses (avoid interruption).

Further reading

Bettenay, C., Ridley, A.M., Henry, L. & Crane, L. (2014), 'Cross-examination: The testimony of children with and without intellectual disabilities', *Applied Cognitive Psychology*, 28: 204-214. https://doi.org/10.1002/acp.2979. Available at: https://openaccess.city.ac.uk/id/eprint/3824/

Brown, D.A., Lewis, C.N., Lamb, M.E. & Stephens, E. (2012), 'The influences of delay and severity of intellectual disability on event memory in children', *Journal of Consulting and Clinical Psychology*, 80: 829-841. https://doi.org/10.1037/a0029388

Henry, L.A., Bettenay, C. & Carney, D. (2011), 'Children with intellectual disabilities and developmental disorders', in Lamb, M.E., La Rooy, D.J., Malloy, L.C. & Katz, C. (eds), *Children's testimony: A handbook of psychological research and forensic practice*, 2nd edn (Wiley), 251–283. https://doi.org/10.1002/9781119998495.ch13

Morrison, J., Forrester-Jones, R., Bradshaw, J. & Murphy, G. (2019), 'Communication and cross-examination in court for children and adults with intellectual disabilities: A systematic review', *International Journal of Evidence and Proof*, 23: 366-398. https://doi.org/10.1177/1365712719851134

5.5 Autism

Autism Spectrum Disorder (hereafter, 'autism') is a lifelong neurodevelopmental condition. It is clinically diagnosed in around 1.76% of the population based on differences in social communication and interaction, alongside patterns of restricted and repetitive behaviours, interests, and activities. Approximately 18% of autistic people also have co-occurring intellectual disability. This section describes memory in people with autism who do not have co-occurring intellectual disability (section 5.4 considered the impact of intellectual disability on memory, which will usually apply in addition to the autism-specific issues outlined below).

Alongside the core defining clinical characteristics, autism is associated with a distinct pattern of memory strengths and difficulties. Autistic people tend to have good memory for timeless facts and events that happened repeatedly or over extended periods of time; for example, where they went to school, or information about an ongoing dispute (i.e. semantic memory). However, they often experience difficulties in recalling instances of specific episodes from their past; for example, an event that happened on a particular day at school, or a specific argument they had one day, including detail about 'where, when, how, what and with whom' (i.e. episodic long-term memory).

Crucially, these difficulties in recalling detailed accounts of specific, past, personally experienced events are predominantly found when very open-ended questions are asked (for example, 'tell me everything that happened'). When more specific questions or prompts are used (for example, 'You said that Pete gave you a lift yesterday. Tell me what happened while you were in the car'), autistic people are often able to recall as much as non-autistic people. It is important to remember, however, that questions must be non-leading. While autistic people are not more suggestible than non-autistic people to their memories being distorted through misinformation, they may be more compliant to acquiescing to leading questions.

Gold standard police interviewing techniques for 'neurotypical' witnesses, such as the Cognitive Interview and requests for an unbounded free narrative, are often difficult for autistic witnesses and can result in inaccurate information unless appropriate modifications are made.

Instead, autistic individuals can benefit from segmenting an event up into more manageable 'chunks' at the outset (which the interviewer can note down and display, for example, on 'post-it' notes), before then recalling each segment in detail in turn. As described in the recently revised 2022 guidance *Achieving Best Evidence in Criminal Proceedings,* other techniques that can help autistic witnesses remember include sketching the event, receiving explicit instructions regarding what to recall (for example, the 'who', 'what', 'where', 'how', and 'when'), being told ahead of the interview what will happen, where, and how (for example, a familiarisation visit to reduce anxiety), and tailoring the interview environment where possible and appropriate (for example, interviewing in a quieter room to minimise sensory issues).

Finally, it is important to note the large heterogeneity in autism. The most effective supports for autistic witnesses are individualised; what is effective for one autistic witness might not work for another. It is therefore important that interviewing techniques are used flexibly, based on an individual witness's needs and abilities. The Registered Intermediary Scheme is designed to facilitate this tailored approach.

Further reading

Maras, K. (2021), *What to do when conducting an investigative interview with an autistic person* (University of Bath). https://bit.ly/3rn1c2S

National Autistic Society (2020), *Autism: A guide for police officers and staff*. Retrieved from https://bit.ly/3hPkGtz

Slavny-Cross, R., Allison, C., Griffiths, S. & Baron-Cohen, S. (2022), 'Autism and the criminal justice system: An analysis of 93 cases', *Autism Research*. https://doi.org/10.1002/aur.2690

The Advocate's Gateway (2016), *Toolkit 3: Planning to question someone with an autism spectrum disorder including Asperger syndrome*. Retrieved from https://bit.ly/3zgIBbr

The Advocate's Gateway (2015), *Toolkit 15: Witnesses and defendants with autism: memory and sensory issues*. Retrieved from https://bit.ly/3kwLqRA

Chapter Six. Suspects' testimony

6.1 Detecting deception in accounts

At trial, judges, magistrates and jurors are habitually faced with conflicting accounts of the same event from defence and prosecution witnesses. Both cannot be true: despite taking the legal oath, one party or the other is likely being deceptive. The ability of court professionals as well as jurors to accurately detect deception is critical to effective legal decision-making. Psychologists have conducted extensive research contrasting people's demeanour when telling the truth or lying, examining possible *non-verbal* ('body language'), *verbal* (speech-based), and *physiological* cues to deception.

As regards non-verbal cues, research has not supported commonly-held beliefs about lying 'tells': the amount of blinking, gaze aversion, facial expressions, postural changes, and fidgeting have all failed to reliably distinguish truthful from fabricated accounts. Such bodily cues are not exclusively associated with lying, but are indicators of discomfort or distress. The stress of giving evidence in court can be just as great for truth-tellers as for liars.

As regards speech patterns, research suggests some uses of language are more frequent in liars than truth-tellers. While no features have been exclusively linked to lying, liars tend to provide shorter, less detailed accounts, include less sensory information (sounds; smells), make fewer spontaneous corrections, and admit to a lack of memory less often compared to truth-tellers.

Attempts have been made to detect deception using physiological measures of which the polygraph, or 'lie detector', is the best known. The results from polygraph examinations are not admissible in UK courts because of concerns over their reliability and susceptibly to false-positive errors. The polygraph is used tactically as a management tool for convicted sex offenders and this has led to increased disclosures of previously undetected offences. The search for neurological correlates of deception continues, including the use of brain scans (for example fMRI) and brain stimulation (for example TDCS). Such research has not progressed beyond the laboratory and is open to the same concerns that have been raised about the polygraph, as well as resting on the presumption that one particular centre or system within the brain is exclusively concerned with deception.

Sustained deception of the kind required to fabricate a coherent defence at court makes heavy demands upon a defendant's attention and working memory. Skilful questioning by lawyers or police officers can be effective in uncovering false accounts.

Further reading

Anonymous (2011), Detecting deception (Parliamentary Postnote no. 375). Available online at: https://www.parliament.uk/globalassets/documents/post/postpn375Detecting_deception.pdf

Granhag, P. A., Vrij, A. & Verschuere, B. (2015), Detecting deception: Current challenges and cognitive approaches (Wiley). https://doi.org/10.1002/9781118510001

6.2 Reported amnesia in offenders

Various research studies have found that amnesia is claimed by about 25–45% of people charged with homicide. It is also reported in other violent offences, and occasionally in non-violent offences. Amnesia is reported in four main types of circumstance but, of course, it may also be simulated.

(i) There are medically-based disorders, including automatisms, which are legally important but in fact rare. Automatism has been clinically defined (see the 'Further reading') as 'an abrupt change of behaviour in the absence of conscious awareness or memory formation, associated with certain specific clinical disorders, such as epilepsy, somnambulism, hypoglycaemia, or head injury'. If any of these are postulated, they require full medical investigation and, in the first three of these, there will almost certainly be a history of previous episodes (which may also have been associated with violence). Occasionally, people with dementia may genuinely have forgotten an episode of alleged past offending, but again full medical and neuropsychological investigation is required to confirm the diagnosis.

(ii) Much more common are people who commit an offence when severely intoxicated with alcohol and/or substances. So-called 'alcoholic blackouts' (see section 3.3) are associated with very high blood alcohol levels, a past history of blackouts (often witnessed by others), and commonly with associated features of an alcohol dependence syndrome. Across UK jurisdictions, there is a general rule that (a) intoxication is never a defence to any criminal charge per se; (b) 'A drunken intent is still an intent', i.e. motivational factors (such as loosened inhibitions through alcohol consumption) are irrelevant; but (c) there are certain legal exceptions.[14]

(iii) Occasionally, offenders are so psychotic that they give a completely deluded account of what happened at the time of an alleged offence. In such cases, there will be a preceding history of psychosis; and the account itself is usually implausible, but is often consistent over time. In such cases, the amnesia itself has no bearing on criminal responsibility or culpability, but the psychosis itself may do so.

(iv) In so-called 'crimes of passion', usually homicide cases, the offence is unplanned and unpremeditated, and the victim usually a spouse, lover, or family member. The amnesic gap is brief, usually a few minutes to an hour. The offence takes place in a state of extreme emotional arousal, and there is often a preceding history of depression, psychosis, or suicidal ideas. Various mechanisms affecting encoding and retrieval have been postulated. These include the effects of the extreme emotional arousal, distracted attention, and shallow encoding, and the avoidance of painful memories resulting in an absence of rehearsal and thereby further forgetting. Highly charged emotional contexts in forensic settings can affect memory in victims and eyewitnesses as well as perpetrators (see sections 3.4 and 4.2).

The possibility of simulated amnesia (malingering) always needs to be considered. There are standard symptom validity tests (SVTs) and performance validity tests (PVTs), used in civil cases, which can also be employed in this context although they generally test new learning rather than gaps in past memory. Various more specific tests have been proposed to try to identify deliberate fabrication in this context, but none is universally applicable and/or properly validated for claims of amnesia in the context of offending. Follow-up studies identify malingering or simulated

[14] *Smith, Hogan and Ormerod's Criminal Law* (16th edn, 2021) ch. 9.4; *Laws of Scotland: Stair Memorial Encyclopaedia, Criminal Law* (2nd reissue, 2021), paras. 110-111; see Eastman *et al.* (reference in 'Further reading'), pp. 485 & 335).

amnesia in a relatively low proportion of real-world cases; whereas experimental investigations, involving psychology students deliberately faking an 'amnesia', suggest that this is an easy thing to do and, in turn, can induce some genuine forgetting. More research needs to be conducted in actual offenders.

Across UK jurisdictions, a reported amnesia by itself does not affect criminal responsibility, culpability, or fitness to plead (fitness for trial in Scotland), except in very rare circumstances (such as an automatism). It is ultimately a matter for the jury, not the expert witness, to decide upon the veracity of a reported amnesia.

Further reading

Kopelman, M.D. (2013), 'Memory disorders in the law courts', *Medico-Legal Journal*, 81: 18-28. https://doi.org/10.1177/0025817213477010

Eastman, N., Adshead, G., Fox, S., Latham, R. & Whyte, S. (2012), *Oxford specialist handbook in forensic psychiatry* (Oxford University Press). https://doi.org/10.1093/med/9780199562824.001.0001

6.3 False confessions

Until the 1980s little was known about the psychology and phenomena of false confessions. Current evidence suggests that there are three types, known as 'Voluntary', 'Coerced-Compliant', and 'Coerced-Internalized' confessions, respectively.

Voluntary false confessions involve absence of police-induced pressure, and are mostly seen when people falsely confess to a crime in order to protect a peer or family member, or for the sake of attention seeking and notoriety. The coerced-compliant type occurs when suspects falsely confess to escape from custodial and interrogative pressure (i.e. for short-term instrumental gain). The coerced-internalized type is linked to 'memory distrust' and a mistaken or false belief in one's involvement in a crime. This is typically due to police-induced pressure and manipulation of memory processes and self-esteem. Each psychological type involves separate, but commonly also overlapping, risk factors.

The current 'gold standard' methodology for evaluating cases involves a five-level 'cumulative disadvantage process model' of risk factors pertinent to false confession.

a. *Background risk factors* (for example, previous history of physical, sexual, or emotional abuse).
b. *Contextual risk factors* (for example, nature of the crime; pressure on police to solve the crime; the strength of the evidence against the suspect; the relationship between the suspect and victim; current bereavement).
c. *Situational risk factors* (for example, the nature and duration of the custodial and interrogative procedure and process; suspects' understanding of their legal rights).
d. *Personal risk factors* (for example, age; mental state or disorder; cognitive functioning; personality traits, such as suggestibility, acquiescence, and compliance).
e. *Protective factors* (for example, the presence of a legal representative, an independent person [when required by legislation] – known in the United Kingdom as an 'appropriate

adult' [AA]). Any suspect under the age of 18 years, and those mentally vulnerable, are entitled to the presence of an AA during interviewing and when charged with an offence. In addition, when appropriate (for example in cases of foreign, non-English speaking nationals) there is free access to language interpreters and, as of 2022, to HMCTS Court-Appointment Intermediaries.

The above categorisation provides a comprehensive conceptual framework for assessing the likelihood of a false confession.

Further reading

Gudjonsson, G.H. (2021), 'The science-based pathways to understanding false confessions and wrongful convictions', *Frontiers in Psychology*, 12: 633936. https://doi.org/10.3389/fpsyg.2021.633936

Chapter Seven. The memory expert in court

7.1 Expert testimony on memory issues

As outlined in the preceding sections of this report, memory issues arise in a wide variety of cases which come before the civil, criminal, and family courts. The parties to court proceedings must decide whether such matters are of sufficient importance as to commission a report from a memory expert and, if necessary, require the expert to attend court to give evidence.

There is no national register of qualified memory experts, but they would normally be distinguished by their relevant academic qualifications and publications and the pertinence of their training and experience. Reports may be prepared at the request of the prosecution, the defence or, in the family and civil courts, at the request of the court. The final decision on the admissibility of their evidence lies with the judge.

The criteria for the admissibility of a memory expert report vary across the court system. The criminal courts are generally the most restrictive – previous judgments having established that memory strengths and failings are well within the experience of most jurors and testimony addressing these issues is unnecessary. More commonly, directions are given by the judge to the jury. For example, in considering identification evidence they are reminded of the need for caution, of the fact that witnesses can be honest and convinced but still make mistakes, and of the need to carefully consider the circumstances of the identification (see section 4.1).

The emergence in evidence of memory matters outside common knowledge and experience, such as the reliability of recovered memories, historical abuse allegations, and the testimony of young witnesses and complainants, could lead the criminal courts to be more receptive to the opinions of memory experts. Appeal courts have admitted evidence from memory experts on childhood amnesia, recovered memories, false confessions, memory suggestibility, head injury, and neuropsychiatric conditions, and these have had a significant impact on their decisions. Even where memory issues are not the main focus of a court hearing, they can arise as incidental or secondary matters.

Traditionally, the civil courts and family courts have been more ready to hear memory experts' evidence. In the criminal courts, there will be cases involving witnesses and defendants with brain injury or other neurological conditions where expert assessment of their memory reliability is central. Likewise, in cases involving issues of compensation where memory impairments are relevant to the claim, it is established practice to commission reports from relevant experts. Section 7.2 provides a more detailed account of what to expect from a neuropsychological assessment.

The family courts have been more open to a broader range of expertise, of which issues around the reliability and accuracy of the evidence of carers and their children form a significant part. In recent years, the rules on the admission of expert reports to the family courts in England and Wales have tightened (such reports must now be 'necessary' rather than 'reasonable'), but memory-based expertise is still likely to be required in some cases.

Courts will draw on reports from experts when deciding upon mental capacity in civil cases and on the fitness to plead/fitness for trial of defendants. The relevant principles are described in more detail in section 7.3. Issues of memory completeness and competence will be central in any such opinions.

In all cases, the commissioner of the report will identify in their instruction the issues to be addressed by the expert. The report itself will often be based on a direct interview between the expert and the complainant, witness, or defendant involved and include the results of relevant tests or scales administered by the expert. In other instances, there will be no direct contact with the client, and reports will be based purely on scrutiny of the court bundle and draw upon the expert's knowledge of the issues of concern. The latter reports are required to familiarise the court with the broad issues involved, rather than to focus on the client. Reports based on individual contact with the client are more typical in criminal, civil, and family courts.

The overriding duty of experts is to the court, not to the person instructing them. They are required to identify evidence which is inconsistent with their opinion and draw attention to contrary professional opinions where these exist. Separate declarations are required for the civil, criminal, and family courts. These may require that the experts confirm they have acted in accordance with the code of practice or conduct for experts of their discipline.

There is a wide range of cases for which memory-based evidence is sought and this report is intended to provide a brief guide to the relevant state of knowledge. In some areas, such as eyewitness identification, the criminal courts are still resistant to the admission of expert reports despite a long history of mistaken or disputed identification. The growing literature on factors influencing the likelihood of witness accuracy or error makes a change in legal policy more necessary.

Further reading

British Psychological Society (2021), *Psychologists as expert witnesses: Best practice guidelines for psychologists*. Retrieved from: https://www.bps.org.uk/guideline/psychologists-expert-witnesses

7.2 Neuropsychological assessment

Expertise

A full clinical neuropsychological assessment should be conducted by someone qualified in clinical neuropsychology. In the UK such qualifications are recognised by the British Psychological Society Division of Neuropsychology. Other disciplines may be able to provide sound advice to a court on specific aspects of memory disorders, including university-based psychologists and professionals allied to clinical neuropsychology, such as neurologists, neuropsychiatrists, or occupational therapists.

Causes of memory disorder

Memory disorders can present in different ways according to causation. The common causes have been outlined in sections 5.2 and 5.3 above. In a medico-legal context, severity of memory loss may be an important factor in determining mental capacity limitations.

Components of neuropsychological assessment

Neuropsychological assessments of memory should be tailored according to condition and severity. They should contain a patient interview concerning cognitive symptoms, with corroboration from someone who knows the patient well, and memory testing.

Interview concerning memory functioning

As part of a broader patient interview, a semi-structured interview approach should ascertain the patient's experience of memory difficulty and cover different memory problem types. This includes difficulties with memory for conversations and recent events (episodic memory), distant events (remote memory), and remembering to do things (prospective memory). As described in section 1.1, episodic memory also can be broadly split into memory for verbally based material (for example, conversations) and visuospatial material (for example, the ability to orientate spatially).

This approach may be supplemented by memory questionnaires such as the Multifactorial Memory Questionnaire and the Everyday Memory Questionnaire. Asking the same questions about patients to people who know them well is important because of the possibility of lack of full insight into memory problems.

Memory testing

Memory testing should be part of a broader assessment of neuropsychological functioning, for example, assessing intelligence, attention, executive and language functioning, and should consider the context provided by other medical investigations such as brain neuroimaging and electrophysiological recording. Because memory impairment is common in people with neurological conditions, it is recommended that memory is always considered in a neuropsychological assessment.

Memory performances should be compared to baseline indicators of core intellectual function or an estimate of intellectual abilities prior to any brain damage (premorbid intelligence). Specifically, the difference between expected level of memory functioning and that found is indicative of the level of memory disorder.

Memory assessment should tailor tests to suit the patient's functional level and be sufficiently comprehensive to cover the main memory aspects, since these can be differentially impaired. Typical test batteries measuring memory include the Wechsler Memory Scale IV, the BIRT Memory and Information Processing Battery II, The Doors and People Test, and the Rivermead Behavioural Memory Test-3. Additional individual tests may supplement test batteries.

Validity of test performances

People can perform unreliably on memory tests or deliberately falsify their memory performances. In medico-legal settings, tests (known as Performance Validity Tests) that may detect this should be used routinely. However, such tests have been validated in rather different settings, and their interpretation needs to occur within the general context of the clinical findings.

Further reading

Wilson, B.A. (2004), 'Assessment of memory disorders', in Baddeley, A.D., Kopelman, M. & Wilson, B.A. (eds), *The essential handbook of memory disorders for clinicians* (Wiley), 159-178.

Bradley, V. & Kapur, N. (2010), 'Neuropsychological assessment of memory disorders', in Gurd, J., Kischka, U. & Marshall, J. (eds), *The handbook of clinical neuropsychology*, 2nd edn (Oxford University Press), 159-183. https://doi.org/10.1093/acprof:oso/9780199234110.003.009

Kemp, S., Kapur, N., Graham, C.D. & Reuber, M. (2022), 'Functional cognitive disorder: differential diagnosis of common clinical presentations', A*rchives of Clinical Neuropsychology*, 37: 1158-1170. https://doi.org/10.1093/arclin/acac020

7.3 Mental capacity and fitness to plead

Memory ability is one of the most important criteria to assess in mental capacity and fitness to plead assessments. It is not the only one, but the ability to retain and remember information is critical, and the assessment should be as thorough as the clinical situation permits. Mental capacity assessments are probably the most common medico-legal context in which memory is appraised.

As lawyers will be well aware, the Mental Capacity Act 2005 (England and Wales) lays down the general statutory principles and grounds on which, in the presence of an impairment of mental or brain functioning, a person can be found incapable of making a specific decision at a particular time. This appertains to the taking of specific decisions by others in a person's best interests. A person is deemed to lack the capacity to make a decision if unable to:

1. Understand the information relevant to the decision;
2. Retain that information;
3. Use or weigh that information as part of the process of making a decision; or
4. Communicate his/her decision by any means.

Scottish legislation is slightly different with section 1(6) of the Adults with Incapacity (Scotland) Act 2000 providing that 'incapable means incapable of (a) acting; or (b) making decisions; or (c) communicating decisions; or (d) understanding decisions; or (e) retaining the memory of decisions.' In Northern Ireland, the Mental Capacity Act (NI) 2016, Section 4, sets out the criteria for lack of capacity.

Similarly, in England and Wales (and also Northern Ireland) the conventional criteria for fitness to plead are based on *R v Pritchard*,[15] as modified in *R v M (John) 2003*[16] and other more recent judgments, and also have an essentially cognitive flavour. The defendant has to:

1. Be able to understand the nature of the charges;
2. Be able to enter a plea of guilty or not guilty;
3. Understand his/her right to challenge a juror;
4. Be able to instruct his/her lawyers;
5. Be able to follow the course of the proceedings; and
6. Be able to give evidence in his/her own defence.

The relevant Scottish provisions for what is there termed 'unfitness for trial' are contained in the Criminal Procedure (Scotland) 1995 (amended in 2010). This provides that the accused must: (i) understand the nature of the charge; (ii) understand the requirement to tender a plea to the charge and the effect of such a plea; (iii) understand the purpose of, and follow the course of, the trial; (iv) understand the evidence that may be given against the person; (v) instruct and otherwise communicate with the person's legal representative. The court can also take cognizance of any other factor which it considers to be relevant.

[15] *R v Pritchard* (1836) 7 Car. & P. 303; 173 E.R. 135.
[16] *R v M (John) [2003]* EWCA Crim 3452.

It has been argued that the criteria for mental capacity and fitness to plead are too cognitive in their emphasis, and the Law Commission of England and Wales (2016) proposed a criterion of 'effective participation' for fitness to plead and stand trial.

There is scope to employ a neuropsychological assessment (see section 7.2) more often than currently occurs. This may provide valuable information feeding into mental capacity and fitness to plead decisions. However, a neuropsychological assessment is not always possible: the patient may be too ill when capacity is assessed; and it is not sufficient on its own – mental capacity concerns the ability to make a particular decision on a specific occasion, and fitness assessments occur within a specific legal context.

Further reading

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Appendix A: List of contributors

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Appendix B: Glossary

Amnesia refers to a partial or complete loss of memory.

Anterograde amnesia refers to a deficit in encoding, storing, and retrieving new memories.

Autobiographical memory refers to memories relating to a person's own life. These may include elements of both semantic memory and episodic long-term memory.

Clinical neuropsychologists are psychologists who are trained in the assessment and rehabilitation of people with brain injury or other neurological disease.

Clinical psychologists are psychologists with a professional training in the assessment and treatment of mental and behavioural disorders.

Confabulation refers to false or erroneous memories arising unintentionally in the context of a neurological amnesia. The memories may be false in themselves or 'real' memories jumbled and confused in temporal context and retrieved inappropriately.

CT refers to computerised tomography.

Episodic long-term memory contains memories of specific experiences from the recent or distant past.

Flashbacks are a symptom of post-traumatic stress disorder, in which powerful, emotion-laden images come to mind and create the feeling the event is happening again in the present.

Flashbulb memory is memory for the circumstances in which we first became aware of a notable public event such as a disaster or the assassination of a leading politician.

fMRI refers to functional magnetic resonance imaging.

Forensic psychologists are trained and qualified to apply psychological knowledge to crime, justice, and the law, and to the detection and treatment of offenders.

Implicit memory refers to information acquired and stored through skills, habits or associations. Rather than being consciously accessible, it can be reflected through bodily reactions or actions such performing a skill.

Memory consolidation refers to the neurobiological processes by which a permanent memory is formed following a learning experience.

MRI refers to magnetic resonance imaging.

Neuropsychiatrists are psychiatrists interested in the hinterland between neurological and psychiatric phenomena, either the psychiatric complications of neurological disorder or the neurological manifestations of psychiatric conditions.

Post-traumatic amnesia (PTA) refers to a period of memory loss following a head injury, seizure, or other neurological event, which ends with the return of continuous registration of personal (episodic) memories. Note that anterograde memory disorder often persists long after PTA ends.

Psychiatrists are medical practitioners specialising in the diagnosis and treatment of psychiatric disorders, such as schizophrenia, bipolar disorder, dementia, and other clinical conditions.

Psychologists attempt to understand the role of mental functions in individual and social behaviour. The following are protected titles that can only be used by individuals registered with the UK Health and Care Professions Council: Practitioner psychologist, Registered psychologist, Clinical psychologist, Forensic psychologist, Counselling psychologist, Health psychologist, Educational psychologist, Occupational psychologist, Sport and exercise psychologist.

Recovered memory refers to the recall of an event, often a traumatic event from childhood, that the person says they had forgotten ever occurred.

Rehearsal refers to the repetition of information in an attempt to maintain it longer in memory.

Retrograde amnesia is the inability to retrieve memories which preceded the onset of a brain injury or disease.

Semantic memory contains general knowledge and memories of facts, as well as summaries of similar autobiographical experiences (e.g., what usually happened when we went to X).

Source memory refers to the origin of a memory or of knowledge; that is, memory for where or how one came to know what one now remembers.

TDCS refers to transcranial direct-current stimulation.

Unconscious transference refers to a source memory error in which (for example) a witness confuses a suspect with an innocent bystander who happened to be present at the same time.

Working memory is the system that permits us to hold different kinds of information in mind and manipulate it.

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