

# 65 Eyewitness testimony

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by

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### [65.10] Eyewitness testimony in trials

Eyewitness testimony can be critical in both criminal and civil trials, and is frequently accorded high status in the courtroom. Indeed, many witnesses to an offence, both adults and children, can remember events with enough clarity and accuracy to assist triers-of-fact in rendering a verdict. Despite their considerable strengths, however, witnesses do make errors.

Although errors sometimes signal lying – and although eyewitnesses sometimes lie – this chapter is not about lying. When people remember an event – whether the purpose is to offer testimony in court or simply to tell a story to a friend – their errors are not necessarily signs of deliberate exaggeration, outright fabrication or intention to deceive. A person’s account can be inaccurate even when he or she *believes* the account to be correct. Indeed, scientific research shows that people can confidently remember false details from genuine events, and even, at times, remember wholly false events. Many processes conspire to shape memories over time. These processes need to be considered by the court, especially in cases where there is no decisive corroborative evidence to support or contradict what the witness says. Even if certain aspects of a witness’s testimony were shown to be inaccurate, those identified errors tell us little about the accuracy of *other* aspects of that testimony, or about the accuracy of earlier or future statements made by the same witness.

This chapter summarises those factors that have been shown to affect the detail, accuracy and quality of eyewitness testimony. We do not provide a separate review for adult and child witnesses because, in most part, the factors that we discuss affect adults and children in similar ways. Further, we do not provide an exhaustive review of the research; rather, our aim is to highlight broad conclusions that are grounded in scientific evidence and their implications for legal professionals. We provide reference material so that readers can pursue particular issues of interest in greater depth.

We begin the chapter with a brief description of the nature of memory to put subsequent material in context.

### [65.20] Memory is a reconstructive process

Many people (except for scientists who study memory) believe that memory works like some kind of recording device, like a video camera, accurately capturing our experiences and storing them on some kind of mental DVD. This kind of model rests on two assumptions. First it assumes that remembering is a matter of finding the DVD and then playing it, and – just as one might rent a favourite movie knowing it will play the same way each time – with each remembering, the memory will be unchanged. Second, the model assumes that the passing of time does nothing to the DVD, although it might make it more difficult for people to remember on which particular DVD the experience is stored. In other words, forgetting is assumed to be a temporary condition caused by an inability to locate information in an archive. A memory model such as this one sounds new, but it is not. Many societies have historically described memory using similar assumptions, with analogies that kept pace with their technology.

The scientific evidence, however, clashes with a mental DVD model of memory. Science shows that memory is a process more than it is a container, and a reconstructive process rather than a replicating one. Memory is a continuing blend of information drawn from thoughts, imagination, dreams, conversations, interviews, media, and so on. As the noted Harvard

scientist Schacter (1997) wrote, “our autobiographical stories are built from many different ingredients: snippets of what actually happened, thoughts about what might have been and beliefs that guide us as we attempt to remember” (p 308). Put another way, memory does not work like a DVD, but more like improvisational theatre.

Scientists have found it convenient to break the processes of memory into three stages. First, during the *encoding* stage, people are exposed to some information. In the case of eyewitnesses, that information is the event. Second, the *retention* stage is simply the time between the encoding stage and the third stage, which is referred to as the *retrieval* stage. The retrieval stage is where eyewitnesses report (recall) what happened during the event or they identify (recognise) objects or persons related to the event.

Witnesses can cycle through the retention and retrieval stages several times. For example, suppose that several customers are waiting in line at a bank, when suddenly two armed men burst into the bank, demand money from one of the tellers and flee into a waiting car. Everyone in the bank is an eyewitness, each of whom will have *encoded* overlapping, yet different, aspects of the robbery. After the robbers drive away – a relatively short *retention* period – the eyewitnesses will begin “retrieving” the event by talking to each other. Although at first glance the retention period may appear like a period where nothing happens except for the passing of time, that is not the case. During retention, encoded information begins to decay; at the same time, witnesses often gain access to new information about the event through discussion with others. This *postevent information* may or may not be accurate. Postevent information can distort memory, changing what witnesses subsequently say about their own observations or experiences.

We can also think of the time until the police arrive and talk to each witness as another retention period, and each witness statement to police (in the form of an investigative interview or identification parade) being another act of retrieval. Although eyewitnesses have only one opportunity to encode an event, they usually recall the event several times, each act of retrieval marking another retention period starting back from when the bank robbery took place. Discussing with other witnesses what they saw just seconds after a crime is an act of retrieval, as is telling friends what happened, thinking about what happened, giving a statement to police, rehearsing testimony for court and giving testimony in court.

Assuming that eyewitnesses are motivated to do their best, the accuracy and detail of what they report will be determined by factors operating at each of the three abovementioned stages. During the encoding stage, these factors include aspects of the event itself (eg, duration, lighting), chronic aspects of the witness (eg, age, vision, hearing) and acute aspects of the witness (eg, attention, intoxication, understanding of what was happening). During retention, an important factor is the length of the retention period. During retrieval, factors include knowledge, beliefs and stereotypes (which may also influence how the event was encoded). Moreover, how witnesses describe their recollections to another person relies on cultural conventions.

As we will describe throughout this chapter, eyewitness memory (inevitably) becomes distorted by these processes and conventions, even under optimal conditions. When witnesses recall an event, distortions may condense their reports, smooth out irrelevant, illogical or inconsistent information and fill in new information based on existing knowledge or expectations. People sometimes omit details they do not think are relevant. They may report new details or transform existing details, reorder sequences to increase logic, over-emphasise other details and change the salience or meaning of what happened. Often these distortions are minor and have no particular bearing on their utility as evidence. But sometimes the distortions can be so major that they make the evidential value of the testimony dubious.

### **[65.30] Memory is not the only process that affects eyewitness testimony**

Witnesses are not the only people who make mistakes when they give testimony. People authorised to *elicit* the witnesses’ evidence can also make mistakes – for example, the police

officers who conduct investigative interviews or person identification tests. By mistakes we mean that the person has used tactics or procedures that unknowingly increased the likelihood of error on the part of the witness.

Sometimes professionals' mistakes are minor, but some seemingly minor mistakes can have a major impact on the outcome of a case. Understanding the nature and impact of professionals' mistakes is just as important as understanding why eyewitnesses may have less than perfect memories or why they may make decisions that are not the most appropriate. Thus, in this chapter we not only review the processes that influence witness testimony but also the effect of various procedures for eliciting that testimony.

### **[65.40] Structure of the chapter**

In the remainder of this chapter, we elaborate on our overview of eyewitness memory and we review key factors known to shape eyewitness behaviour and performance. Overall, our discussion comprises four sections. The next section provides a brief overview of eyewitness research from the 1970s and the paradigms adopted by researchers. The subsequent section describes the variables (or groups of variables) known to influence the occurrence of errors in eyewitness testimony. These include; factors related to the event (the offence) and similar experiences, witness-related factors and various situational influences. Although many of the factors in this section are related, we will discuss them separately for simplicity and ease of presentation. The final two sections provide a brief overview of what constitutes best-practice guidelines in relation to the elicitation of eyewitness testimony (interviewing as well as identification parades).

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## OVERVIEW OF THE SCIENTIFIC RESEARCH PARADIGMS AND THEIR FOCUS

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### **[65.200] Eyewitness memory research**

The scientific literature offers a long and rich history of research on human memory. Eyewitness memory in particular is one of the oldest fields of inquiry in the psychological sciences, with some of the first experiments dating back to before 1885. The modern era of research examining eyewitness memory distortions dates back to the 1970s with the central paradigms remaining relatively similar during this time. In an excellent review, Sporer (2006) reported that in the early twentieth century, memory scientists who turned their attention to legal problems such as eyewitness memory gave evidence in trials and were successful in some law reforms. Despite their early successes, however, achievements stalled – a major factor being that some of the core scientists were both Jewish and in Germany. In the 1970s, a new generation of scientists rediscovered the earlier research, and – armed with their more sophisticated techniques – ushered in the modern era of scientific research on eyewitness memory.

A key focus of eyewitness memory research during the past few decades has been suggestibility. Suggestibility refers to the degree to which a person’s encoding, retention and retrieval of events can be influenced by a range of social and psychological factors (Ceci and Bruck, 1993). The effect of misleading postevent suggestions (as a source of potential memory distortion) has dominated the literature, although memory contamination has been shown to arise from a wide range of conditions operating at the time of, and even prior to, the event.

The majority of eyewitness testimony research has been conducted in laboratories as opposed to naturalistic settings, because laboratories enable scientists to know what truly occurred and to examine phenomena under *controlled* conditions – isolating, manipulating and evaluating the impact of specific factors that can affect encoding and retrieval. Typically, laboratory research is conducted by cognitive and social psychologists (rather than clinicians) and is directed toward testing formal theories of memory and communication. Field studies that examine patterns of responding by actual witnesses to a crime help to generate questions to be brought into the laboratory and studied under controlled conditions. They also assist scientists in examining both the applicability and prevalence of phenomena observed in the laboratory, and in guiding the interpretation of research (Lamb and Thierry, 2008). In the remainder of this section, we describe the laboratory procedure for examining eyewitness testimony, followed by a brief statement about its applicability to the courtroom setting.

### **[65.210] The laboratory procedure for examining eyewitness testimony**

To examine the influence of social and psychological factors on eyewitness memory using controlled experimental conditions, scientists typically use a staged procedure (Lindsay, 1990;

Loftus, 1991; Loftus, Miller and Burns, 1978; McCloskey and Zaragoza, 1985; Tversky and Tuchin, 1989). First, participants – acting as mock eyewitnesses – watch a simulated crime, such as a film of a car accident, or a bank robbery. In studies of child witnesses (who have more limited attention spans) it is common to engage the children in one or more of a series of innocuous activities that were organised by the researchers. Staging a film or series of activities is critical because if scientists do not actually know what occurred, there would be no way of ascertaining if witnesses' responses to questions were accurate or complete. What the witnesses do not know is that the scientists have identified a number of details ahead of time and will track the participants' reporting of these details throughout the course of the experiment. We refer to these details throughout this chapter as *target information*, and the staged event (eg, film or activities) as the *target event*.

Second, witnesses experience a delay designed to allow their memories to fade, and (for scientists interested in the effect of postevent information) witnesses may be given access to new information about the event. One common technique for introducing postevent information is to give the witnesses a summary of the event in the form of written or spoken text. The summary may be described by the experimenter as another eyewitness's statement, a police report, a lawyer's description – or the experimenter simply remains silent on the issue of authorship. Another common technique is to give witnesses an initial interview about the event for the sole purpose of feeding them misinformation via leading questions. Generally, the witnesses are not told that the information being provided contains inaccurate detail and witnesses are usually only misled about some aspects of the event.

In the final experimental phase of eyewitness testimony experiments, the witnesses answer questions about the event, and are sometimes asked to report how confident they are about their answers. In the case of interviews where witnesses can provide elaborate responses about the target event, details may be coded for features such as accuracy, coherence and completeness. In the case of recognition tests (eg, where witnesses merely choose a response from two or more options) responses are coded for accuracy.

Scientists often manipulate specific variables (eg, retention interval, the way in which false information is delivered), randomly assigning witnesses to experimental conditions to observe the affect these manipulations have on witnesses' decisions about, or reporting of, the target information. With regard to misleading postevent information, research has consistently shown that people who are misled about some aspect of an event are far more likely to report having seen the suggested details compared to people who are not misled. This effect is referred to as the *misinformation effect*, with memory distortions ranging from small details to large events or objects (Tousignant, Hall and Loftus, 1986). For example, "misinformation effect" experiments have led people to claim that they saw buildings in a bucolic landscape, a thief with a hammer instead of a screwdriver, or a lost child holding a green teddy bear instead of a white bear (Belli, 1989; Loftus, 2005). Some studies have demonstrated that entirely false events can be "implanted" in memory (Bjorklund, 2000), ranging from being lost in a public place as a young child, going up in a hot air balloon, creating chaos at a wedding, or being attacked by an animal (Garry and Wade, 2005; Hyman, Husband and Billings, 1995; Porter, Yuille and Lehman, 1999).

### **[65.220] The relevance and usefulness of laboratory studies to the courtroom setting**

With laboratory research it is sometimes possible to create conditions that correspond quite closely to those in the real world. Nevertheless, laboratory research is often criticised for not capturing certain dimensions of actual witnesses' experiences. For example, it is difficult to simulate the level of stress and arousal associated with observing many crimes, particularly those associated with being confronted with a weapon or being assaulted. Witnesses in the

laboratory are obviously much less likely to be victims than are real witnesses. The interval between the crime and the identification or recall test is usually shorter in the laboratory than in real cases. Further, it is difficult to recreate the consequences in the laboratory that flow from a “real” witness’s decision (eg, sending a person to jail, having a dangerous culprit potentially go free). These objections raised in reference to eyewitness laboratory research are similar to those raised about other areas of experimental research as well (see Kerr and Bray, 2005, for discussion).

Although most laboratory studies do not (and cannot) capture some aspects of actual crimes, it is important to emphasise that where comparisons can be drawn, they do not highlight obvious discrepancies between contexts. In other words, the literature does not suggest that the underlying memory processes somehow work differently in the laboratory compared to the outside world. For example, while the retention interval between the crime and identification or recall test may be much longer for real than for laboratory-simulated crimes, the available findings are consistent not only with laboratory studies but also with more basic memory research (ie, accuracy declines as the retention interval lengthens). While social and motivational factors (eg, threats of secrecy, fear, intimidation) influence witnesses’ willingness to disclose offences, when witnesses *do* report their experiences of crimes, the pattern of responding with respect to various interviewing processes is consistent with expectations arising from laboratory research.

As researchers accumulate more and more knowledge, it may be possible one day to generate examples of memory processes and witness behaviour associated with real crimes being affected in ways that are never indicated in laboratory studies. Currently, however, the available evidence does not point clearly in such a direction.

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## OVERVIEW OF VARIABLES KNOWN TO AFFECT EYEWITNESS TESTIMONY

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Social compliance and motivation .....	[65.350]
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The interval between the crime and the retrieval test .....	[65.370]
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Individual difference factors .....	[65.390]
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### [65.300] Variables

In this section, we provide a brief overview of the variables, or groups of variables, that have been measured in scientific research and subsequently shown to affect witnesses' susceptibility to error when testifying about events. These variables are influential because they affect eyewitnesses' ability to (a) perceive, encode, retain or retrieve target event information, (b) make distinctions between information genuinely acquired at the event or acquired later from other sources, and/or (c) share what they know about the target event. We describe these variables under several broad headings which include: prior knowledge, biases and expectations; attention to, and processing of, target information; distinctiveness and salience of event details; related or competing information; social compliance and motivation; presence of stress or trauma at the time of the event; and the interval between the crime and the retrieval test. These factors impact all witnesses in similar ways. Even though our examples are mostly drawn from studies using adult witnesses, the general principles or conclusions stated throughout these subsections are able to be generalised across child and adult participant groups.

The remaining two sections entitled "age of the witness" and "individual difference factors" discuss how eyewitness testimony performance varies across different stages of the lifespan and in accordance with individual demographic, internal and background factors.

### [65.310] Prior knowledge, biases and expectations

People's cognitive systems organise knowledge and prior experience in order to facilitate later perception, thinking, comprehension, remembering and problem solving. Such organisational systems are often referred to by scientists as *schemas*. Specific schemas are selected by people in specific circumstances (based on prior knowledge and experiences) to work out what is happening and what will happen shortly. These expectations or schemas, in turn, influence how events are perceived and remembered. A classic experiment illustrates this point well with regard to event memory. Specifically, Bransford and Johnson (1972) asked a group of adults to listen to the following passage of text.

The procedure is actually quite simple. First you arrange things into different groups depending on their makeup. Of course, one pile may be sufficient depending on how much there is to do. If you have to go somewhere else due to lack of facilities, that is the next step; otherwise you are pretty well set. It is better to do too few things at once than too many. Remember mistakes can be expensive. At first the whole procedure will seem quite complicated. Soon, however, it will become just another fact of life.

Afterwards, when examined on what they remembered, the people who heard the passage demonstrated very low comprehension, and remembered little of it. By contrast, a group of adults who heard the same passage but were initially told it was called “washing clothes” demonstrated relatively high comprehension and recalled the information well. The benefit of providing the context (washing clothes) is that it led the people to draw on their knowledge and expectations about the topic – by selecting that schema – to create a framework that helped them to understand the passage and improve their memory of it later.

Having an event schema, however, does not always facilitate accurate recall. The same cognitive mechanisms that led to improved memory for the “washing clothes” passage can also lead people to misinterpret events as they unfold, and to misremember event details that are irrelevant to (or inconsistent with) personal biases and expectations. Witnesses cannot take in all available information during an event; thus they must sometimes “fill in” the gaps with information typical of a particular experience – what scientists call “schema-consistent” information (Alba and Hasher, 1983). Many studies have illustrated this effect, including studies which have focused on details of events (Hannigan and Reinitz, 2001; Kleider, Pezdek, Goldinger and Kirk, 2008; Loftus et al, 1978). For example, Tuckey and Brewer (2003) asked a group of adults to watch a film of two people robbing a bank. In some versions of the film, the scenes were ambiguous (a robber pointing a bag *as if* it contained a gun), while in others, they were unambiguous (the robber held a bag by his side, which clearly could not have been a gun). Later, when the people were interviewed, they were more likely to report seeing a gun when they saw the ambiguous version of the film than the non-ambiguous version.

Even experiences, beliefs and expectations about how we *should* remember certain events can contaminate verbal and written recollections of these events or lead to incorrect judgments about the timing of the events. For example, adults often expect old memories to have relatively weak perceptual details, thus if recollections are vivid and detailed it is assumed they are recent even if there is no actual memory of when the details occurred (Friedman, 2004). Adults also expect their memories to be worse when intoxicated, and this can affect their recollections of events, according to a study by Assefi and Garry (2003). They found that adults who thought they were intoxicated on vodka (but had merely been given a non-alcohol substance) made more errors on a memory task than the group who knew they were not intoxicated.

Event schemas or stereotypes can also heighten a person’s susceptibility to believing false information. This is particularly true when the misleading information is consistent with the schema or stereotype (Leichtman and Ceci, 1995; Loftus et al, 1978; Roberts and Powell, 2006). Further, interpretations about the plausibility of information (based on prior knowledge and expectations) play a critical role in the creation of *false memories*. To develop a false belief, a person needs to accept the false information as being true (which is more prevalent when the information is plausible). Plausibility can grow into belief and beliefs, in turn, can grow into false memories via reinterpretation of false information (narratives or images about the event) into genuine memories (Sharman, Garry and Hunt, 2005; Strange, Sutherland and Garry, 2006).

The relationship between plausibility and false memory development, however, is not straightforward. One would expect that presenting a photo to a person – a photo that had been skillfully doctored to show that person taking part in an event that never occurred – would be

more persuasive and thus heighten suggestibility compared to merely reading text of what allegedly occurred. Garry and Wade (2005), who based their study on adult participants, showed the opposite is true. More people came to remember the false event (a hot-air balloon ride) when it was suggested to them by text rather than by a doctored photo. Garry and Wade's explanation for this phenomenon was that because the photograph specified precise details, it constrained the people's abilities to imagine what the experience looked like, whereas the text gave them latitude to imagine the event however they wanted. The general principle is that imagination plays a critical role in the generation of completely false recollections of events, such that techniques that make it easy to imagine cause more mayhem compared to ones that constrain imagination.

### **[65.320] Attention to, and processing of, target information**

All things being equal, the time spent processing event detail at the time of encoding affects the accuracy and detail of witness testimony. Exposure time of target information is related to memory such that the longer the time period that a target detail is observed, the more people will pay attention to it, and, subsequently, the more information they will remember about it (Bugelski, 1962; Laughery, Alexander and Lane, 1971). This phenomenon is consistent with research on facial recognition performance which is generally superior with longer exposure durations (Ellis, Davies and Shepherd, 1977; MacLin, MacLin and Malpass, 2001; Memon, Hope and Bull, 2003; Shapiro and Penrod, 1986; Weber and Brewer, 2004). The phenomenon is also consistent with research on the effect of event repetition on witness recall. After multiple occurrences of an event, more frequently occurring details are better remembered over time and are more resistant to false interviewer suggestion compared to details that were experienced fewer times (Powell and Thomson, 1996; Powell, Roberts, Ceci and Hembrooke, 1999).

More time spent attending to target information does not necessarily translate into better remembering. The physical (eg, lighting, sound) conditions, and the distance between the person and any observed event, need to be considered (Lindsay, Semmler, Weber, Brewer and Lindsay, 2008). Further, the *type* of cognitive processing affects memory performance. When people actively infuse meaning into target information, and engage in slow, effortful and deep processing, they remember the information better compared to when they engage in rapid, automatic and shallow processing ( Craik and Lockhart, 1972; Wells and Hryciw, 1984). For example, people who know they are witnessing a crime and understand what is happening, tend to be more accurate when subsequently reporting details later. People who process a face in a deep or holistic way (eg, "Is this person honest?") are more likely to recognise that face later than if they engaged in shallow meaning or feature processing (eg, "Does this person have a large nose?").

Interestingly, attention to or processing of target event details can also impact reporting of events that never actually occurred. *Any* process that exposes people to the idea of an event (eg, paraphrasing fictitious experiences or explaining how something one knows to be false might have happened) can increase confidence that the false events were real. Out of this confidence, false memories can grow that are consistent with beliefs about what occurred (Sharman, Garry and Beuke, 2004; Sharman et al, 2005). "Imagination inflation" is a term used to explain the phenomenon where people become more confident that a false event actually happened when they imagine it really happened (Garry, Manning, Loftus and Sherman, 1996; Goff and Roediger, 1998; Heaps and Nash, 1999; Paddock, Joseph, Chan, Terranova, Loftus and Manning, 1998; Paddock, Noel, Terranova, Eber, Manning and Loftus, 1999; Thomas and Loftus, 2002). While the mechanisms underlying this phenomenon are still being determined, it may be that exposure to the idea makes the event feel more familiar, and we often use familiarity as a yardstick of truth (Bernstein, Whittlesea and Loftus, 2002; Whittlesea, 2002; Whittlesea and Williams, 2001a, 2001b).

Identifying the potential influence of attentional factors on a particular individual's testimony is exceptionally challenging. All witnesses, including normally functioning adults, are not particularly good at recalling conditions that may have impacted their attention; they tend to underestimate the distance between themselves and a target event (Lindsay et al, 2008) and overestimate the duration of events and their ability to notice salient aspects or changes to their environment (Friedman, 2004, 2005; Simon and Ambinder, 2005). Even if the conditions were favourable and a legal professional knew for sure that a witness had paid attention to a target detail, this does not mean that the witness actually processed the detail (Cowan, 2005; Simons and Resink, 2005). Consider the phenomenon referred to as "change blindness". Change blindness is what happens when people fail to see significant, obvious changes in a scene. For example, Simons and Chabris (1999) showed that roughly half of adults asked to watch a basketball game and count the passes among the team mates did not notice when a person dressed in a gorilla costume walked through the middle of the game, stopped to thump her chest and then walked out of view. In another study, a researcher pretended to be lost on a university campus. He approached an adult pedestrian for help and, as the pedestrian was telling him how to get to his destination, two people carrying a large door walked between them briefly blocking the pedestrian's view of the researcher. At this point, a new researcher replaced the original one, who carried on the interaction as if nothing unusual had happened. Approximately half the pedestrians who engaged in the study failed to notice this significant change (Simons and Levin, 1998)<sup>1</sup>. Note that in both the "gorilla" and "door" studies, the socially desirable response would be to admit having seen the change (to show oneself as highly observant), which suggests the percentages are not inflated.

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<sup>1</sup> These and other demonstrations are available at <http://www.theinvisiblegorilla.com/videos.html>

### [65.330] Distinctiveness and salience of event details

Events that occur in the real world are complex. They usually consist of a wide array of details that vary in perceived salience or distinctiveness. Generally speaking, the more intensive a stimulus (eg, the brighter the lighting, the louder the noise, the more pungent the smell, the sharper the taste, the more forceful the blow) or the more a stimulus contrasts with preceding or surrounding stimuli due to physical qualities (colour, size, shape texture, detectability of pattern) or any other feature (eg, movement) the greater the probability that the stimulus is observed (Thomson and Davies, 1988). In the case of person identification, the presence of one or more distinct features of a person's anatomy can increase correct identification of that person or correct rejection of other persons who were not seen (Light, Kayra-Stuart and Hollander, 1979). A target item can even stand out by virtue of its position in a series as well as its physical properties. When an item or event occurs for the first time, it is generally remembered better than when it occurs during a sequence of similar items or events (Powell, Thomson and Ceci, 2003).

The findings reported above are consistent with expectations based on our understanding of memory processes. For example, distinctive stimuli are likely to command attention from the perceiver and, accordingly, will be encoded in memory more effectively, providing a better quality memorial representation against which to compare any competing test stimulus. Further, the more distinctive or salient an event detail, the smaller the pool of competing details that could subsequently be confused with it. For example, in the case of a face recognition test, trying to retrieve a typical face from memory to match the face presented by the police is likely to produce a number of possible matches whereas attempts to retrieve a match for a distinctive face is likely to produce fewer possible candidates (Valentine and Ferrara, 1991). The association between novelty or distinctiveness of an event and depth of processing also needs to be considered. People typically process mundane, routine aspects of events automatically, and they process distinctive and unusual aspects with greatest effort.

Whether a person will attend to an item long enough to notice distinctive features is determined in part by individual interests and knowledge.

Some scientists prefer the notion of centrality as opposed to item distinctiveness (ie, items are dichotomised as being central or peripheral with the former being better attended to and remembered). Consider, for example, a study by Wright and Stroud (1998). They showed a group of adults a simulated shoplifting event that included central details (such as a stolen bottle of wine) and peripheral details (such as the colour of a bystander's shirt). The people were better at remembering central details than peripheral details, and they were less likely to be misled about central details than peripheral details. An overarching problem with these terms, however, is circularity: people remember central details better than peripheral ones, and details are often defined as central because they are remembered better than details that are peripheral. Moreover, what scientists mean by central or peripheral varies across studies and circumstances. Is a detail central because it is large, or because people are exposed to it for a long time or because it is important to the event unfolding? Whether an item is defined as central or peripheral can also change depending on the surrounding event context and the person's prior knowledge of the event which may change over time. For example, the fact that an offender wore a New York Yankees cap may be a peripheral detail until the police arrest a man a few hours later wearing a baseball cap.

One interesting finding worth noting in relation to item distinctiveness is that the increased attention demanded by salient or distinctive items can have a detrimental impact on memory for surrounding event details. In the phenomenon called *weapon focus*, the presence of a weapon causes people to pay more attention to that weapon to the detriment of other details. To illustrate, Loftus, Loftus and Messo (1987) gathered data on adults' eye movements while they watched one of two versions of an event. In one version, a man pointed a gun at a cashier in a restaurant; in the other version, the same man gave a cheque to the cashier. The weapon captured people's attention: their eyes fixated on the gun more than on the cheque. The second experiment was similar, but this time people were asked to remember what happened during the event. People who saw the man with the weapon remembered fewer details than people who saw the man with the cheque.

Taken together, the two experiments by Loftus et al (1987) show the same pattern as a meta-analysis by Steblay (1992): when people see a weapon, they tend to fixate attention on it, which impairs their ability to remember other details of an event – details that might later become critical to a case, such as being able to correctly identify the offender. Weapons are not the only “items” that can produce a decline in memory for surrounding event details. People will often pay attention to bizarre details, and subsequently be less able to correctly identify a person who is holding a bizarre object. In one study, Pickel (1998) asked a group of adults to watch a film showing an interaction between a man and a woman. The version of the film differed across participants. In one version, the man held a gun in the woman's direction. In another, he held a whole raw chicken. In a control version, the man held nothing. Compared with people who saw the control version of the event, people who saw the “gun” and “chicken” versions remembered less – but similar amounts – about the interaction. While there has been some discussion in the literature about the unconvincing nature of the “weapon focus” effect outside the laboratory (Behrman and Davey, 2001), weapon presence in the real world is often confounded with variables such as viewing distance (ie, the culprit is likely to be close to the witness) and level of stress. These confounds make interpretation of effects difficult.

Persons who commit premeditated offences and are aware that they could be subsequently identified often attempt to conceal their true appearance by wearing a disguise (eg, balaclava or stocking over their head). Disguises have been shown to reduce the likelihood that witnesses

will choose any person from a line-up and they reduce the accuracy of positive identifications (Cutler, Penrod and Martens, 1987a). However, not all studies on the effects of disguises have found such effects. This indicates that it is not easy to obscure *all* distinctive cues that could assist in recognising the culprit (Cutler, Penrod and Martens, 1987b; O'Rourke, Penrod, Cutler and Stuve, 1989). Hairlines, for example, may still be detectable even though other facial features have been covered.

### [65.340] Related or competing information

People gain access to information about a target event in many ways, not merely by directly experiencing or observing the event. Other potential sources of information about a target event include: experiences with related or similar events; dreams; rumination; media reports; and discussions with other people about the event. Irrespective of the source of competing event information or whether it was acquired before or after the target event, this information can subsequently impact or intrude into what people remember about the target event (Belli, 1989; Garry, French, Kinzett and Mori, 2008; Loftus and Palmer, 1974; Loftus and Zanni, 1975; McCloskey and Zaragoza, 1985; Roberts and Powell, 2001).

There are two possible ways in which target information acquired indirectly (ie, not through direct experience of an event) can affect memory of the target event. First, the competing event detail might overwrite, replace or change the original memory. These effects were first demonstrated in early studies by Loftus and colleagues, such as a study where adult participants watched a film showing a simulated car accident featuring a green car (Loftus, 1977). After watching the film, participants were verbally presented with misleading information that the car was blue. Later in a surprise memory test, the participants used a colour wheel to report the colour of the passing car. The people who had been exposed to the misleading information reported more colours in the "bluish-green" spectrum than the control subjects who had not been exposed to the misinformation. Thus, participants' recognition of the colour of the car represented a compromise of the car's actual colour (green), and the postevent suggestion (blue). Similar alterations in memory have been found in experiments on repeated events. Powell and Thomson (1996; 1997a; 1997b) reported that, in remembering an occurrence of a repeated event, children sometimes falsely incorporate features from multiple occurrences to represent a single occurrence of the event. In one study, for example, children heard six stories delivered twice a week for three weeks. One story in the sequence was about a police lady who rescued a boy and another story (the final story that was heard) was about a sea creature. When recalling the final story some children merged features, reporting a story about a police lady who rescued a sea creature. This is an example of a memory alteration because the individual details were correct but they were incorrect when combined in this way.

Second, suggestibility effects can occur even when all details (ie, both target event and competing details) remain intact in memory. Specifically, errors may result from misattribution of the *source* or *temporal location* of non-target details as having been included in the target event. For example, a witness who claims to have seen a person exiting a building prior to an explosion may actually have seen the person exiting the building – but on a different day from the explosion (Brewer, Weber and Semmler, 2005). A person who has been assaulted by the same person on multiple occasions may correctly remember that the culprit wore a red jacket on one occasion and a white shirt on another, but may falsely attribute the red jacket to the wrong occasion (Powell and Thomson, 1996; Postman and Underwood, 1973; Winograd, 1968).

In the event recall literature, the misattribution of a related memory to being part of the target event is referred to as an intrusion error. In the case of identification research, selection of a non-target item among various options is referred to as a false positive identification. Irrespective of the nature of the error, their prevalence is heightened when the competing items

(ie, target and non-target event details) are perceptually, contextually or semantically similar and are thus not easily distinguished (Johnson, Hashtroudi and Lindsay, 1993; Mitchell and Johnson, 2000). For example, two female voices are harder to distinguish than a male versus female voice; thus a female voice is more likely to be falsely selected from a series of “possible culprit” voices including both genders (Cook and Wilding, 1997). Items that are consistent in theme to what occurred are more likely to be falsely recognised than items that are inconsistent (Roberts and Powell, 2006). The likelihood that differences between competing information will be detected depends on many factors such as the amount of time spent attending to features used to discriminate items, the relative strength of the target versus non-target item in memory and background experiential factors (Tousignant et al, 1986). One important background factor related to face identification is race. When people try to identify a culprit from another race, they are less likely to make an accurate decision than when identifying someone from the same race (Meissner and Brigham, 2001)<sup>1</sup>.

Familiarity with competing event details affects the prevalence of intrusion or false positive identification errors. For example, when witnesses recall an occurrence of a repeated event, intrusion errors tend to be details that occurred in close temporal proximity to the occurrence, or details that occurred frequently in the series (Powell and Thomson, 1996; Powell and Thomson, 1997a). In relation to identification tasks, witnesses are more likely to make false positive identifications when the culprit was actually seen in a previous identification test – here witnesses can mistakenly attribute the familiarity of a line-up member to that person being the culprit when in fact it is due to having seen the person in a previous identification test (Dysart, Lindsay, Hammond and Dupuis, 2001; Godfrey and Clark, 2010).

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<sup>1</sup> A number of different hypotheses have been advanced to account for the cross- or other-race effect, ranging from perceptually based accounts, which implicate a lack of expertise in encoding and discriminating other-race faces (Meissner and Brigham, 2001; Valentine, 1991; Valentine and Endo, 1992), to social-cognitive accounts which argue that coding of other-race faces is driven by stereotypes or racial attributes rather than by those individuating features that are crucial for the recognition of individual faces (Levin, 2000).

## [65.350] Social compliance and motivation

What a witness recalls in an interview is not purely the result of cognitive factors; social and motivational factors also play a role. For example, a person may intentionally give a false response or withhold information to serve some benefit such as to avoid embarrassment, keep a secret for a loved one, gain rewards and avoid punishment (Ceci and Bruck, 1995; Gudjonsson, 2003). However, irrespective of whether a witness is initially aware that what he or she says is not true, over time the false reported details may come to be believed as true (Bruck, Ceci and Hembrooke, 2002; Garry et al, 1996).

Errors arising from social rather than cognitive mechanisms are not always initially deliberate. We can provide three examples to justify this statement. First, performance on a memory task can be dictated by societal experiences that shape individuals’ perceptions about their abilities in interviews and the role of people who interview them. This explanation has been used to explain (in part) why people with an intellectual disability sometimes perform worse when recalling an event compared to mental age-matched controls (Agnew and Powell, 2004; Saetermoe, Farruggia and Lopez, 1999; Williams, 1995). Witnesses with intellectual disabilities have a lower status in society than mainstream witnesses and they are used to people speaking on behalf of them. Therefore these witnesses would be less aware of the perceived value of relating what they know. Further, if people with an intellectual disability are more likely to be asked questions in everyday life that require only brief answers, they will perceive that short answers are *usually* all that is expected of them and give such responses even to questions that are intended to elicit elaborate ones (Agnew, Powell and Snow, 2006).

Even feedback or instruction *within* an interview (feedback about the nature of a memory task or the appropriateness of an interviewee's prior performance) can affect interviewees' confidence or criterion for reporting information. This reporting criterion in turn can influence whether the interviewee reports certain details about a target event and (if so) the nature, type and amount of information reported (Goldsmith, Koriat and Weinberg-Eliezer, 2002; Weber and Brewer, 2008). While all persons can be influenced by social demand factors operating in the interview, those with cognitive or language limitations, or inferior social status, are particularly susceptible to these factors (Young, Powell and Dudgeon, 2003)

Second, the qualities of an information provider can shape people's memories without them being consciously aware of these influences (Echterhoff, Hirst and Hussy, 2005; Gabbert, Memon and Wright, 2006; Vornik, Sharman and Garry, 2003). For example, when people are led to believe that a person was not able or motivated to give a truthful account of an event, they are less likely to be influenced by what that person says about an event (Dodd and Bradshaw, 1980; French, Garry and Mori, 2008; Gabbert, Memon and Wright, 2007). People are more influenced by postevent suggestion if their romantic partner or a friend rather than a stranger, tells them about it (French et al, 2008; Hope, Ost, Gabbert, Healey and Lenton, 2008). More attractive, knowledgeable and authoritative persons generally demand more compliance which can enhance witness suggestibility (Echterhoff et al, 2005; Powell, Wilson, Gibbons and Croft, 2008; Smith and Ellsworth, 1987; Vornik et al, 2003). The mechanism underlying these effects could relate to prior knowledge, biases or expectations about the qualities that determine trustworthiness or credibility of speakers. However, they could also be due (in part) to perceptions about the consequences of complying with the information provider.

Finally, the social context or purpose of a memory task can markedly affect the degree of effort a person takes to remember details. For example, victims of crime would probably expend more energy trying to remember the timing of the offences than they would remembering other life details such as who told them a funny joke (Mitchell and Johnson, 2000). The greater effort, in turn, would probably influence the accuracy and detail of information reported about the target event.

### **[65.360] Presence of stress or trauma at the time of the event**

Many people believe that stressful or traumatic events are typically remembered with high levels of accuracy (Benton, Ross, Bradshaw, Thomas and Bradshaw, 2006; Read and Desmaris, 2009). Research, in general, does not support this belief. Significant traumatic events can be forgotten even after relatively short periods of time (Loftus, 1982; Means and Loftus, 1991; National Center for Health Statistics, 1965). For example, among 590 people who had been involved in an injury-producing car accident in the previous 12 months, 14 per cent of people did not report being in such an accident and this increased to over 25 per cent after a further delay of 9 to 12 months (Cash and Moss, 1972). Further, studies examining the relationship between stress or trauma and memory have produced mixed results, many of which suggest a negative rather than positive relationship<sup>1</sup>.

Conducting informative research on the impact of stress and trauma on memory accuracy poses many difficulties. Researchers need a reliable record of what event occurred and ethically it is not appropriate to simulate stress or trauma in laboratory research merely for the purpose of observing the effects. Researchers also need a reliable system of measuring stress or trauma and they need control over crucial variables that are likely to mediate the impact of these variables. Control of variables is difficult to establish in research conducted in naturalistic settings, making results of studies often difficult to interpret. Consider, for example, the case study by Yuille and Cutshall (1986). They showed that people who reported most stress during a bank robbery were the most accurate witnesses, implying a causal relationship between the

stress measure and memory accuracy. However, because the highly stressed witnesses were also closest to the crime, their better memory could actually be explained by heightened perceptual or attention processes associated with their proximity<sup>2</sup>.

One of the best scientific studies on the impact of stress was conducted by Morgan et al (2004) – they showed a negative relationship between stress and memory. This was a field experiment that also incorporated rigorous experimental design. Specifically, Morgan et al examined the memory of soldiers in a US Army survival school who engaged in a program modelled on genuine experiences of prisoners of war. In one phase of the training, soldiers were taken to a realistic prisoner of war camp where they were deprived of sleep and food for 48 hours, and were interrogated for more than half an hour in either a “high” or “lower” stress situation. In the high-stress situation, the interrogator engaged in physical confrontation which produced physiological and psychological stress responses similar to those produced by people experiencing life threats. In the lower-stress situation, there was no physical confrontation, but the interrogator tried to trick the soldier into producing information (the physiological and psychological stress responses were confirmed to be lower compared to the high-stress conditions). Shortly after the interrogation, the soldiers were released from camp, fed, and allowed to rest. Morgan and colleagues met with the soldiers 24 hours after release, and asked them to identify their interrogator from either a live line-up or an eight-person photo montage. For some soldiers the interrogator was in the line-up (or montage), and for the rest of the soldiers he was not.

Overall, the soldiers were better able to identify lower-stress interrogators than high-stress interrogators, although at best they were only 76 per cent accurate. Soldiers were poor at identifying high-stress interrogators from both line-ups and photo montages, 20 per cent and 34 per cent respectively. When a lower-stress interrogator was not actually in the line-up or montage, the soldiers falsely identified someone 38 per cent of the time in a line-up and 12 per cent of the time in a photo montage. But when a high-stress interrogator was not present, false identifications rose dramatically: soldiers frequently falsely identified someone 56 per cent of the time from a line-up, and 68 per cent of the time from a photo montage. Morgan et al (2004) commented that their results are all the more noteworthy given that their subjects were “successful graduates of military selection programs that are designed to screen for individuals who have superior abilities for retaining information and tasking ability while experiencing potentially life-threatening situations” (p 275). In other words, it is reasonable to conclude that a typical person would fare less well.

The most common explanation put forth to explain this negative effect is that stress causes people’s attention to narrow so that they attend to some aspects of an event at the expense of others, taking in (encoding) less detail than people under less stress (Easterbrook, 1959). Another explanation for the negative effect is that memories form over time – that is, they consolidate – as the result of a complex cocktail of hormones to which the brain responds; stress affects this consolidation process (McGaugh, 2003). Research also suggests that although a certain amount of stress is necessary for learning and remembering, the relationship between stress and memory is not a straight line (Andreano and Cahill, 2006; Cahill, Gorski and Le, 2003; Christianson, 1992; Deffenbacher, 1983; Loftus, 2005; McNally, 2003; Yerkes and Dodson, 1908). Moreover, in some circumstances, witnesses may be relatively low-stress, alert and able to direct their attention to the offender; in these situations, enhanced memory may result (Deffenbacher, Bornstein, Penrod and McGorty, 2004). But in actual crimes, the stress levels experienced by witnesses can never be determined because we cannot know how any particular witness responded to factors such as the presence of violence, weapons, or threat. Consequently, at the level of the individual case it is extremely difficult to determine whether the crime circumstances are likely to have contributed to either impaired or enhanced memory performance.

The concept of “repression” is often used to explain why people who have allegedly experienced a traumatic event delay reporting it. Proponents of this concept argue that delays in reporting are the result of a human protective mechanism where disturbing memories, thoughts or behaviours are unconsciously removed from awareness after the event and later reappear when therapy or other techniques diminish the anxiety associated with them, or when something else “triggers” their return (Briere and Conte, 1993; Herman, 1992; Terr, 1988, 1995). At present, however, the published work in support of this explanation has lacked the scientific rigour (for instance, control of variables) needed to rule out alternate explanations. Schooler and colleagues (1997) suggested that at least some instances of apparent “delayed memory recovery” could be the result of people remembering traumatic experiences in qualitatively different ways over the course of their lives. For example, a woman who thinks of her sexual abuse as very disturbing may not recall that a decade earlier she thought of it as only moderately upsetting – thus, she will not remember that she previously remembered being abused. Schooler and colleagues called this illusion of forgetting the “forgot-it-all-along effect” and there is some independent research to support this cognitive mechanism in use among women who claim to have recovered memories of child sexual abuse (Merckelbach, Smeets, Geraerts, Jelicic, Bouwen and Smeets, 2006). The “forgot-it-all-along effect” mechanism is similar to another explanation referred to as the “reinterpretation mechanism” (Clancy and McNally, 2005/6; Joslyn, Carlin and Loftus, 1997). The latter mechanism suggests that some instances of childhood sexual abuse are not interpreted as abuse or trauma until adulthood and that the reinterpretation provokes a feeling of discovery that is mistaken for uncovering a repressed memory. In short, illusions of forgetting and remembering and reinterpretation may help to account (at least in part) for a feeling of uncovering a repressed memory among adults.

A related issue concerns the impact of repeated stress and trauma on development. In a comprehensive review of the maltreatment literature, Veltman and Browne (2001) noted that 49 out of 65 studies reported delayed cognitive and language skills among maltreated child samples relative to age-matched controls. Poor language and cognitive outcomes are attributed (at least in part) to the impact of long-term physical/ psychological trauma on neurobiological development (De Bellis, 2001). During infancy and childhood the central nervous system (which supports motor and higher-order functioning) undergoes rapid changes in both structure and function. Maltreatment increases stress levels which in turn disrupt central nervous system function and development (De Bellis et al, 1999). The degree to which development is affected by maltreatment is determined by the age of initial abuse onset, and the duration and severity of acute trauma (Higgins, 2004). In general, the earlier the trauma and the greater its duration and severity, the more profound and long lasting the impact of maltreatment on the brain maturation process (Ansari and Karmiloff-Smith, 2002).

The association between maltreatment and child language impairment is also potentially explained by disruptions in relational (attachment) experiences (Coggins, Timler and Olswang, 2007). For example, the speech that infants and children hear is critical to learning phonology (sounds of language) and grammar (rules for combining words). Communication conventions within cultures such as rules of initiating and disengaging a conversation (pragmatic skills) are also learned through repeated and systematic engagement with others. Neglect in particular, which is associated with sexual and physical abuse (Higgins and McCabe, 2000), deprives children of necessary exposure to and experience with the use of language to support the development of oral communication skills and interpersonal relationships.

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1 Sixty-four percent of eyewitness memory experts surveyed by Kassin, Tubb, Hosch and Memon (2001) concluded that the scientific evidence shows that stress has a negative affect on memory accuracy.

2 Also at least one witness who was positioned far away from the event (relative to other witnesses) had her view blocked so may have never seen a lot in the first place.

**[65.370] The interval between the crime and the retrieval test**

A robust finding from both basic and applied memory research is that memory declines over time. All things being equal, the greater the temporal distance between the event and the memory test, the greater the potential for witness error (Baddeley, 1997). This is the case irrespective of the nature of the retrieval test (event recall or recognition) and the nature of the event detail. However, not all details are forgotten at the same rate. Memories for *when* a target event detail occurred (ie, temporal information) fade faster than memories related to whether the detail occurred at all (Read and Connolly, 2007).

Some researchers have provided guides as to the likely extent of memory decline over time. For example, Deffenbacher, Bornstein, McGorty and Penrod (2008) demonstrated that the drop-off in memory strength on face recognition tasks among adults is rapid (eg, about 15 per cent within the first 10 minutes) and under relatively favourable conditions correct identification decisions from a six-person line-up is no better than 50 per cent after one week. While such findings highlight the importance of the retention interval, no simple rule can be used to predict likely accuracy at various retention intervals in the courtroom. It is impossible to know the full range of factors (eg, characteristics of the stimulus encoded, competing sources of information) that could have influenced the nature of the forgetting function.

So what mechanisms account for declines in memory for event details over time? One explanation is that over time, there is a reduction in the strength of memory traces. For example, a person's susceptibility to suggestion increases over time because characteristics of memory that assist in distinguishing information from multiple sources fade with time (Lindsay, 2008). Another explanation is that over time, there are increased opportunities for interference from intervening events. With regards to face recognition, a culprit's appearance is likely to change over time, resulting in some degree of mismatch between the stimulus presented to the witness in any identification test and that observed by the witness at the time of the crime. This in turn lowers the rate of correct recognition (Patterson and Baddeley, 1977; Read, 1995; Shapiro and Penrod, 1986). Further, social, developmental and motivational factors may contribute in part to a decline in reporting of event detail over time. Motivation to talk about a traumatic event can sometimes decrease after long delays in time, and witnesses' perspectives of crimes, their own memory abilities or the consequences of reporting crimes may change, subsequently impacting what is reported (Jordon, 2001; London, Bruck, Ceci and Shuman, 2007).

One factor known to minimise the detrimental effect of delays on memory is the availability of intervening retrieval opportunities in situations where no false or misleading information is presented. For example, conducting a non-leading intervening interview soon after an event can help to consolidate memories leading to stronger memory performance at a subsequent target interview (Powell and Thomson, 1997b). However, if the target interview occurs after a very long delay in time, any reinstatement or reactivation of the memory is more advantageous if it occurs a while after the event (rather than soon after) when some forgetting has occurred (Roberts and Powell, 2007). The impact of repeated interviewing is less important in those jurisdictions where electronic recording of witness evidence is conducted and used for investigative purposes as well as evidence-in-chief.

**[65.380] Age of the witness (chronological and mental age)**

The abilities of eyewitnesses are not consistent across the life span. Children in the early (preschool) and middle (primary or elementary school) years tend to be more susceptible to error than adults. This is true irrespective of whether the measure is overall decision accuracy on identification tasks (Pozzulo and Lindsay, 1998), the number or proportion of correct event details recalled (Bjorklund, 2005; Goodman and Reed, 1986) or the degree to which the

testimony is presented in a manner that is logical and easy to follow (Snow and Powell, 2005). However, among child samples, preschoolers are by far the most susceptible to error or being misunderstood – language and memory ability start to plateau for typically developing children at approximately six years of age (Fromkin, Rodman, Collins and Blair, 1984; Gathercole, 1998). In other words, the differences in eyewitness testimony performance between a four-year-old and six-year-old child are likely to be much greater than the differences between an eight-year-old child and an adult.

Differences in the performance of witnesses can be measured not merely as a result of chronological age but mental age as well. The prior research has revealed that people with an intellectual disability are more prone to being misled and to providing incomplete testimony compared to chronological age-matched controls (Agnew and Powell, 2004; Carlin, Soraci, Dennis, Chechile and Loisel, 2001; Soraci, Carlin, Read, Pogoda, Wakeford, Cavanagh and Shin, 2007). The relationship between suggestibility and intelligence is negligible when intelligence level is within the normal range (Gignac and Powell, 2006).

In relation to adults, performance generally declines during the later stages of the normal adult aging process (ie, beyond 60 years of age; see Luo and Craik, 2008, for review). As is the case with children and persons with an intellectual disability, the size of the differences among elder and younger adult witness groups has typically varied depending on the memory task. Tasks that rely on perceptual ability (visual acuity, hearing etc), temporal and source processing (remembering where, when or how information was obtained), and the ability to focus attention are most impacted by age and cognitive status (Bjorklund, 2005; Lavoie, Mertz and Richmond, 2007; Mueller-Johnson and Ceci, 2007; Moulin, Thompson, Wright and Conway, 2007).

Further, age effects on error rates are particularly pronounced when the witness is given specific cues (ie, asked to select a response among various options as opposed to recall what happened with little prompting from the researcher or interviewer: Agnew and Powell, 2004; Wright and Holliday, 2003). When offering forced choice or yes/no questions which narrow the range of response options, young children, people with an intellectual disability and older adults (compared with young adult witnesses) are more likely to provide a response even when they cannot recollect what items actually occurred in the event (Carlin et al, 2001; Cordón, Saetermoe and Goodman, 2005; Jens, Gordon and Shaddock, 1990; Keast, Brewer and Wells, 2007; Memon and Gabbert, 2003; Pozzulo and Lindsay, 1998; Searcy, Bartlett and Memon, 1999; Searcy, Bartlett, Memon and Swanson, 2001). Additionally, even when there is no explicit demand to make a positive choice, as in an eyewitness identification test, children and older adults are more likely to choose, thereby increasing the likelihood of false identifications from culprit-absent line-ups (Memon and Gabbert, 2003; Pozzulo and Lindsay, 1998; Searcy, Bartlett and Memon, 1999; Searcy, Bartlett, Memon and Swanson, 2001). Precisely what mechanism underlies this phenomenon is not currently known. It seems reasonably clear that these witnesses are more vulnerable to the demands of the testing situation that suggest to them that the appropriate response is to make a choice. But the degree to which this reflects an attempt to please an authority figure, poor memory monitoring that makes them more dependent on perceived demands, or some other mechanism, is not known. Regardless of the underlying mechanism, this inability to withhold responding when the target information is not accessible and “suggestions” are put to them means that these witnesses’ responses to questions that narrow the range of response options are difficult to interpret.

It is important to emphasise that our conclusions in relation to the increased suggestibility of children, persons with an intellectual disability and elderly adults provide no justification for excluding these witnesses from the courtroom. Suggestibility is a matter of degree (all witness groups can be misled) and there are many manipulations that can modulate or moderate the

size of differences in memory performance when comparing any of these groups and mainstream controls. If the external conditions reported throughout this chapter that affect encoding, retention and retrieval are favourable, then the impact of age on the veracity, durability and reliability of witness testimony is negligible. Research can only indicate the type of memory details or contexts where more caution must be exercised when accepting testimony.

Further, deficits in language and cognitive skills do not always translate to poor testimony. Older adults are often no less accurate than younger adults in relation to details that draw on general thematic information rather than details linked to time and place (Lavoie et al, 2007). In the case of children, better ability to understand the task demands (eg, the need for witnesses to be complete in their accounts and report everything which is associated with cognitive ability) can sometimes lead to higher rates of errors among older compared to younger children as a consequence of a shift in the criterion used in screening information for recall. Ceci, Papierno and Kulkofsky (2007) showed that nine-year-olds could be more easily misled than four-year-olds into recollecting that a cheese sandwich that they heard in a story was an egg sandwich because the older children were more likely to perceive eggs and cheese as being semantically similar. Agnew and Powell (2004) showed that although children with an intellectual disability were more likely to acquiesce to misleading questions compared to chronological age-matched children, they were *less* likely to repeat false-interviewer suggestions that they had heard the previous day. This finding is interpreted in light of the fact that repeating an interviewer's suggestion requires the ability to take in, retain and then recall the information later. Thus, the poorer memory and language skills of the children with intellectual disabilities inoculated these children against the interviewer suggestions.

In relation to a witness's ability to provide an account of an event, there are only two situations that would render an individual completely incapable of providing forensically relevant and accurate information. The first is when the individual has little or no expressive language to assist them. For example, witnesses to crimes are usually asked to provide detailed descriptions – although these witnesses may be able to make precise perceptual discriminations, they may not necessarily have the language to describe these aspects (Leibowitz, Guzy, Peterson and Blake, 1993; Powell, 2000). This problem is particularly relevant to situations where the witness relies on alternative (non-verbal) forms of speech communication such as selecting images or sounds from a computer to represent speech, or using a sign language system. Alternate communication systems vary markedly in their sophistication and the degree to which they contain all necessary vocabulary required by a witness to describe an event (Westcott and Cross, 1996).

The second situation that would render a witness incapable of providing accurate information about a target event is where the target event *preceded* the witness's development of verbal language, which typically occurs around three to four years of age. The inability to translate preverbal memories into spoken language has been shown to occur regardless of whether the witness has the vocabulary to describe the event at the time of the interview and/or can demonstrate memory of the event through non-verbal means (Simcock and Hayne, 2002). The same line of reasoning applies to witnesses' ability to monitor the source of event details. There would be little value in asking a person to identify where or how they came to know something when the event occurred prior to the development of key source monitoring processes (Roberts, 2000).

### **[65.390] Individual difference factors**

As with most skills there is usually large individual variability in memory and suggestibility, even on standardised memory tasks where developmental level, the nature of the material being recalled and the assessment conditions are held constant for all individuals.

Theoretically, a wide variety of internal factors could potentially account for variations in performance among individuals (Bruck and Melnyk, 2004; Gudjonsson, 2003; Soraci et al, 2007). Studies using methodologies that closely match eyewitness contexts have focused primarily on the affect of demographic factors (eg, socioeconomic status, gender), cognitive factors (eg, intelligence, language, memory, executive functioning) and psycho-social factors (eg, self concept, personality). Apart from intellectual disability, research on the effect of psychological impairments (eg, schizophrenia, Alzheimer's disease, autism, and long-term drug or alcohol use) is limited within the eyewitness testimony field (see Soraci et al, 2007, for review).

Research on individual differences within an eyewitness testimony context has been largely restricted to laboratory (experimental) designs. The typical procedure is as follows: research participants are required to take part in a standard memory paradigm (ie, that which provides sufficient control of extraneous non-witness variables) and they sometimes also complete one or more psychometric tests. Background characteristics are obtained through surveys completed by the participants themselves or a caregiver (where applicable). The relationship between the individual variables and memory performance is then examined via correlational analyses or by examining differences in memory performance between certain witness groups.

So far, a wide range of variables have been explored using both adult and child samples. In relation to the child witness literature, for example, Bruck and Melnyk (2004) reviewed the findings of over 500 analyses which focused on various individual factors. Irrespective of the witness age group, however, a strong case cannot be made at present for any variables (apart from intellectual status which was reviewed in the previous section). Significant effects have tended to be the exception rather than the rule, and at best any significant effects have tended to be moderate in size. This does not mean that memory and suggestibility are independent of psycho-social and demographic variables. It may be that memory and suggestibility are determined by a complex array of interrelated factors, not all of which have been adequately controlled in prior research. Research in this area is still in its infancy and studies have suffered methodological limitations relating to poor reliability or validity of measures and difficulties recruiting suitable control groups. These limitations raise concerns about whether previous findings reflect context-specific factors rather than factors related to participants' individual profiles. Further, it could be that eyewitness testimony performance is not related to isolated variables, but rather a combination of various cognitive or psycho-social factors (Bruck and Melnyk, 2004). If this is the case then researchers will need to build models comparing language or memory outcomes with eyewitness profiles as opposed to examining variables in isolation.

### **[65.400] Summary**

Eyewitness testimony is determined by many factors – the strength or quality of the witness's memory as well as complex interactions between memory characteristics and various situational influences. Given the current knowledge, it is not possible to specify the precise likelihood of these influences affecting witness testimony in any particular case. Scientists can only provide a guide as to the sorts of questions that need to be asked by juries when reflecting on the evidence of a particular witness.

[The next text page is 65-3051]

## GUIDELINES FOR INTERVIEWING WITNESSES

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### **[65.500] Key elements which affect the outcome of investigative interviews**

Our review of eyewitness testimony now focuses solely on those influences which are amenable to control by the justice system. Here we refer to methods of eliciting witness evidence either at the time of the police investigation or the trial. For example, a witness may be required to engage in interviews during the investigation process to help police establish whether a particular criminal offence was committed and (if so) how, when and by whom it occurred. If the case goes to trial, the witness may be invited to provide live evidence (evidence-in-chief and cross-examination). In cases where the offence was perpetrated by someone not previously known to the witness, that witness may be asked to take part in an identification test to assist investigators in establishing the identity of the culprit.

The witnesses' behaviour and responses during any of the abovementioned retrieval tasks can have a significant impact on the outcome of court proceedings. This is especially true in cases where there is little physical or other corroborative evidence to guide professionals and juries in making their decisions. A properly conducted investigative interview about intra-familial child abuse, for example, affects the completeness and accuracy of the victim's examination-in-chief and the degree to which the victim's account is susceptible to distortion during cross-examination (Pipe et al, 2013; Powell, 2005). Witnesses' behaviour when confronted with a police line-up can focus the investigation on the suspect and increase the likelihood of a prosecution being initiated and successful (Cutler and Penrod, 1995; Wright, 2007). Errors when identifying suspects can lead to real culprits going free and erroneous convictions. Indeed, the US Innocence Project website (2013) reports that mistaken identifications were important in the wrongful conviction of 72 per cent of the 311 DNA exoneration cases documented to August 2013.

In this section, we review the key elements that are known, or believed, to affect the outcome of investigative interviews with police or in-court interviews in front of a judge or other decision-maker. The next section focuses solely on suspect identification procedures. Our reviews have been written with the aim of assisting legal professionals in determining whether a witness's account of an offence or decision in an identification parade was elicited in a manner that best facilitated accurate and (in the case of interviewing) complete recall. As with

the previous section, the elements we discuss relate to both children and adults. Where the findings are applicable to only one witness group, this is indicated in the text.

### **[65.510] Timing of the interview**

As explained earlier in this chapter, memory of event details declines over time and with the passing of time there is increased opportunity for contamination of witnesses' accounts via exposure to potential misinformation about the event. It is for this reason that the timing of interviews is an important consideration, particularly the timing of the initial investigative interview. Ideally an initial interview occurs as soon as possible after a disclosure or referral is made and before the witness has spoken in detail with other persons about the offence (Read and Connolly, 2007). Minimising delays in the elicitation of a witness statement is important for all witnesses but particularly "vulnerable witnesses" (eg, children, persons with a cognitive impairment) and when witnesses are required to recall one or more occurrences of a repeated offence – the impact of delay is much greater in these situations (Brainerd and Reyna, 1995; Powell, Roberts and Guadagno, 2007).

Many jurisdictions have acknowledged the need to elicit testimony as soon as possible from vulnerable witnesses. These jurisdictions have introduced the electronic recording of witness statements to police and the use of these statements for dual purposes – as a record of information that can assist in the investigation of abuse as well as in an evidentiary capacity where the statement can be played as evidence-in-chief (Hoyano and Keenan, 2007). Some jurisdictions have also adopted a pre-trial hearing model where the witness's whole evidence, including cross-examination and re-examination, is recorded pre-trial within a few months of the cases proceeding to prosecution. When the trial proper occurs, the entire evidence (the videotape of the investigative interview which took the place of evidence-in-chief, cross-examination and re-examination) is played to the jury instead of the witness having to attend the trial live many months later (Hoyano and Keenan, 2007).

While combining the investigative and evidential interviews preserves witnesses' statements at an early stage in the legal process, tensions can arise from combining these interviews because the purpose of an interview conducted early in an investigation is necessarily different in nature to an interview conducted for the purpose of direct examination. To maximise the accuracy, scope and clarity of the information obtained, investigative interviewers must encourage interviewees to recall *everything* that comes to mind, irrespective of whether it seems trivial, out of place or inconsistent (Fisher and Geiselman, 1992; Milne and Bull, 2002). In contrast, the purpose of evidence-in-chief of a victim or prosecution witness is to yield a coherent, cogent and (where necessary) chronological narrative which complies with the rules of evidence, covers the criminal elements of each alleged offence and provides particulars (Burrows and Powell, in press a; Davis, Hoyano, Keenan, Maitland and Morgan, 1999). Direct examination of witnesses, therefore, ideally occurs *after* the interviewer has developed a theory of the case, understands the necessary elements that are required to establish the prosecution case and knows how the witness's testimony fits into the broader evidential pattern. The underlying tension that arises from combining investigative and evidentiary interviews has led some researchers to conclude that prosecutors should be allowed the latitude to supplement the pre-recorded evidence-in-chief with additional in-court questioning if required (Davis et al, 1999; Powell and Wright, 2009). In this way, the relevant part of, or entire, interview can be reconstructed in a more presentable form to serve the needs of the prosecution.

### **[65.520] The relationship between the interviewer and interviewee**

Irrespective of the witness's age or willingness to cooperate in the interview process, the accuracy and detail of that witness's testimony is likely to be maximised when the interviewer

establishes a relationship at the outset that is conducive to good communication. Good communication is facilitated when the witness's subjective experience of anxiety, fear or lack of confidence is minimised, because these factors impede effective engagement in the process (Powell and Cauchi, 2013). Being valued and respected is important for all witnesses, and is a common factor underpinning high levels of withdrawal of complaints by people who report offences perpetrated against them (Kelly, Lovett and Regan, 2005; Lievore, 2003).

When describing how good rapport between the interviewer and interviewee is best established in the investigative interview situation, interviewers and legal professionals often emphasise the importance of personal characteristics (eg, the ability to show empathy, emotional support and belief in the witness's account, Wright and Powell, 2006, 2007; Wright, Powell and Ridge, 2007). In contrast, eyewitness testimony researchers emphasise the importance of demonstrating a *process* of interaction that is considerate of the witness's physical, emotional and cognitive needs while demonstrating to the witness that his or her story will be heard, understood and not judged' (Fisher and Geiselman, 1992; Powell, Fisher and Wright, 2005).

The value of putting the witness into the role of a valued informant early in the interview process was well demonstrated by Sternberg et al (1997), who focused on the effect of various styles of rapport building with child witnesses. In each script, the interviewer encouraged the child to talk about an innocuous event such as a recent family holiday. One of the rapport-building scripts was based on a style where the child was encouraged to speak at his or her own pace, without interruption or without pressure to conform to the interviewers' attitudes or beliefs about what occurred. The other script was very directive whereby the interviewer asked a series of focused questions about details that may have occurred in the holiday. Irrespective of the rapport-building script, interviewers then began the substantive phase of the interview with the instruction: "Please tell me everything that happened [in the offence or target event], every detail, from the very beginning to the very end". Overall, the witness-directed rapport-building script facilitated the informativeness and accuracy of the children's subsequent responses about the target event. Children who were allowed to do all the talking prior to remembering the target event provided 2 1/2 times as many details and words about the target event than the children exposed to the interviewer-directed script (90.56 vs 38.32 details respectively). Since Sternberg et al's (1997) study, evidence to support the benefit of open-ended rapport-building about a neutral event has mounted. Roberts et al (2004) found that children in the child-directed rapport-building condition gave a higher proportion of accurate details and were more resistant to misleading suggestions about the target event. Price, Roberts and Collins (2013) found that children exposed to more open-ended prompts in the pre-substantive interview phase provided more information in their subsequent reports about alleged abuse. Brubacher, Roberts and Powell (2011) found that when open-ended rapport-building focused on recall of an episode of a repeated innocuous event (compared to practice using generic prompting or prompting about a novel innocuous event), children provided more details specific to an episode about the substantive event.

An added advantage of encouraging the witness to talk as much as possible in the rapport-building (pre-interview) stage is that it provides an objective point of comparison to interpret later interviewee behaviour (Snow and Powell, 2005). For example, if the interviewee demonstrates highly complex and elaborate language skills in the rapport-building stage yet provides lack of detail about the offence, one can conclude that the reason for the change in behaviour is due to poor memory or emotional factors rather than language limitations per se.

The importance of facilitating communication by reducing anxiety, fear or lack of confidence is no less important in the courtroom compared to the investigative interview situation. This is the rationale behind the establishment of numerous legal reforms such as the use of support persons, the admission of videotaped testimony as evidence-in-chief, the ability to testify via CCTV in lieu of live testimony, and witness preparation prior to attending court (see Malloy,

Mitchell, Block, Quas and Goodman, 2007, for discussion). The limited research on the impact of these arrangements indicates they have played a major role in reducing witnesses' feelings of uncertainty and intimidation and increasing their willingness to engage in the legal process (Eastwood and Patton, 2002; Malloy et al, 2007). However, these procedures cannot address the stressors imposed by intimidating, confusing, accusatory and controlling questioning during cross-examination (Cotterill, 2004; Richards, 2009)<sup>2</sup>. The ability to tell one's story is one of the most important determinants of witness satisfaction in the justice process (Powell & Cauchi, 2013).

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1 The perception of "not being judged" cannot continue into the courtroom, where the proceedings are adversarial and one or more parties and their witnesses are judged better or worse than another.

2 Preparation to deal with those stressors requires distinctive approaches which are outside the scope of this chapter (see, for example, chapters 7.5 and 7.10 in this publication).

### [65.530] Use of conversational rules or warnings

The elicitation of accurate and detailed testimony is facilitated by mutual understanding between the interviewer and interviewee of the function of the interview and the interviewee's role within it. Most adults and children have limited understanding of what is needed to prosecute offences and the evidential role of interviews. This poses a problem in that the conversational rules underpinning effective investigative interviews (eg, not editing or withholding information, not filling in any "gaps" in memory, correcting false assumptions or statements of the interviewer) may violate those rules commonly followed in everyday interactions (Fisher and Geiselman, 1992). When witnesses do not understand the forensic interview process, they are less likely to provide complete and accurate responses. Further, when witnesses perceive that the interviewer has some knowledge of the original event, they are more likely to accept suggestions offered by the interviewer rather than rely solely on their own recollection of the event or related experiences (Welsh-Ross, 1999; Wright, Memon, Skagerberg and Gabbert, 2009).

The provision of simple interview "ground rule" instructions is often recommended by experts as a way of giving interviewees permission to break the conventional conversational rules that impede effective communication in interviews. For example, witnesses may be explicitly told at the outset of the interview that "I don't know" is an acceptable response, that it is important not to guess or make things up and that they should report everything they remember, even things they might not think are important. One problem that has become increasingly evident, however, is that while mainstream adults can often adjust their answers in a sensible manner when warnings are given (Chambers and Zaragoza, 2001; Greene, Flynn and Loftus, 1982; Highhouse and Bottrill, 1995), simple ground rule instructions are not very effective with young children (Beusche and Roebers, 2005; Cordón et al, 2005; Ellis, Powell, Thomson and Jones, 2003). This is especially true when the ground rules are relayed at the outset of the interview, when the event is not well remembered, and when the ground rules are not compatible with the interviewer's manner, approach and the nature of the questioning *throughout* the interview. Giving explicit instructions to correct the interviewer is useless if the questions are so complex that witnesses do not even realise they misunderstood them, or do not feel comfortable enough in the interview situation to contradict the interviewer (Powell, Mattison and McVilly, 2013). Cautioning witnesses against guessing or fabricating responses has little impact in inoculating them against the negative effects of misleading, harassing or repetitive questions commonly used in cross-examination (Righarts, 2007). Instructions to be detailed will not be beneficial when the underlying memory traces are not suitable for the cognitive operation requested.

Because of the limitations of simple instructions or warnings with children and other vulnerable participant groups, some researchers have advised that more extensive practice in

adhering to ground rules is warranted (eg, providing practice in responding “I don’t know” to questions on an unrelated topic in which the witness does not know the answer). There is some evidence to support this claim (Nesbitt and Markham, 1999; Righarts, 2007; Saywitz and Moan-Hardie, 1994). For example, Righarts (2007) examined the effect of extensive pre-interview practice and feedback to children regarding their responses to leading questions about an innocuous event. While subsequent cross-examination about the target event decreased accuracy (a typical finding), the pre-interview intervention significantly reduced its negative impact. When used in an investigative interview situation, however, the gain arising from extensive ground rule practice does come at a cost. The problem is that it uses up valuable interview time with witnesses who have short attention spans. Furthermore, extensive ground rule practice has been found to inhibit reporting of correct as well as incorrect responses (Nesbitt and Markham 1999; Saywitz and Moan-Hardie, 1994). The smaller number of correct details gives investigators less opportunity to follow leads and obtain additional evidence that may be used to corroborate the child’s evidence.

Overall, the research on ground rules and warnings highlights that the onus of responsibility for promoting accurate and detailed recall rests primarily with the interviewer. The interviewer’s role is to use questions that minimise confusion and maximise accurate and complete recall. Instruction and feedback about the recall process should be offered, but this is best dispersed throughout the interview as the need arises rather than confining these to the pre-interview phase. For example, the interviewer should acknowledge acceptance of “don’t know” or “don’t remember” responses immediately after they are provided spontaneously by the witness for the first time. If the witness does not initially respond to requests for further detail about an aspect of the event, the interviewer could remind the witness that (s)he does not know what happened and needs to know every detail. See Russell (2006) for further discussion.

### **[65.540] The investigative interview framework**

To assist interviewers in eliciting reliable and detailed statements during investigations of abuse, interview protocols have been developed by researchers to target particular interviewee groups. For example, the Cognitive Interview was developed mainly for interviewing cooperative adults (Fisher and Geiselman, 1992) and Conversation Management was designed for use with hostile witnesses and suspects (Shepherd, 2007). Two prominent protocols developed specifically for use with child witnesses include *Achieving Best Evidence in Criminal Proceedings* (CJS, 2007) and the National Institute of Child Health and Human Development (NICHD) Protocol (Lamb, Orbach, Hershkowitz, Esplin and Horowitz, 2007). The protocols are based on a common, public pool of knowledge arising from experimental, laboratory research (controlled testing of specific interview techniques) and are applicable across jurisdictions with minor variations reflecting legislative requirements, local customs and local research strengths and expertise. For example, practices of individual agencies in relation to eliciting disclosures, presenting evidence to suspects, clarifying sexual acts and terminology, and assessing witness competency have evolved over time within their own political, legal, and socio-cultural contexts<sup>1</sup>.

Irrespective of the variations across interview protocols, the central structure, processes and precepts underlying all investigative interview protocols are remarkably similar. The core feature of interview protocols is that narrative detail needs to be maximised and interviewer prompting of any kind should be minimised where possible (Fisher and Schreiber, 2007; Powell et al, 2005). Questions that encourage elaborate detail but do not dictate what information is required are generally used to encourage the interviewee to report as much information as possible in the form of narratives (Fisher and Geiselman, 1992; Lamb et al, 2007; Poole and Lamb, 1998; Wilson and Powell, 2001).

The benefits of maximising narrative detail are four-fold. First, details provided in response to free-recall prompts are more accurate than those provided to questions that elicit focused and brief responses (Dent, 1986; Dent and Stephenson, 1979). This is true of all witnesses. In fact, when comparing the performance of various witness groups (eg, children versus adults, children with an intellectual disability versus mainstream controls) there are usually negligible between-group differences in the accuracy of details provided during narrative accounts (Agnew and Powell, 2004; Dent and Stephenson, 1979; Soraci et al, 2007). Second, witness responses during free narrative are more detailed (Pipe, Lamb, Orbach and Esplin, 2004). Thus it is not surprising that interviews that adhere to this style yield more investigative leads and are more likely to be authorised to proceed to prosecution and result in convictions (Pipe et al, 2013).

Third, when interviewers impose their language and framework of the event on the questioning, there is greater potential for confusion or misunderstanding. Witnesses with language impairments can easily mask these impairments in response to focused questions, to avoid embarrassment or to get the interview over with. For example, they repeat back certain phrases or words used by the interviewer or provide stereotypical or affirmative yes/no responses (Brennan and Brennan, 1988; Eades, 1994; Snow and Powell, 2005). Fourth and finally, allowing witnesses the opportunity to provide accounts at their own pace promotes more elaborate memory retrieval and a more coherent, logically constructed and therefore credible account (Feltis, Powell, Snow and Hughes-Scholes, 2009).

Despite the existence of clear guidelines regarding the way in which investigative interviews should be conducted, most interviews do not adhere to recommended approaches. This is true of all witness groups, including interviews with child witnesses where the avoidance of specific prompting by the interviewer is even more important than with adults (Powell et al, 2005). One reason that interviewers give for not eliciting free-recall in child abuse interviews is that children provide scant detail during free recall compared to what can be achieved with a series of more focused or short-answer questions (Wright and Powell, 2006, 2007; Wright, Powell and Ridge, 2007). Such concern about the limited ability of young children to provide narrative detail is unfounded. Although young children (eg, preschoolers) provide briefer accounts of their experiences than older children and adults (Lamb, Hershkowitz, Sternberg, Esplin, Hovav, Manor and Yudilevitch, 1996), with gentle persistence and questions that use the child's own statements as cues for further information, these witnesses can produce the substantial amounts of forensically relevant detail needed to prosecute cases (Lamb, Sternberg, Orbach, Esplin, Stewart and Mitchell, 2003; Orbach and Lamb, 2007).

Another reason why interviewers do not adhere to best-practice interviewing technique is that investigative interviewer training programs across the globe typically lack a core element needed to develop and maintain the use of effective questions, specifically, ongoing practice and critical feedback extending well beyond the completion of the initial training course (see Powell, 2008 for review). The gap between ideal and actual interview practice can be understood in the context of organisational isolation and the discrepancy between the relative feasibility and low cost of research (identifying best practice) when compared to the difficulty and high cost of implementation in large Government departments. At present, the lack of consistent systems, practices and information gathering across jurisdictions means it is not currently viable to assess whether individuals and/or organisations are adopting or adhering to best practice interviewing practices without scrutinising the interview itself<sup>2</sup>. In Australia, organisations are working towards addressing this problem by pooling resources and developing a national interview framework encompassing evidence-based best practice

interview and potential guidelines for training. Separate systems and structures to ensure on-going quality assurance, evaluation, quality improvement and compliance may also be developed in future.

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1 See Powell (2005) and Powell and Snow (2007b) for a review of techniques for eliciting disclosures of abuse from children taught in several investigative interviewer training programs throughout Australia. See Burrows and Powell (in press b) for a review of interview protocol developments in Australia arising from collaboration between child development experts, prosecutors and police investigators.

2 The need to scrutinise interviews poses a problem in those jurisdictions where not all interviews are electronically recorded and available for evaluation (Powell & Wright, 2009).

## [65.550] The types of questions used

The definitions and function of various questions used in interviews are poorly understood by professionals and are not consistently defined by researchers. Experts in the adult interviewing literature tend to use a dichotomy with open-ended questions (effective questions) on the one hand and specific or closed questions (less effective questions) on the other (Fisher and Geiselman, 1992; Milne and Bull, 1999). Here, open-ended questions are generally defined as any prompts designed to elicit an elaborate response (eg, “Describe the gun in as much detail as you can”) and closed questions where the expected response is one or two words (eg, “What colour was the gun” or “Was the gun black?”; Fisher and Geiselman, 1992). Lawyer advocates often use a similar dichotomy but with closed questions referring solely to those that invite acceptance, rejection or don’t know (H Selby, personal communication, 22 June 2009).

In contrast, child interview experts (eg, Poole and Lamb, 1998; Wilson and Powell, 2001) generally classify open-ended questions according to two dimensions: questions that elicit elaborate responses *and* do not dictate what specific information needs to be recalled. This includes questions that ask the witness to report another detail, act or activity (eg, “What happened then?”, “What else happened?”) or to elaborate on parts of the account already provided (eg, “Before you mentioned...Tell me more about that part”). The remaining questions are regarded as specific questions which include questions that elicit a yes or no response as well as cued-recall questions that focus on what specific detail needs to be reported (eg, Who, What, When, Where, How questions). In other words, “Describe the button in as much detail as you can” would be regarded as a specific cued-recall question because it specifies *what* information needs to be recalled (ie, a description of the button). The need for the more stringent definition of an open-ended question arose from the recognition that children are more suggestible than adults and they more often attempt to answer highly focused questions even when they have no recollection or knowledge of the detail requested (Waterman, Blades and Spencer, 2000, 2001).

Although open-ended questions do not always elicit detail from witnesses (no question or technique can be expected to do that), on average these questions are more effective at eliciting detail compared to specific or focused questions (Pipe et al, 2004). Open-ended questions, however, cannot be considered synonymous with “good” questions. Like specific questions, open-ended questions can be either simple or complex and they can also be highly suggestive. Any question (irrespective of its structure) will not be effective if it is not understood by the interviewee, if it targets concepts that are not meaningful, if the interviewer and interviewee are not clear about what event (or occurrence of the event) is being recalled or if the interviewer controls or suggests the response. In recognition of these issues, Powell and Snow (2007a) advised that the effectiveness of questions (both open-ended and specific questions) should be judged according to the degree to which they adhere to the following four criteria that make up the acronym SAFE:

(S) *Simple language:*

Any question will have limited utility if it is not understood by the interviewee. The language used in many investigative and evidential interviews is often far too complex for people with a competent grasp of the English language let alone those that are less linguistically skilled. Questions (particularly those during cross-examination) have been criticised for:

- (a) being multifaceted (where numerous sub-propositions or qualifying clauses are contained in the one question),
- (b) including too many pronouns (he, she, they etc) which make it difficult to keep track of who or what is being discussed,
- (c) including unnecessary relational terms (eg, before, after),
- (d) being passive in structure such that the sense of who is doing is obscured, eg, “Were you kissed by him?”,
- (e) stating propositions that imply the correct answer, eg, “This is your bag isn’t it?”,
- (f) including complicated past tense verb phrases, eg, “It *might have been* your brother...”, and
- (g) using complex terminology or ambiguous terms (Brennan and Brennan, 1988; Cotterill, 2004; Eades, 1994).

In essence, interviewers need to keep the questions short, ask one question at a time, and be upfront or direct in their request for information rather than relying on the witness’s ability to distinguish between the “surface” and the “intended” meaning of requests (Powell and Snow, 2007a). Walker (1999) provides an excellent guide to phrasing questions, which has been tailored specifically for legal professionals who interview children.

*(A) Absence of specific details (not previously raised) or coercive techniques:*

Ideally, an investigative interviewer should not refer to (presume or request responses about) any activities or details related to the alleged event that have not already been mentioned by the witness, or have not been established to be true<sup>1</sup>. Complete avoidance of such questions related to the event may not be feasible; however, it is important that the questions be delayed until *after* the witness’s free-narrative account is exhausted. Even if a false suggested detail was initially refuted by the witness, it could later be incorporated into a subsequent account and accepted as being true (Ceci, Loftus, Leichtman and Bruck, 2004; Sharman et al, 2005).

Legal professionals need to be on the lookout for any question that leads on an issue or suggests or presumes contentious details. This includes questions that refer to temporal as well as content details<sup>2</sup> (Powell, Roberts and Guadagno, 2007), and open-ended questions for which an adequate “foundation” has not been established (Hughes-Scholes and Powell, 2008). Indeed, asking a witness “Tell me what happened when Joe hurt you”, when it has not been established that the witness was hurt by Joe, is *more* likely to lead to a false account than the yes/no question, “Did Joe hurt you?” This is because the open-ended question presumes the false detail and asks the witness to generate a response (Greenstock and Pipe, 1996; Sharman and Powell, 2012). With closed questions, the process of providing a response is much more superficial – the witness may acquiesce to the question without even hearing or understanding the question at all. Further, the development of a false belief is more likely to occur when the interviewee draws on existing memories to generate an account of what may have occurred. Questions that are broader in scope (which many open-ended questions are) offer greater opportunity to integrate existing memories.

*(F) Flexibility in allowing the interviewee to choose what information will be reported.*

Questions can vary depending on the degree to which the witness is permitted to choose what information to report. For example, the question “Tell me everything that happened when you visited Joe’s house” is much broader in its focus and this allows greater flexibility in content than the question “You mentioned eating at Joe’s house. Tell me about what you ate”. As explained earlier, when witnesses are given the opportunity to report what they remember without specific prompting, the information they provide is generally more accurate and is structured in a way that is easier to comprehend (Feltis et al, 2009). Even very slight changes in wording can markedly change the likelihood of eliciting connected narrative rather than isolated descriptive details. For example, “Tell me about what happened when you washed the baby” tends to focus on the narrative account, and invites additional details, more than the question “Tell me about washing the baby”, which tends to focus on action details. Including the words “what happened when ...” tends to keep the focus wide, by allowing the witness to introduce other characters and events that may not have been previously mentioned.

*(E) Encourages an elaborate response.*

Questions can vary depending on the number of words required to provide an adequate response. For example, the question “Tell me *everything* that happened at Joe’s house” would elicit a longer and more detailed response than the question “Tell me something you did at Joe’s house” or “Tell me a little bit about what happened at Joe’s house”. All of the above questions would probably elicit lengthier and more detailed responses than the questions “Did you do anything at Joe’s house?” or “Is there anything else you can tell me?” (Powell and Snow, 2007). The more elaborate the response, the greater the likelihood that the witness has engaged in a deep level of memory processing (Sternberg et al, 1997; Waterman et al, 2000).

A final point to acknowledge about questioning is that this is not the only method by which interviewers can contaminate witnesses’ accounts. Biased interviewers can shape interviews to maximise detail consistent with their beliefs in many ways (Ceci, Kulofsky, Klemfuss, Sweeney and Bruck, 2007). Examples of other coercive techniques discussed in the child witness testimony literature include: appeals to conform with reports made by others; bribery; asking the witness to speculate; reinforcement of certain responses through praise or criticism or making positive non-verbal gestures contingent on certain responses; repeating questions until a desirable answer is obtained; and creating a negative or accusatory tone when speaking about the alleged offender (see Ceci, Powell and Principe, 2002, for review). Problematic techniques that have been the focus of discussion in relation to adult witnesses include hypnosis and other memory recovery techniques aimed at elucidating memories supposedly buried in the person’s unconsciousness (Mazzoni and Lynn, 2007). Witnesses with cognitive or language limitations or inferior social status are particularly susceptible to the influence of social demand factors (Agnew and Powell, 2004; Gudjonsson, 2003).

1 These questions are sometimes referred to as leading questions. However, definitions of the term “leading” (like “open-ended” and “closed”) vary among lawyers and social science researchers.

2 The rate of questions that suggest or presume the *temporal position* of details within a series of occurrences of a target offence is generally higher than the rate of questions that suggest or presume *content* details, but the former questions are often overlooked by professionals when evaluating interviews about repeated abuse (Powell, Roberts and Guadagno, 2007). Examples of questions observed in actual child abuse interviews that suggest or presume temporal details include: (a) “You said Joe touched your fanny with his hand this second time. Did Joe put his doodle in your fanny this second time as well?” when the witness had previously mentioned being penetrated but not on the second occurrence, (b) “Tell me about the last time Joe kicked you” “when the witness

had not previously stated that Joe kicked him on more than one occasion”, and (c) “Did Joe give you a treat the last time he played the sex game?” when the witness had previously mentioned a sex game, but no treat at all. Note that questions can presume or suggest *both* content and temporal details, as in example (c).

### [65.560] Use of cues and props

Cues and props have been widely used in forensic contexts as a way of facilitating witnesses’ memories of persons or events. For example, photographs are sometimes used in interviews with adults and children to remind the witness of some target information or to aid recall. The impact of physical cues is similar to any memory retrieval procedure. While a specific prompt can facilitate recall, it can also sometimes impair memory (Davis and Loftus, 2007). When cues have been found to facilitate recall without increasing errors, this has typically been in contexts where the details had actually been present in the event, had related to distinctive aspects, the retention period was short and no false details or distracter details were presented during or subsequent to the event. To the extent that the detail provided in the form of a cue or prop is inaccurate, information will be impaired. This is a problem because, in the forensic context, there is usually no way of knowing whether the cue or prop is a good representation of the event.

With regard to child witnesses, cues and props have been used for a broader array of purposes. They have been used not only as a way of facilitating memory, but also to facilitate reporting, to establish the witness’s understanding of certain concepts and to determine the likelihood of an event occurring. For example, the first author has viewed transcripts where children (quite early in the interview) were asked to draw the scene of an offence, or to point to body parts on a figure drawing to facilitate the interviewers’ understanding of the events (Powell, Wright and Hughes-Scholes, 2011). Drawings have been widely used in clinical contexts as a way of encouraging children to talk about events (Jones and McQuiston, 1985). Anatomical dolls and human figure drawings have been used as aids in investigative interviews of sexually abused children (Everson and Boat, 2002; Willcock, Morgan and Hayne, 2006). Objects such as tissue boxes have been used to allow the witness to demonstrate the concepts “on” and “in” as a precursor to questioning the child about whether sexual abuse involved penetration (Powell et al, 2009).

There are various rationales behind the use of tools in the abovementioned contexts. First, dolls and props are thought to lessen the language demands of verbal interviews particularly among young children whose oral language capabilities are limited. A related rationale is that doll and prop manipulation may serve as reminders of the alleged event and thereby cue recall, augmenting children’s responses to open-ended questions. In addition, doll and prop enactment is thought to help children overcome certain motivational problems, such as embarrassment and shyness that may inhibit disclosure of abuse. Finally, some professionals have argued that particular behaviours, such as avoidance of the dolls and preoccupation with the dolls’ genitalia, are diagnostic of abuse (Dammeyer, 1998; Johnston, 1997).

There is no doubt that providing cues and props can make children’s retrieval of information from memory easier. As mentioned earlier, however, the downside is they can increase errors. An increase in errors as well as correct responses can occur regardless of whether a cue is in the form of a specific question, instruction or physical prop (eg, doll, demonstration aid, scale model: Salmon, 2001). Further, there is no strong empirical support for any of the other assertions about the usefulness of props or cues in interviews with children. Children’s understanding of words is context specific (eg, knowing the meaning of the word “inside” in one context does not mean it is known in another: Walker, 1999). Doll play is not a good indicator of abuse status – in fact there is risk of misinterpretation in any situation where nonverbal behaviour is used to augment verbal reports (Bruck, Ceci and Francoeur, 2000; Hungerford, 2005). Body maps have not been found to facilitate children’s reports of touch in controlled contexts (Willcock, Morgan and Hayne, 2006). More detailed reports are not elicited

when anatomical dolls or other props are used compared to when they are not (Dickinson, Poole and Bruck, 2005; Lamb, Hershkowitz, Sternberg, Boat and Everson, 1996; Thierry, Lamb, Orbach and Pipe, 2005). Finally, the ability to use an object, drawing or figure as symbolic representations of oneself or another person, or to see the relation between a scale model and a larger space it represents, is a process that develops throughout childhood, even without the added challenge of having to rely on memory (DeLoache, 1995; Marzolf et al, 1999).

It may be that with further research, we will be better able to identify the conditions in which cues, props and drawings can facilitate reports in a way that does not compromise accuracy (Gross, Hayne and Drury, 2008; Saywitz and Snyder, 1996). However it is premature to advocate the use of physical interviewing aids, particularly before the witness has been given the opportunity to recall information in response to open-ended questions. The use of any specific cue or prop is especially risky with young child witnesses (ie, children under 6 years) and this is the age group that tools are usually targeted for because oral language skills are still rapidly developing at this stage.

### **[65.570] Methods of establishing witness credibility**

An important point emphasised throughout this chapter is that memory performance is moderated by a vast array of interacting variables (eg, target offence characteristics, retention interval effects). Although research highlights reliable patterns of behaviour when certain variables are manipulated, and although a person's tendency to make errors on standardised tests of suggestibility<sup>1</sup> is associated with errors when remembering a target event (McFarlane and Powell, 2002; Miles, Powell and Stokes, 2004; Miles, Powell, Gignac and Thomson, 2007; Scullin, Kanaya and Ceci, 2002), the prior work does not enable forensic professionals to diagnose the accuracy of any particular statement or response of a witness. The influence of any one variable at the time of encoding or retrieval differs depending on the state of other variables, many of which are unknown to legal professionals. Further, it needs to be acknowledged that eyewitness confidence is not a reliable predictor of eyewitness accuracy in interviews (Ceci et al, 1994; Garry et al, 1996; Shaw, McClure and Dykstra, 2007).

This should not be taken to mean that tools are not currently available for assessing the veracity of a witness's account of an event. Statement Validity Assessment (SVA), and more specifically its core part Criterion Based Content Analysis (CBCA), is a popular instrument for assessing the veracity of child witness testimony in the context of child abuse allegations (Vrij, 2005). With this technique, trained evaluators are required to judge the witness's verbal account of an allegation according to a range of 19 criteria such as logical structure, descriptions of interactions, the presence of unusual or superfluous details and spontaneous corrections. The presence of these criteria are taken to indicate genuine experiences based on the assumption that they are difficult to fabricate. Further, liars and truth tellers are perceived to differ in the sense that liars avoid saying things that they think sound suspicious, including correcting themselves or saying "I don't know". Other verbal tests for assessing the truthfulness of an adult witness's statement include Scientific Content Analysis (SCAN). Polygraph tests which rely on measuring physiological responses, and tests which focus on identifying changes in emotion include the Control Question Test and the Directed Lie Test (see Griesel and Yuille, 2007, and Vrij, 2008, for review). With any of the existing tools, however, the number of diagnostic failures when discriminating truthful and false statements is too high to enable them to be of assistance in trials (Griesel and Yuille, 2007; Nahari, Vrij & Fisher, 2012; Rassin, 1999; Vendemia, Schilliacci, Buzan, Green and Meek, 2006; Vrij, 2000, 2005). Poor reliability is especially magnified when the tools are used by insufficiently trained experts (Tye, Amato, Honts, Devitt and Peters, 1999), about witness statements that were not elicited using best-practice interview procedure (Hershkowitz, Fisher, Lamb and Horowitz,

2007), with persons from different cultural groups (Powell and Bartholomew, 2003) and when there is no physical evidence to rely on (Vrij, 2008).

Some professionals have suggested that although tools such as SVA may not be reliable enough for use by the courts, they may be helpful in the early stage of police investigations to provide a “rough” indicator of the witness’s veracity, which may assist in decision making (Griesel and Yuille, 2007; Vrij, 2005). We do not recommend this in cases of sexual or physical assault. Decisions by police not to forward cases of assault to prosecution have been criticised as being too heavily focused on witness credibility (Jordan, 2001; Powell, Murfett and Thomson, 2010). Police have also been criticised for not entertaining alternative hypotheses (apart from lying) as an explanation for why witness behaviour or speech is not consistent with other evidence (Jordan, 2004; Victorian Law Reform Commission, 2004). As it currently stands, the best way of assessing the quality of a witness response is to focus on the reliability of the witness statement (verbal report) considering the way in which that statement was obtained (Powell, 2005). The likelihood of suggestive interviewing occurring prior to any officially recorded interview also needs to be considered (Ceci, Kulofsky, Klemfuss, Sweeney and Bruck, 2007).

Another issue, relating solely to child witness credibility, is competency testing. For a child to testify in court in many jurisdictions, judges need to first establish whether or not the child can distinguish the truth from a lie and whether the child understands the importance of telling the truth in legal proceedings. Currently there is widespread contention regarding the value of truth-lie discussions and how (if at all) they should be administered. Although children as young as four years have a good idea of what constitutes the truth versus a lie and the seriousness of lying, many of the tests for assessing competency could be criticised for underestimating children’s true abilities (Bussey and Grimbeck, 2000; Lyon, 2000; Talwar, Lee, Bala and Lindsay, 2002; Westcott and Kynan, 2006). Traditional approaches to assessing competency often ask children to define “truth” and to explain the difference between truth and lies – it is unrealistic to expect this of young children (Bala, Lee, Lindsay and Talwar, 2001; Walker, 1999). Further, traditional approaches typically ask children to indicate whether a statement made by the interviewer is the truth or a lie (eg, “If I said my shirt was red, is that the truth or a lie?”, “If I said you came here in a helicopter is that the truth or a lie?”). The problem with these questions is that they necessitate that the child call the interviewer a “liar” in order to be answered correctly and they do not focus on the issue of intent to deceive which is critical for determining the occurrence of a lie (Lyon and Saywitz, 1999).

Given concerns about competency testing being not adequately tailored to children’s developmental level, some researchers have invested in the development of new tests of assessing competency which attempt to overcome some of the previous limitations. For example, Lyon and Saywitz (1999) and McCarron, Ridgway and Williams (2004) developed tests for child witnesses of various ages where the witness answers questions about a series of drawings or stories involving fictitious children depicted in situations telling lies or the truth. However, irrespective of how developmentally appropriate truth/lie questions are, children’s responses to these questions are not a good indicator of the accuracy of their subsequent or preceding testimony about an event (London and Nunez, 2002). Most errors in interviews are not intentional and lying is not linked to the ability to answer correctly the types of questions asked in competency inquiries<sup>2</sup>. In situations where children do lie, this can occur (like it does with adults) when they understood the importance of, and promised to, tell the truth (Talwar et al, 2002; Talwar, Kang, Bala and Lindsay, 2004). Thus it is argued that competency testing is really just wasting valuable time in the interview and because of its interviewer-directed test-like format it runs the risk of altering the dynamic between the child and interviewer in a manner that inhibits subsequent elaborative reporting (Russell, 2006). Further, any truth-lie discussion could potentially be stressful to victims if they perceive it as evidence that their stories are not believed (Russell, 2006).

Irrespective of the ongoing debate in the literature about the value of competency tests, many jurisdictions still use competency testing for qualifying child witnesses and still adhere to the conventional (risky) examination procedures where the child is required to contradict a factual statement made by the interviewer (Lamb et al, 2007; Victorian Law Reform Commission, 2004). The creators of child investigative interview protocols include these tests only because local legislation or customs require they be administered, rather than because of a belief that they serve any true value for the court (Lyon, Lamb and Myers, 2009).

- 1 The two most prominent tests of individual witness suggestibility are the Gudjonsson Suggestibility Scales (GSS1 or GSS2: Gudjonsson, 1984, 1987) and the Video Suggestibility Scale for Children (Scullin and Ceci, 2001).
- 2 There is evidence that asking the child to promise to tell the truth may promote truth-telling behaviour in some situations (see Talwar, Kang, Bala and Lindsay, 2004; Lyon and Dorado, 2008). However, it is not yet known whether giving this instruction as part of a truth-lie discussion is any more effective than merely giving the child a simple instruction not to guess or make up responses in the interview.

### [65.580] Interpretative assistance

Prior research has established that persons from ethnic minority groups have a higher involvement in crime than the mainstream population and are over-represented in Western judicial and penal systems (Mildren, 1997; Mukherjee, 1999; Tran, 2005). In situations where there are fundamental differences between interviewers' and interviewees' language and culture, the risk of miscommunication is elevated and thus assistance from qualified interpreters is warranted (Laster and Taylor, 1994). While access to appropriate interpreter services is a well-documented due process and human rights issue, these services are under-utilised due to their limited availability and poor competency of professionals in assessing whether the services are needed (Lawrie, 1999). Indeed, professionals often assess the need for interpreters on the basis of *informal* pre-interview chats – superficial social exchanges are not usually a good indicator of witnesses' production skills in forensic interviews where the linguistic challenges are quite pronounced (Mildren, 1997; Powell, 2000).

Interpreters can be of assistance not only in relation to speech translation, but also in facilitating professionals' understanding of how cultural variables affect the interview process. Even subtle differences in the meaning of English words can have a major impact on the outcome of legal cases (Powell, 2000). For example, in Torres Strait Creole, the word "kill" can be used to mean "hurt" or "maim", rather than to kill dead in the English sense (Nash, 1979). "Guilty" is understood by many older (Aboriginal) Warlpiris to be used only in reference to murder, thus if you plead guilty you are seen to be admitting to murder even if you are accused of a less serious charge (McKay, 1985). Miscommunication in forensic interviews can also arise from fundamental differences between speakers' use of discourse cues (eg, listenership cues, intonation patterns, rhythm, eye-gaze, space usage). For example, among traditional Aboriginal Australian and Japanese groups, avoidance of eye contact is a sign of respect or deference to a speaker whereas to many English-speaking listeners this signals avoidance, a guilt demeanour or inattentiveness (Eades, 1994).

Finally, different priorities regarding social commitments and dissemination of information can pose challenges for forensic professionals. For example, in Muslim communities, sex is not openly discussed between males and females under any circumstances (Gupta, 1997). In many Australian Aboriginal groups, it is forbidden to say the name of a deceased person or see any photograph of the person for approximately six months after the deceased person's death (Eades, 1992). Knowledge of these socio-cultural influences assists in understanding the full context of offences and in avoiding inaccurate assumptions about the meaning of interviewees' behavioural and verbal responses.

### [65.590] Summary

- A witness interview should be conducted as soon as possible after a disclosure or referral is made.
- The best relationship between the interviewer and interviewee is one where the interviewee perceives that his or her story will be heard, understood and not judged.
- The aim of all investigative interviews is to maximise narrative detail and minimise specific prompting as much as possible.
- There is no foolproof way of assessing the accuracy of a witness's response, but the best way is to look at the statement itself – the interviewer's questions. Generally the less restricted the answer to a question, or the less the interviewer imposes his/her view of what happened, the lower the potential for errors or misunderstanding.
- Warnings and ground rules cannot be considered a method of inoculating the witness against poor questioning, particularly when these are provided in the form of simple instructions at the beginning of an interview.
- Providing children with practice responding to open-ended prompts (in the rapport-building stage) or practice resisting suggestive questions can be helpful.
- Any physical cue and prop should be avoided if possible in the interview, particularly before the witness has had the opportunity to recall information in response to open-ended questions. The disadvantages with respect to accuracy are likely to outweigh the potential benefits in enhancing memory retrieval, particularly with young children.
- Children's ability to pass truth-lie questions is not a good indicator of the accuracy of their subsequent or preceding testimony. There is some evidence that getting the child to promise to tell the truth may promote truth-telling behaviour, but further research is needed to determine how this directive is best delivered.
- Interpreters can be of assistance not only in relation to speech translation but also in understanding how a range of cultural variables potentially impact the interview process.

[The next text page is 65-4051]

# GUIDELINES FOR THE CONDUCT AND INTERPRETATION OF EYEWITNESS IDENTIFICATION TESTS

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## **[65.700] Eyewitness identification tests**

In the final section of this chapter, we discuss processes related to eyewitnesses' involvement in suspect identification tests. An identification test may take one of several forms, such as a (live or video) line-up comprising the suspect and a number of other people, an array of photos including the suspect, or a showup in which just a single suspect is presented to the witness. The witness's behaviour in any of these tests can have a significant impact on the ensuing investigation and the outcome of any court proceedings, irrespective of whether the evidence is actually admitted at the time of the trial. For example, a positive identification is likely to focus the investigation on the suspect and increase the likelihood of a prosecution being initiated (Cutler and Penrod, 1995; Wright, 2007). A negative decision (ie, the witness rejects the line-up, which in field settings happens in about 50 per cent of line ups: Pike, Brace and Kynan, 2002) may satisfy the police that their suspect is not the culprit, thereby changing the course of the investigation, or perhaps leading the police to conclude that the witness is unreliable. The likelihood of mistaken decisions arising will depend upon interactions between a range of variables that we discuss.

Some of the factors reported in the previous section that affect the outcome of the interview process (eg, the timing of the test, use of interpreters, assessment of credibility) also apply to identification test outcomes. In the current section we review those factors that are particular to the administration of an identification test. These include the composition of the line-up (the size of the line-up and the way in which line-up members are selected); the line-up presentation (the line-up administrator, the instructions provided to the witness) and the presentation format (live line-up versus photoarray, simultaneous versus sequential presentation); the recording of an interpretation of the witness's identification response; characteristics of the identification response such as confidence and speed of responding; and influential events following the identification test.

### **[65.710] Line-up size**

There are two dimensions of line-up size: nominal and functional size. Nominal size refers to the actual number of line-up members whereas functional size indicates the number of members who are plausible foils for the suspect. Nominal line-up size varies across different jurisdictions around the world, but typically ranges from six to 10 members. The evidence suggests that, as long as the line-up contains at least three plausible foils (or fillers) for the target, nominal size has little impact on the likelihood of witnesses choosing or on rates of correct and false identifications (Nosworthy and Lindsay, 1990).

One special case that warrants mention is a nominal size of one, typically referred to as a showup. North American field studies report that between 30 per cent and 77 per cent of identification tests involve the presentation of a single suspect to the witness (Dysart and Lindsay, 2007). A review of studies contrasting the outcomes of showups and line-ups (Stebly, Dysart, Fulero and Lindsay, 2003) revealed that witnesses are less likely to make positive identifications from showups (ie, less likely to say, "Yes, that's him.") than from line-ups and that both procedures produced similar rates of correct identification. However, while the likelihood of a witness choosing from a showup is lower than that for a line-up, false identifications of innocent suspects are more likely. This is because any positive identification of an innocent suspect from a showup constitutes a false identification, whereas positive identifications from unbiased culprit-absent line-ups tend to be spread across the suspect and (known to be innocent) foils. Note that a special problem for showups is what has been referred to as clothing bias. If an innocent suspect in the showup is wearing some distinctive item of clothing that is similar to what the culprit wore, a mistaken identification of the suspect is more likely (Dysart and Lindsay, 2007).

Considerable research attention has been devoted to who should go in the line-up with the suspect. One issue is whether the line-up should contain just one suspect or multiple suspects. Given that witnesses often choose line-up foils who are known to be innocent (Stebly, Dysart, Fulero and Lindsay, 2001; Wells, 1993; Wells, Memon and Penrod, 2006; Wells and Turtle, 1986), multiple-suspect line-ups increase the likelihood that an innocent suspect will be identified and (possibly) prosecuted. In contrast, a single-suspect line-up allows a clear distinction to be drawn between identification of the suspect and a known-innocent foil.

A second issue is the functional size of the line-up. Functional size refers to the number of line-up members who are plausible foils for the suspect (see Wells, 1993, for a detailed discussion of functional size). Imagine that a witness, when describing the culprit, clearly recalled the culprit having bright blue eyes. If a suspect (with bright blue eyes) then appears in a line-up with a number of foils, all of whom might look quite similar to the suspect but do not have blue eyes, the functional size of the line-up is one. While low functional size will increase the chances of a correct identification when the suspect is the culprit, it also increases the likelihood of a false identification when the suspect is not the culprit (Lindsay and Wells, 1980; Wells, Rydell and Seelau, 1993).

### **[65.720] Selection of line-up members**

The preceding discussion on functional size of the line-up indicates the importance of selecting appropriate line-up foils. The obvious way of doing this so as to provide a tough test of the witness's memory would appear to be to select foils who are similar in appearance to the suspect. Yet, in the absence of any agreed upon formal or quantitative procedure for selecting foils based on similarity, this will clearly be a subjective process. Moreover, this approach can give rise to a couple of significant problems. First, if line-up foils are too similar to the suspect, the likelihood of a correct identification will be low (Wells, 1993; Wells et al, 1993). Second, no matter how similar the line-up members may be, if only the suspect matches the description

originally provided by the witness (cf the example cited above involving the suspect with bright blue eyes), then the suspect will still stand out from other line-up members, thereby increasing the likelihood that an innocent suspect could be falsely identified. Accordingly, it has been argued that a key ingredient in achieving a fair line-up is to ensure that all line-up members match the description of the culprit provided by the witness. In turn, this provides an opportunity to add to the information provided by the witness at recall with information from an identity test (Wells, 1993). Despite the desirability of line-up foils matching the culprit's description, it is important to realise that this approach alone will not always guarantee a fair line-up. If, for example, the witness is only able to provide a vague or scanty description, it is possible that match-description foils will differ from the suspect on many different dimensions, with the result being that the suspect still stands out as the only plausible choice (Brewer et al, 2005; Meissner, Sporer and Schooler, 2007). Under these circumstances, considerations of foil similarity would obviously become particularly important.

### **[65.730] Line-up administrator**

The administration of an identification test typically involves a social interaction between the line-up administrator and a witness who will likely come to the test with certain expectations. Being asked by the police to view a line-up is likely to signal to witnesses that the police have a suspect (cf Memon, Gabbert and Hope, 2004) and it is now up to them to find that suspect in the line-up. Illustrating this tendency to make a pick from the line-up are Wells' (1993) data showing that, when the line-up member who attracts the highest proportion of selections from mock-witnesses is removed from the line-up, a significant proportion of witness choices are then redistributed across other line-up members, rather than shifting to the *not present* response option. This tendency to make a positive line-up selection is likely to be enhanced if any aspect of the line-up administrator's interactions with the witness – whether deliberate or inadvertent – suggests to the witness that the culprit must be in the line-up or, during the line-up presentation, provides cues to the witness about the suspect's identity (see Brewer and Wells, 2009, for specific examples of how such cueing could occur).

The potential for administrator influence on witness behaviour has led eyewitness researchers to argue that some important protective measures are crucial in line-up administration. First, it is highly desirable that line-up administration should be double-blind: that is, the administrator should be blind to the identity of the suspect versus the innocent foils. This practice is designed to prevent the line-up administrator, either deliberately or inadvertently, influencing the witness's decision. The psychological literature contains abundant demonstrations of how the expectations of someone conducting a test can shape the performance of people undertaking that test. Moreover, line-up research has demonstrated how accurate decision making is more likely under double-blind conditions, with line-up administrators more likely to behave in ways that cue witnesses in the absence of such protection (Greathouse and Kovera, 2009). Interestingly, having an independent officer conduct the line-up was advocated in police guidelines as far back as the early 1900s in the UK, though this is seldom enshrined in current line-up administration practices.

### **[65.740] Line-up instructions**

It is important that the instructions to the witness are unbiased. Unbiased instructions may vary considerably with respect to the emphasis placed on the consequences of a positive identification decision. But the key consideration is that unbiased instructions should explicitly advise the witness that the culprit *may or may not be* present in the line-up. In other words, these instructions make it clear to the witness that making a positive identification is not the only choice available. Rather, it is also possible to respond that the culprit is not present, that they are unsure or don't know. The problem with biased (or no-warning) instructions is that

they significantly increase the likelihood that the witness will make a positive identification. When the culprit is present in the line-up, this may increase the likelihood of a correct line-up selection (Brewer and Wells, 2006; Clark, 2005) as, on average, the culprit will be the best match to the witness's memory. But the downside is that the likelihood of witnesses making a false identification from a culprit-absent line-up increases significantly (Brewer and Wells, 2006; Steblay, 1997). Clear unbiased instructions are crucial for child witnesses as research shows that children, even more so than adults, have difficulty withholding a positive identification response (Keast, Brewer and Wells, 2007; Pozzulo and Lindsay, 1998).

### **[65.750] Presentation format: Live line-up versus photoarray**

Anecdotal perspectives often suggest that accurate identification-test decisions are more likely if the witness views a live line-up rather than a photoarray. Presumably this position derives from the fact that a live line-up provides many more cues that should help the witness decide on whether or not a line-up member matches their memory of the culprit. For example, the live line-up allows line-up members to be viewed from different angles, provides a better perspective on the person's build and height, gait and other movement patterns and so on. Yet there is no convincing empirical evidence that witnesses are more accurate with live line-ups and one review of the literature suggests no meaningful differences exist between live line-ups and photoarrays (Cutler, Berman, Penrod and Fisher, 1994; Morgan et al, 2004). Brewer and Palmer (2010) provided two reasons why live line-ups may not lead to better performance. First, the often unfavourable viewing conditions experienced by witnesses (eg, brief exposures, lots of distractions) may prevent them from encoding features of the culprit that a live line-up would allow them to use in recognition. Second, the differences between the stimuli seen at encoding and test are likely to be sufficiently large that accurate identification is dependent on the witness having a sufficiently good memorial representation to compensate for the relatively impoverished cues provided by a photo test stimulus. It is possible that future research will reveal conditions that are associated with differences in identification performance between live or video line-ups and photoarrays. But, our present state of knowledge indicates that there are many more important issues to consider in evaluating the likely accuracy of identification test outcomes.

### **[65.760] Presentation format: Simultaneous versus sequential**

The line-up presentation format with which most people are familiar is known as the simultaneous line-up. This format involves the presentation (live or photoarray) of all line-up members at the same time. While simultaneous presentation may seem the obvious way to present a line-up, there are problems with the procedure that contribute to identification errors.

Ideally, a witness should make an absolute judgment about each line-up member, only selecting a particular line-up member when (s)he closely matches the witness's memorial representation of the culprit. There is now abundant evidence, however, to indicate that witnesses, expecting the culprit to be in the line-up, have a tendency to make relative judgments: that is, they select the line-up member that most closely matches their memory of the culprit (Wells, 1984, 1993). When the culprit is in the line-up, this strategy will often result in the culprit being chosen. However, when the suspect placed in the line-up is innocent, this judgment strategy increases the likelihood of a false identification.

One technique that has been recommended to overcome this problem is the sequential line-up (Lindsay and Wells, 1985). In this procedure line-up members are presented one at a time and the witness is asked to indicate whether each line-up member is (or is not) the culprit. There are several variations on this procedure, but particular conditions sometimes used to increase the likelihood of the witness making an absolute judgment include concealing the number of line-up members from the witness, advising the witness that the line-up will be terminated if a

selection is made, and not allowing the witness to make multiple passes through the line-up. Recent research demonstrates how crucial it is that witnesses do not know how many images will appear in a sequential line-up (Horry, Palmer, and Brewer, 2012). In their pioneering work on the sequential line-up Lindsay and Wells (1985) demonstrated a significant reduction in false identifications when witnesses were confronted with culprit-absent line-ups at little apparent cost for correct identifications from culprit-present line-ups. There is a considerable body of evidence supporting the Lindsay and Wells' findings (eg, Steblay et al, 2001, 2011), although there is now strong evidence indicating that hit rates (from culprit-present line-ups) are also likely to fall, suggesting that the procedure leads witnesses to adopt a stricter criterion for making a positive decision (Palmer and Brewer, 2012). Indeed there has been considerable recent debate about what has been referred to as the sequential superiority effect (see, for example, Lindsay, Mansour, Beaudry, Leach and Bertrand, 2009; Malpass, Tredoux and McQuiston-Surrett, 2009; Mickes, Flowe and Wixted, 2012), with some research suggesting that the simultaneous line-up may be superior (Mickes et al, 2012) and that the sequential line-up's superiority may only be detected when the line-up is biased or unfair in the sense that the suspect stands out (Carlson, Gronlund and Clark, 2008).

### **[65.770] The record of the witness's identification response**

Imagine that evidence tendered at trial indicates that a witness picked the police suspect from the line-up, and that the suspect was, for example, "number two" in the line-up. While the interpretation of this piece of evidence may seem straightforward, this record of the witness's decision could cover a variety of different witness responses. For example, the witness might have looked at the line-up and said: "That's him, number two." Or the witness might have said: "I think number two looks closest to him" and, when pressed as to whether this was their choice, said "Yes, I think it's number two." Or, the witness might have said something like: "It's either number two or number four – I think it's number two." Any of these responses could conceivably end up being recorded as a selection of line-up member two. Yet, these responses suggest different conclusions about how well line-up member number two matched the witness's memory of the culprit, conclusions that are likely to shape jurors' judgments about the strength of evidence against the defendant. This example illustrates how important it is to have a record of precisely how the witness actually responded at the identification test in order to interpret their response. Video recording of the procedure would, of course, provide such a record.

It is also important that it is documented when witnesses make line-up rejections. There may be a temptation (on the part of investigating police) to dismiss a line-up rejection as the response of a witness who simply has (for some reason) a poor memory of the culprit. But, of course, line-up rejections indicate that no one in the line-up is a strong match to the witness's memory, and it has been demonstrated that line-up rejections, as well as selections, are informative about whether the suspect is in fact the culprit (Wells and Olson, 2002).

### **[65.780] Confidence and speed of the identification response**

Witnesses can make an identification response with different degrees of confidence and decisiveness. Moreover, the confidence expressed by the witness is likely to influence other people's judgments about the likely accuracy of the identification. Survey research shows that confidence is perceived by police, lawyers and jurors as a useful indicator of likely eyewitness accuracy (Deffenbacher and Loftus, 1982; Potter and Brewer, 1999) and carefully controlled mock-juror experiments have consistently demonstrated the influence of witness confidence on jurors' judgments of their credibility (Bradfield and Wells, 2000; Brewer and Burke, 2002; Cutler, Penrod and Stuve, 1988; Lindsay, Wells and Rumpel, 1981; Tenney, MacCoun, Spellman and Hastie, 2007). Indeed, in some legal jurisdictions, one of the criteria for evaluating the reliability of eyewitness evidence is the witness's confidence (eg, *Neil v Biggers* 409 U.S. 188 (1972)).

The research literature is replete with statements by eyewitness researchers suggesting that identification confidence is not a useful guide to accuracy. Our current knowledge indicates that these statements should be qualified to take into account the conditions under which the confidence-accuracy relationship is determined. It is certainly true that the correlation found between confidence in the identification decision and whether the decision was accurate has been consistently weak (see Brewer, 2006, and Brewer and Wells, 2006, for a detailed discussion of this issue). It is also well documented that identification confidence is highly malleable, with a number of variables distorting confidence judgments without any associated changes in identification accuracy (eg, Brewer, 2006; Semmler, Brewer and Wells, 2004; Wells and Bradfield, 1998, 1999).

Given this combination of research findings, it is not at all surprising that researchers have often asserted that identification confidence does not help diagnose accuracy. Recent research has, however, clarified the nature of the confidence-accuracy relationship, enabling us to distinguish more precisely those conditions that are associated with variations in strength of this relationship. Recent reviews of the confidence-accuracy relationship (Brewer, 2006; Brewer and Palmer, 2010; Brewer and Weber, 2008) provide a comprehensive account of the current state of knowledge about this issue. These reviews suggest the following conclusions, based on empirical findings from a number of different research groups (eg, Brewer and Wells, 2006; Horry, Palmer, and Brewer, 2012; Juslin, Olsson and Winman, 1996; Keast et al, 2007; Lindsay, Nilssen and Read, 2000; Lindsay, Read and Sharma, 1998; Palmer, Brewer, Weber and Nagesh, in press; Sauer, Brewer and Weber, 2008; Sauer, Brewer, Zweck and Weber, 2010; Sauerland and Sporer, 2009; Sporer, Penrod, Read and Cutler, 1995). First, as results from any of the above studies show, a highly confident identification in no way guarantees that the identification is accurate. Second, under most (though not all) conditions witnesses exhibit some degree of overconfidence: that is, average levels of confidence typically exceed overall accuracy rates. For example, data from 1,200 witnesses reported by Brewer and Wells (2006) show that when confidence is at 90–100 per cent, accuracy is generally no better than 80–90 per cent. Despite this overconfidence, confidence provides a reasonable indication as to whether the identification response is likely to be correct *if* confidence is assessed immediately after the identification response (cf Brewer, Keast and Rishworth, 2002). Very confident positive identification responses (ie, choices) are much more likely to be accurate than are unconfident responses. In other words, confidence and accuracy appear to be reasonably well calibrated. This conclusion does not, however, apply to line-up rejections (ie, failures to choose) or to children's identification responses (Brewer and Wells, 2006; Keast et al, 2007), with confidence not providing a useful guide to accuracy in either case.

In sum, confidence in a positive identification, if assessed at the time of the identification, is a potentially informative piece of forensic information. However, as we demonstrate in a later section, which focuses on events taking place after the identification decision, the usefulness of confidence as an index of likely identification accuracy evaporates if the confidence assessment is delayed or subject to extraneous influences.

Another characteristic of the identification response – decision speed or latency – can also provide a guide to accuracy. While there might be some basis for speculating that the witness who deliberates long and hard before making a response is more likely to be accurate because (s)he is clearly behaving conscientiously and thoughtfully, the empirical evidence clearly shows that it is fast rather than slow identifications that are more likely to be accurate (Brewer and Weber, 2008; Brewer, Caon, Todd and Weber, 2006; Brewer, Gordon and Bond, 2000; Sauerland and Sporer, 2009; Sporer, 1993, 1994; Weber, Brewer, Wells, Semmler and Keast, 2004). These findings are consistent with more basic research on memory processes which shows that a sign of a strong memory for the culprit is the ability to be able to access it and compare it to the presented stimulus rapidly. Thus, if a witness picked the police suspect from

the line-up, but clearly had to examine the line-up for a long period of time to do so, there are grounds for doubting the accuracy of the identification.

Additionally, it has been shown that identifications that are both very fast and highly confident are also more likely to be accurate (Weber et al, 2004). These findings indicate that it is important not only to record the witness's exact identification response and confidence at the time of the identification but also the time it took to make a decision. The latter provides vital information for interpreting the testimony of a witness who, for example, says in court that they are highly confident that they have identified the real culprit, given that such a witness should generally be expected to have made a very rapid identification.

It is worth noting that some research has gone so far as to argue that identifications made within a particular time window are almost certainly accurate. For example, Dunning and Perretta (2002) argued that identifications made within 10–12 seconds of exposure to the line-up are almost always accurate. While there is no doubt that accurate identifications are likely to be fast rather than slow, it is important to recognise that there is now strong evidence against the claims made by Dunning and Perretta with respect to the invariant nature of the optimum time window. A number of studies have shown that the identification latency associated with the highest accuracy rates tends to be quite variable, sometimes well above or below 10–12 seconds (eg, Brewer et al, 2006; Sauer, Brewer and Wells, 2008; Sauerland and Sporer, 2009; Weber et al, 2004). Indeed, this variability is to be expected given the likely wide variation across events with respect to factors that will affect speed of memory access and comparison (eg, attention and viewing conditions at encoding; the size and arrangement of line-up stimuli; the closeness of match of the stimulus seen at encoding and test; the nature of instructions given to witnesses; whether line-up members are seen simultaneously or sequentially). In sum, while accurate identifications are likely to be fast, there is no magical response time that can be used to diagnose accuracy.

### **[65.790] Influential events following the identification test**

Even after the witness has made their response at the identification test, the nature and probative value of their identification test evidence may be influenced. The primary source of this influence is feedback that they may receive about their identification response. It is now well established that postidentification feedback can exert a potent influence on subsequent witness reports. Feedback might originate from a line-up administrator, investigating police officer or even another witness (for a range of examples, see Brewer and Wells, 2009). It might indicate to the witness that they had picked the suspect or the same person as the other witness had picked: that is, it might appear to confirm the accuracy of their pick. Alternatively, it might be disconfirming in nature, perhaps indicating that they probably didn't have a good enough memory of the culprit to make an accurate selection. The feedback might be verbal and quite explicit in nature, or non-verbal.

The most dramatic effect of such feedback documented to date is on witness confidence. Postidentification feedback that is confirming in nature produces marked confidence inflation (Bradfield, Wells and Olson, 2002; Douglass and Steblay, 2006; Semmler et al, 2004; Wells and Bradfield, 1998, 1999). Witnesses who, in the absence of any confirming feedback, might report average confidence levels of around 60–70 per cent, are much more likely (following feedback) to report confidence levels of 90–100 per cent. This applies regardless of whether the witness made a correct identification, a false identification from a culprit-absent line-up, or a line-up rejection. It occurs regardless of whether the feedback comes from a line-up administrator, a co-witness or a computer (Luus and Wells, 1994; Semmler et al, 2004) and may even be produced by non-verbal cues (Garrioch and Brimacombe, 2001). In other words, a witness who was only moderately confident at the time of their identification decision might

(following receipt of feedback) present as extremely confident when testifying at some later time – even though the accuracy of their identification response obviously has not changed. In turn, the witness's evidence is likely to be far more persuasive than it would have been if the confidence assessment made at the time of the identification was tendered in evidence. The opposite effects are found when witnesses receive disconfirming feedback about their line-up decision. These highly reliable and powerful effects underpin the universal recommendation of eyewitness researchers (now enshrined in the US Dept of Justice Guidelines for the collection of eyewitness evidence, Technical Working Group for Eyewitness Evidence, 1999) that identification confidence is only useful as a guide to accuracy (and still only as a guide) if it is measured immediately after the identification response and prior to any possible social influences that may inflate (or deflate) confidence.

The second important impact is on witnesses' recollections of their witnessing and line-up decision experiences. It has been shown that confirming feedback about the identification feedback alters witnesses' perceptions about the viewing conditions at the time of the crime and the degree of attention they paid to events, with witnesses reporting more favourable viewing conditions and attention (Douglass, Brewer and Semmler, 2010; Wells and Bradfield, 1998, 1999). It also makes it more likely that the witness will report that the line-up decision was easy or that the culprit just "popped out". All of these judgments are also likely to render the witness's testimony more persuasive for triers of fact than it would have been in the absence of feedback.

### [65.800] Summary

- Line-ups should contain only one suspect. Foils should capture the key features of the witness's description and be plausible matches for, but not too similar in appearance to, the suspect.
- There is little value in being preoccupied with the line-up presentation medium. There are many other factors that seem to be far more important.
- Double-blind line-up administration (where the person conducting the test does not know who the suspect is) should be preferred.
- Witnesses who have previously seen a suspect's face in a mugshot search or showup should not subsequently view a line-up for that suspect.
- The administrator should ensure unbiased instructions providing clear warnings regarding possible culprit absence.
- Immediately after the identification decision the administrator should ensure there is an (independent) record of the witness's exact identification response, the confidence in that decision, the witness's decision latency and other perceptions that witnesses had of the encoding and identification experiences.
- Courtroom expressions of identification confidence and other witness perceptions of encoding and the line-up should be discounted unless they were recorded at the time of the identification decision.

[The next text page is 65-5051]

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