

Features of Eyewitness Testimony Evidence Implicated in Wrongful Convictions

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That eyewitnesses make frequent errors in their recollections of people and actions from brief criminal events has been recognized by most legal systems for a very long time; indeed much longer than scientific researchers have studied the issue. Nonetheless, at the Unlocking Innocence International Conference (October 2005) Jennifer Thompson's compelling presentation of her erroneous identification of Ronald Cotton and the subsequent descriptions of other remarkable exonerations of the wrongfully convicted achieved through the tireless efforts of the Innocence Project in the United States (described by Peter Neufeld) and the Association in Defense of the Wrongfully Convicted in Canada (described by James Lockyer) serve to remind us of the horrific devastation of the lives of innocents when unreliable identification evidence is heard at trial and legal safeguards failed to detect it.

In the 175 exoneration cases described on the Innocence Project website,¹ faulty eyewitness identification was implicated in 74 percent of the cases. Indeed, mistaken identification was the single largest source of wrongful convictions (along with false confessions, weak alibi evidence, jailhouse informants, and false witness testimony). If these cases prove to be representative of other wrongful convictions, it is imperative that we determine why eyewitness identification errors occur and why they are so infrequently detected. Of course, one can only estimate the total numbers of wrongful convictions based on faulty eyewitness identification, but the numbers in Canada, the United States, and other jurisdictions are most certainly higher than those that have been uncovered to date, often through the assessment of DNA evidence. For example, Queens University psychologist Rod Lindsay has estimated that there are ap-

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proximately 8 000 tests of identification per year in Canada. Even a 99 percent rate of correct decisions would mean 80 mis- and failed identifications per year.

Historically, scientific psychology has accomplished what the legal professionals have neither been trained nor have chosen to do: collect empirical data that illuminate sources of eyewitness error. As a result, from the beginning of the twentieth century, research psychologists have conducted studies that speak to the frequency and nature of these errors as well as providing recommendations as to how to minimize their occurrence. In particular, over the last 35 years alone some 2 000 published papers have examined aspects of eyewitness testimony of adults and children from the influence of poor interviewing and lineup procedures to the identification of an accused at trial. A substantial portion of this work has been completed in Canada but the lion's share has its origins in the United States, the United Kingdom, and Australia.

Despite the impressive volume of this work, several issues examined in the last 35 years had been discussed by researchers in the United States² and Germany³ at the beginning of the last century. And it should be noted that the distinguished American evidence scholar, Dean John Henry Wigmore, described in the early 1900s some of the same procedural recommendations to reduce faulty identifications that are today being eagerly and currently imbedded in various guidelines regarding pretrial identification procedures.⁴ A difference, however, of great importance between Wigmore's and the present era is that the scientific evidence now exists to support what Wigmore earlier and many others have much more recently recommended.

Eyewitness error has generally been identified as the result of either the limited abilities of humans to fully process, permanently encode, and accurately retrieve information or the use of biased and unreliable procedures by which eyewitness testimony is gathered. In 1978, Gary Wells, then a psychologist at the University of Alberta, distinguished between two general types of factors relevant to the reliability of eyewitness testimony: *system* and *estimator* variables.⁵ Briefly, *system* variables are those features that are under the control of the legal system such as the type of identification procedure, its construction

² Hugo von Münsterberg, *On the Witness Stand* (Garden City, N.Y.: Doubleday, 1908).

³ William Stern, "Wirklichkeitsversuche" (1904) 2 *Beiträge zur Psychologie der Aussage* 1, trans. by Ulric Neisser in Ulric Neisser, ed., *Memory Observed: Remembering in Natural Contexts* (San Francisco: W.H. Freeman, 1982) 95.

⁴ For a well-written description of Dean Wigmore's contributions and his assessment of eyewitness psychology research, see James Doyle, *True Witness: Cops, Courts, Science and the Battle Against Misidentification* (New York: Palgrave Macmillan, 2005). See also John Wigmore, "Professor Münsterberg and the psychology of evidence" (1909) 3 *Ill. L. Rev.* 339.

⁵ Gary Wells, "Applied eyewitness testimony research: System variables and estimator variables" (1978) 36 *Journal of Personality and Social Psychology* 1546.

and administration including the instructions provided the witness. *Estimator* variables, on the other hand, include just about everything else: the specific capabilities of human observers as a function of their genetics, age, and backgrounds, the lighting at the scene of the crime, and so forth. Because the effects of the latter kinds of factors upon witness performance can only be estimated after the fact, Wells referred to them as estimator variables. For example, we know that children's reports can generally more easily be influenced by the questioning procedure than can those of adults but in any specific circumstance, the magnitude of that influence can only be estimated. Similarly, it is known that alcoholic intoxication impairs the encoding of information but its effects on eyewitness testimony can only be estimated. The important difference between the two categories of variables is that because system variables are under our control and their manipulation can serve to increase or decrease the opportunity for error, their negative effects may be minimized by making changes in the justice system. And, over the years, most players in the criminal justice system have come to recognize, at least at an intellectual, if not at a policy level, that altering the methods by which eyewitness evidence is gathered is possible and appropriate. I will later briefly discuss some of these system variables and point to some procedural recommendations that have been advanced recently in Canada and elsewhere that capitalize on our position of control over these variables.⁶

In contrast, the second group of factors, estimator variables, those that are usually descriptive of the human or eyewitness characteristics in the mix, has virtually never been the recipient of recommendations or guidelines. That is, because we rarely have any predictability as to exactly who will be a witness to or victim of a crime and, concomitantly, no control over the individuals who find themselves involved as victims or witnesses, individuals who vary as to their age, sex, mental or physical state, motivation, and specific histories. Many of these uncontrolled characteristics, however, are known to be related to eyewitness memory performance. That is, psychological researchers have investigated these characteristics at length and can give us the basis for estimating the average performance of members of a group with some set of characteristics, estimates that are said to be *nomothetic*. What these researchers have not done is to provide bases for specific predictions at the level of the individual witnesses to or victims of a crime, predictions that would be said to be *idiosyncratic*.

According to some commentators in both the psychological and legal communities, such idiosyncratic predictions are currently beyond and may forever

⁶ See also A. Daniel Yarmey, "Eyewitness Identification: Guidelines and Recommendations for Identification Procedures in the United States and in Canada" (2003) 44 *Can. Psychol.* 181.

be beyond our science.⁷ The standard response from psychological researchers to this challenge is that, nonetheless, when armed with knowledge of the general effects of variables that are relevant to certain types of crimes, for example, the effects of drugs on eyewitness performance, triers of fact will be better able to evaluate the reliability and credibility of eyewitness testimony.⁸ And, considerable research has examined the impact of such knowledge upon both real and mock jury verdicts.⁹ While I do not disagree with this standard response, trial counsel have often been dissatisfied with it and judges have frequently ruled that expert testimony centering on a listing of variables that, on average, are related to the reliability of witness reports is not sufficiently helpful to the trier of fact in a specific case and in regard to a specific witness to outweigh its potentially prejudicial effects.¹⁰ I will later suggest an alternative way of conceptualizing this problem, one that focuses on an understanding of the roles of the underlying and ubiquitous perceptual and cognitive processes that contribute to the possibility of eyewitness unreliability.

At the heart of eyewitness performance is our ability to perceive, encode, and retrieve information. The job of the criminal justice system is to test a witness's memory of an event in a manner that accurately reflects, rather than undermines, what was actually observed such that, ultimately, reliable verdicts are achieved. Unfortunately, of the tests of eyewitness memory that might be employed, none is immune to a range of other cognitive, social, and motivational biases that can serve to distort the recollection of an event; for example, the witness's expectations for various types of criminal events, and the integration of *post-event information* into his or her memory. I will describe a few examples of these factors and use them as a way of thinking about the potential contributions to an understanding of eyewitness behavior by research psychologists.

Throughout this paper, my focus is upon witness memory for persons as tested by lineup-type identification procedures. However, it is important to keep in mind that eyewitness memory is of interest not just because it may provide information about a person's identity, but also because it can provide information about the physical context, actions of all those involved including perpetra-

⁷ Ebbe Ebbesen & Vladimir Konecni, "Eyewitness memory research: Probative vs. prejudicial value" (1996) 5 *Expert Evidence* 2; Michael McCloskey & Howard Egeth, "Eyewitness identification: What Can a Psychologist Tell a Jury?" (1983) 38 *American Psychologist* 550.

⁸ Michael Leippe, "The case for expert testimony about eyewitness memory" (1995) 1 *Psychol. Pub. Pol'y & L.* 909; A. Daniel Yarmey, "Expert testimony: Does eyewitness memory research have probative value for the courts?" (2001) 42 *Can. Psychol.* 92.

⁹ Brian Cutler & Steven Penrod, *Mistaken Identification: The Eyewitness, Psychology, and the Law* (Cambridge: Cambridge University Press, 1995).

¹⁰ *R. v. McIntosh and McCarthy* (1997), 117 C.C.C. (3d) 385 (Ont. C.A.).

tors, victims, and witnesses, their voices and conversations, and other aspects of their appearance, all of which may be used to provide support for an inference about a perpetrator's identity but also and perhaps more significantly in many cases, a more complete understanding and more successful investigation of the criminal action of interest. In terms of unreliable eyewitness evidence, unreliable verdicts, and wrongful convictions, errors of recollection about these other features can be at least as important as those of identity alone. As a reflection of the breadth of this topic, recent reviews of the variety and results of eyewitness memory research required the publication of two volumes comprising 50 chapters contributed by over 100 researchers.¹¹

I. BASIC CHARACTERISTICS OF THE HUMAN PROCESSOR OF INFORMATION

Even when identification tests are well constructed, identification evidence may be fallible and unreliable as a result of the observer's perceptual and memorial processes. It is easy to overstate this unreliability and I believe it often is overstated. However, under the right circumstances, careful observation, and combined with appropriate and sensitive testing, eyewitness memory can be shown to be very accurate and reliable. To take advantage of this possibility, a number of assumptions about several cognitive processes must be met.

What we call memory is really a by-product of our mental processing of an experience that allows us to later recognize or recall some person, place, or action. The by-product may be likened to *trace evidence*, as researcher Gary Wells has argued,¹² because it is often frail, incomplete, and erodes, changes, or is misplaced with the passage of time. Generally, the more cognitive processing a witness gives to an experience, including the perpetrator and event, the stronger the trace representation, and the greater the likelihood that a sense of familiarity will arise later when the person, event, or its features are once again encountered or probed. Our ability to engage in effective processing presumes first that that we have directed our attention to the person and event. This prerequisite may seem obvious, but because attention is a truly limited capacity resource its limitations are applicable in every situation: we are simply unable to spread our attention evenly and simultaneously to all aspects of an event or a person's features, statements, appearance, and actions as well as to the environmental con-

¹¹ See Michael P. Toglia, J. Don Read, David F. Ross & Rod C.L. Lindsay, eds., *Handbook of Eyewitness Psychology, Volume 1: Memory for Events* (New Jersey: Erlbaum Associates, 2006); ———, *Handbook of Eyewitness Psychology, Volume 2: Memory for People* (New Jersey: Erlbaum Associates, 2006).

¹² Gary Wells, "Scientific study of witness memory: Implications for public and legal policy" (1995) 1 *Psychol. Pub. Pol'y & L.* 726.

text including spatial layout, objects, and other people. Instead, attention might be likened to a flashlight beam: it may pass very quickly over and around an event or it may be placed for a sustained period of time upon a very limited portion of all of the available information (including external sights, sounds, and conversations as well as the observer's internal thoughts and emotions). Further, even if we could spread our attention in an evenly distributed fashion across a complex event, only a minor proportion of it would receive cognitive processing at a sufficient depth to be recalled later.

Indeed, we've all become aware of our limited attentional capacity when we have had to reduce extraneous stimulation as a way of improving our success at making rapid and important decisions; for example, when driving in rush-hour traffic through an unfamiliar city. To do so, we usually turn the radio down and ask the children in the back seat to be quiet. The reason, of course, is that we wish to assign all of our resources to the task of driving. As we focus our attention on the road, however, we lose access to other information and are typically completely unaware of changes in the environment around us; for example, the appearance of the driver in the truck beside us or the lettering on its side panel. While this kind of focused vision increases our chances of a successful and safe journey, it also means that many aspects of the environment will fail to be processed, and, as a result, will never be available for our recall. This is not to say that individuals might not nonetheless appear to recall these details later but their recall would likely be the result of reconstructive processes augmented by inference and information from other sources. And, of course, when our attention is focused on something other than the driving environment, as on, say, a cell phone conversation, highly significant changes in the external driving environment may go completely and tragically unnoticed, such as a train bearing down on a railway crossing ahead.

Second, in addition to our failure to process some information because attention is focused elsewhere, it is also the case that despite our belief that we perceive the world around us as it really is—complete, meaningful, and integrated—our perceptual system has evolved in such a way as to give us only a succession of brief, multiple, overlapping, but incomplete visual (or auditory) slices of the information that is available at any moment. As a result, we are generally and completely unable to detect rapid changes in a specific area of our visual field unless attention is continuously directed to that part of the environment. For example, vision researchers have demonstrated that significant changes to an unfamiliar scene (such as the removal of an entire building, person, or vehicle from a photograph) will rarely be detected if the person's attention is redirected to something else for even a fraction of a second.¹³

¹³ Ronald Rensink, "Change Detection" (2002) 53 *Annual Review of Psychology* 245.

Of course, our day-to-day experience leads us to believe instead that we're able to perceive quickly the details of a complex environment and that we will be able to describe it accurately later. But, our beliefs in this regard are quite illusory: what we have really done is completed a cursory and rapid extraction of the meaning and layout of a scene by relying upon other similar schemas or categorical information already available in memory from a lifetime of prior experience. As a result, the scene is understood easily because it benefits from those prior experiences with other similar environments: it is easily processed, appears to contain few, if any surprises, and as a result, it seems a good candidate for later memory. However, detection of objects or details within the scene is related to the scene's organization and whether it matches the *schema* we have acquired for similar scenes in the past. In a global sense, the scene will likely will be remembered if something similar has been experienced a number of times before, but *schema-irrelevant* information (i.e., features that do not define the scene) will have received little attention and will be forgotten quickly while other unseen and nonexistent but *schema-relevant* information will be incorrectly recalled. For example, after a brief observation of a professor's office, many research participants fail to report schema-irrelevant objects like a toaster but falsely recall schema-relevant items like a nonexistent computer.

Finally, these limitations extend to our observations of and memory for people as well. In a number of experiments completed outside the laboratory, researchers have demonstrated that one person who is interacting with an observer may be replaced by another but the observer rarely notices. For example, in a candid-camera type of manipulation, a young female retail clerk behind a sales counter ducks below the counter to obtain a product for the "witness" but a second, different person rises seconds later. Fewer than half of the witnesses actually notice the change.¹⁴ In this case, the customer or witness has likely engaged in *categorical perception* of the retail clerk such that changes within the clerk's defining visual category (of, say, young, Caucasian women) simply go unnoticed. As you might anticipate, however, virtually everyone notices a switch if a young male instead surfaces from below the counter. Categorical perception of this type extends to our judgments of people by, among other things, their sex, age, race, and role as defined by their clothing (e.g., business suits or overalls).

II. IDENTIFICATION TESTING

As mentioned, whereas my focus in this paper is on *estimator* rather than *system* variables, a brief review of the significant changes recommended for identifica-

¹⁴ Daniel J. Simons & Daniel T. Levin, "Failure to detect changes to people in a real-world interaction" (1998) 5 *Psychonomic Bulletin and Review* 644; ———, "What makes change blindness interesting?" (2003) 42 *The Psychology of Learning and Motivation* 295.

tion testing is nonetheless worthwhile. In recent years there have been many recommendations in regard to testing procedures; for example, from the Sophonow Inquiry in Manitoba, to change the nature of lineup construction and the administration of such a test.¹⁵ There is considerable consensus among researchers and law enforcement personnel as to what changes will reduce the likelihood of a faulty identification. Identifications are not made in a vacuum: while tests of memory can be sensitive and unbiased indicators of prior experience, they can also be very poor reflections of what was observed and encoded in memory. For example, identification tests that really provide no reasonable choice other than one person (the person sitting in the prisoner's dock) or tests in which any choice would be judged correct by investigators (when all lineup members or photos are possible suspects) are clearly weak tests of memory for a person from a specific time and place. Let's assume that a witness and/or victim observed a perpetrator of a criminal act and that observation led to some trace representation in memory and it is tested later. A few of the many test features that can undermine the reliability of the witness's memory report are as follows:

- (i) Biased photo or live lineup construction and procedures that greatly increase the likelihood that the investigators' suspect will be chosen through the use of labeled mug shots or drawing attention to a specific lineup member by virtue of distinctive clothing or features that are salient and/or uniquely different from other lineup members. The construction of poorly structured tests like these are most likely today to be a result of intentional bias or laziness.
- (ii) Biased instructions to the eyewitness that do not make evident to the witness that the perpetrator *may or may not be* in the collection. As a result, witnesses feel obliged to choose someone (which they virtually always do) on the basis of a *relative judgment* that results in the "best choice", given the lineup. It is obvious that in any lineup, no matter how poorly and egregiously constructed, someone will always be the *best* choice. Most standard instructions in Canadian jurisdictions include such a warning.
- (iii) Instructions from investigators that fail to distinguish between "recognition" and "identification" decisions. A face or person may feel familiar to a witness but familiarity by itself is an inadequate basis for selection because a link must be drawn between that familiarity and the crime scene. When lineup instructions

¹⁵ *The Inquiry regarding Thomas Sophonow: The Investigation, Prosecution and Consideration of Entitlement to Compensation* (Winnipeg: Manitoba Justice, 2001) (Commissioner: The Honourable Peter deCarteret Cory), online: Manitoba Justice <<http://www.gov.mb.ca/justice/publications/sophonow>>.

emphasize “looking for a familiar face” rather than identifying the person seen in a specific context, witnesses may erroneously assume that their sense of familiarity for a face can only have arisen from the crime context when, in fact, it may have derived from other observations, as, for example, from the mug shot photos reviewed two days earlier, or from a lifetime of experience with many thousands of faces that can imbue many unseen faces with a sense of general familiarity.

- (iv) Verbal and nonverbal interactions between lineup administrator and witnesses such that administrators knowingly or unknowingly bias the witnesses’ responses to a particular member who is the investigator’s suspect. People are remarkably sensitive to very subtle nuances conveyed through both verbal and nonverbal cues (body language) particularly when the situations or choices are ambiguous because witnesses usually seek information and feedback from investigators. The dangers of such interaction are particularly great in a “show-up” or “walk through” where the witness’s attention is explicitly directed to one specific individual. And, ironically, although *sequential* lineups are preferred to *simultaneous* lineups because they provide greater protection of the innocent, nonverbal cueing of the witness by a non-blind investigator is potentially more likely with the sequential method of presentation.
- (v) Priming or biasing witnesses’ choices towards a specific lineup member through the leakage of other information from other witnesses or from prior mug shots or failed lineups that contained the police suspect.¹⁶
- (vi) Presentation of a test after a long delay. Clearly, the length of the delay is usually a consequence of the degree of success investigators have had in locating a suspect and a test will only be presented once a suspect is available. Nonetheless, in such a situation, the witnesses’ trace memory is not likely to be as clear as it was shortly after the crime and, as a result, witnesses are particularly vulnerable to many of the biasing factors described above.

Importantly, these errors can be largely remediated by changing the construction of a lineup and the administration of identity testing. A number of inquiries and task forces in North America and elsewhere have developed

¹⁶ See *R. v. McGuinness, Ballantyne & Ballantyne*, [1997] B.C.J. No. 1695 (B.C.S.C.) (QL) (wherein one witness’s identification of one of the accused followed three prior lineups in which the accused’s face always appeared but the other lineup members changed from lineup to lineup).

highly similar recommendations for making such changes. In Canada, thanks to Justice Peter de C. Cory's report following the Thomas Sophonow Inquiry, strong recommendations regarding procedures have been made and are being attended to in many jurisdictions.¹⁷ Similarly, in Canada an extensive and thorough document titled *Report on the Prevention of Miscarriages of Justice* reached the same kinds of conclusions and recommendations and supported the organization of the 2005 Unlocking Innocence conference.¹⁸ In the United States, thanks to members of the National Institute of Justice's (NIJ) Technical Working Group for Eyewitness Evidence and former Attorney-General Janet Reno, national changes in procedure were recommended and at least several jurisdictions have mandated them of all police forces.¹⁹ Finally, the American Bar Association developed a "Best Practices" paper in 2004 that includes most of the same system variable recommendations made by Commissioner Cory and the NIJ's Working Group.²⁰

The specific changes suggested over the last 30 years include "double-blind" testing (such that even the lineup administrator is unaware of the identity of the police suspect), video recordings of all identification procedures such that the interactions between witnesses and lineup administrators may be examined and lineup fairness may be assessed (as well as ensuring a permanent record of the lineup and its administration), unbiased instructions, unbiased lineups based on witnesses' verbal descriptions of the perpetrator, the use of single-suspect lineups, the collection of confidence assessments at the time of identification, and sequential rather than simultaneous lineup presentation procedures.

Taken together, these documents have hit the radar and law enforcement training programs in Canada and elsewhere are incorporating them in education and training. To the extent that these recommendations become part of standardized best practices, the less likely it is that experts would be invited to proffer testimony (at the behest of prosecution or defence counsel) on identification testing procedures because violations of the guidelines would be evident and counsel need only refer to either the rigour or carelessness in the procedures. As

¹⁷ See *R. v. Richards*, [2002] O.J. No. 2830 (in which Ontario Superior Court Justice William Gorewich criticized investigators for not having followed the Sophonow Inquiry recommendations).

¹⁸ FPT Heads of Prosecution Committee (2004). The report is available online: Justice Canada <<http://www.justice.gc.ca>>.

¹⁹ U.S., Technical Working Group for Eyewitness Evidence, *Eyewitness Evidence: A Guide for Law Enforcement* (Washington, D.C.: United States Department of Justice, Office of Justice Programs, 1999).

²⁰ U.S., American Bar Association, "Statement of Best Practices for Promoting the Accuracy of Eyewitness Identification Procedures", online: American Bar Association <<http://www.abanet.org/crimjust/policy/AM04111c.doc>>.

yet, however, there appear to have been few legislated changes to these procedures; instead, law enforcement forces in some jurisdictions have chosen to mandate changes within their control. In the United States, a few jurisdictions (e.g., State of New Jersey) have, however, legislated such changes. I refer readers to the cited documents for thorough coverage of these recommendations.

III. CHARACTERISTICS OF THE WITNESS'S PROCESSING OF INFORMATION

We turn now to further discussion of the features of human memory and information-processing that may contribute to eyewitness error. Most of these may be classified under the rubric of estimator variables because they refer to components of the crime context, the execution of the crime, and characteristics of the witnesses/victims themselves over which the criminal justice system has no control. There are a number of factors that are frequently discussed in relation to eyewitnesses because both laboratory research and archival research demonstrate that performance often suffers when these are present. As a result, their discussion is frequently proffered by expert witnesses at trial who apply them to specific case facts. For example, readers may well have heard reference to and may have consulted experts on one or more of the following topics: cross- or own-race bias, weapon focus, unconscious transference, the accuracy-confidence relationship, suggestibility, false childhood memory, mug shot bias, and repression as well as the effects of stress, event violence, witness age, delay, exposure time, and post event information on eyewitness reliability. Because each one of these factors is related to the reliability of eyewitness testimony and provides an opportunity for diminishing the credibility of witnesses, it is not surprising that both Crown and defense counsel have on occasion been interested to have these features highlighted and applied to the case in question.

As discussed earlier, following observation of a brief event, witnesses are left with an incomplete memory trace because of their inability to attend to and encode all event information. However, and in contrast to this necessary feature of human information processing, in our subjective experiences of recalling an event, we rarely characterize our memories of these scenes as fragmented or incomplete. Instead they are remembered as whole, detailed, and integrated snapshots in memory. When we are questioned or cross-examined in detail about our observations we often learn that we did not, in fact, notice the toaster in the office, the picture on the wall, or the colour of the rug and similarly we learn that we could not actually have seen the computer and filing cabinet that we reported because they were not physically present in the office. However, it is striking and telling that even after having our failures in the detection of present and absent features pointed out to us, and even after we acknowledge their respective absences from memory and the scene, our recollection nonetheless

continues to feel complete. This experience of completeness is an illusion created by the ever-present processes of memory and memory reconstruction by which both recent (the event) and past (other lifetime events) experience and expectation join together to provide us with what feel like seamless integrated experiences. Thus substantial memory reconstruction may be seen to be a consequence of weak encoding, often exacerbated by trace erosion over time, and in concert with a rich history of other prior observations of similar environments. When we add to this mix two additional ubiquitous features of human information processing, social influence and intelligence (decision heuristics or inference) we can understand the relevance of many eyewitness phenomena to faulty identification and recall.

It should be noted that not all memories are reconstructive in this same way and to the same degree. Sometimes, memory is essentially *reproductive* because what comes to mind is a remarkably accurate representation of what was observed, whether a room, person or action. Not surprisingly, such reproductive memory experience is most likely to occur when events and observations of events lasted substantial periods of time, were experienced repeatedly, were salient (by virtue of their novelty, size, or emotional impact) or processed cognitively or mentally rehearsed to a high degree. Eyewitness observations of highly familiar people or environments, for example, rarely pose any difficulty in identification or recall. However, by eyewitness memory we usually refer to memory of briefly observed unfamiliar persons, objects, and actions that occur often in relatively unfamiliar contexts. When a witness to a perpetrator and his crime has had sustained opportunity to encode the information, the significant errors wrought by reconstruction are likely to be greatly reduced.

For example, two eyewitness topics sometimes proffered by defence experts in cases involving eyewitness testimony (occasionally in Canada, very frequently in the United States) are known as the *own-race bias* and *weapon focus* effects. A considerable research literature using staged or mock crimes (in live or recorded formats) has consistently reported increases in misidentifications when the witness is of a different racial group than that of the suspect or when a weapon is present.²¹ These phenomena are thought to arise, on the one hand, as a result of inadequate opportunity to encode relevant distinguishing information about the perpetrator via categorical perception and, on the other hand, by limited attention to the perpetrator's facial features. Both of these phenomena have also been documented (albeit less consistently than in laboratory investigations) in

²¹ Nancy M. Steblay, "A Meta-analytic Review of the Weapon Focus Effect" (1992) 16 *Law and Human Behavior* 413; Christian A. Meissner & John C. Brigham, "Thirty Years of Investigating the Own-Race Bias in Memory for Faces: A Meta-analytic Review" (2001) 7 *Psychol. Pub. Pol'y & L.* 3.

archival studies of police lineups in which suspect identification rates are compared across levels of these variables.²²

Identification decisions are also affected by a host of decision biases, motivational factors, and social variables, as mentioned above. For example, at the *pre-identification* stage the willingness of the witness to choose someone from a lineup will be affected by what we call decision heuristics. One common heuristic that we all employ is called *availability* in which we rely upon subjective features of the experience of recollection to assess whether we are recalling an actual memory of what was observed or of imagined, dreamt, or constructed experiences. That is, when something comes easily to mind we are more likely to treat the experience as a memory of an event. Individuals vary substantially in the ease with which they are willing to refer to a phenomenological experience as a memory; however, the criteria by which they do so may be modified by the context and by their interpretations of others (including the investigators' behaviours) such that ease of recall by one witness may be treated as evidence of a positive identification and by another as an ambiguous sense of familiarity. For example, if two groups of individuals have identical opportunities to observe an unfamiliar person but one group later acquires additional information about him (non-facial information such as his personality, type of employment, and so forth), this group of observers may subsequently be twice as likely (than members of the other group) to make an identification choice from a lineup.²³ The reason appears to be that the more knowledgeable observers misattribute their enhanced sense of familiarity to their original visual experience with the person and his appearance. In reality, however, the additional information they acquired did not provide them with any basis for improving visual discrimination amongst the various lineup members and increasing their accuracy or chances of choosing the correct person. It appears instead that they simply feel more prepared to make a choice and they do so, in every case making an error when the target person is not in the lineup. In this case, knowing more leads to greater error.

²² Bruce W. Behrman & Sherrie L. Davey, "Eyewitness Identification in Actual Criminal Cases: An Archival Analysis" (2001) 25 *Law and Human Behavior* 475; Patricia A. Tollstrup, John W. Turtle & John C. Yuille, "Actual Victim and Witnesses to Robbery and Fraud: An Archival Analysis" in David F. Ross, J. Don Read & Michael P. Toglia, eds., *Adult Eyewitness Testimony: Current Trends and Developments* (Cambridge: Cambridge University Press, 1994) 140; Tim Valentine, Alan Pickering & Stephen Darling "Characteristics of Eyewitness Identification that Predict the Outcome of real Lineups" (2003) 17 *Applied Cognitive Psychology* 969. Further, on the Innocence Project website, fully 44 percent of the faulty identifications were cross-race situations in which a white person incorrectly identified a black person.

²³ J. Don Read, "The Availability Heuristic in Person Identification: The Sometimes Misleading Consequences of Enhanced Contextual Information" (1995) 9 *Applied Cognitive Psychology* 91.

Identification evidence is also affected by cognitive processes that occur at the *post-identification* stage, in particular, by considering the information received after the identification decision from investigators, other witnesses, or the media. When information has been received from investigators it may be particularly destructive of the memory representation achieved at the time of the crime and this altered representation may later be particularly influential in court decisions. Recent work by Wells and Bradfield on the feedback received by an eyewitness demonstrates this kind of contamination.²⁴ Specifically, when research participants have observed a mock crime and are given an opportunity to identify the perpetrator of the crime in a lineup and they do so, they may then learn from the investigator whether they chose the police suspect. The feedback may be as inappropriately explicit as “You got him!” or inferred by the witness after being told that the Crown will proceed with charges. What Wells and Bradfield have been able to show, however, are the ways in which positive or confirming feedback of this sort serves to alter witnesses’ subsequent descriptions of their observation of the perpetrator and the crime: specifically, how well they attended to the perpetrator, how good their view was, how much time was spent viewing him, and the ease with which they picked the perpetrator out of the lineup.

It is important to recognize that because there is usually no objective record left behind in most crimes by which to examine or compare witness reports, the descriptions of a witness’s viewing conditions can come only from the witness and are often provided long after the witness has received feedback about his or her lineup choice (e.g., at trial). Indeed, in the U.S., the witness’s descriptions of the viewing conditions have regularly been used by the court as the explicit criteria by which to infer the witness’s level of reliability.²⁵ The circularity and risks involved in this kind of reasoning should be evident. In the research studies by Wells and Bradfield and colleagues that have manipulated feedback following an identification decision, the research paradigm is constructed such that every lineup choice made by the hundreds of research participants/witnesses is an error and, further, every witness makes this error by virtue of the instructions given to them (i.e., they are not told that the suspect may or may not be in the lineup and, in fact, he never is). The changes in their descriptions of their witnessing experiences reflect the reconstructive nature of memory because their awareness of features of the observation experience itself is not available “online” or as the event unfolds. Instead, changes in these judgments (compared to a no-feedback condition) can only occur after the identifi-

²⁴ Gary L. Wells & Amy Bradfield, “‘Good, You Identified the Suspect’: Feedback to Eyewitnesses Distorts Their Reports of the Witnessing Experience” (1999) 83 *Journal of Applied Psychology* 688.

²⁵ *Neil v. Biggers*, 409 U.S. 188 (1972).

cation task itself. Wells and Bradfield have also demonstrated that individuals who received confirming feedback (relative to those receiving no feedback) increased their confidence in their picks and increased their willingness to attend court in support of the prosecution case. Numerous studies of mock jurors have demonstrated that the single greatest influence of witness testimony upon verdicts is the confidence expressed by the witness. I note from Jennifer Thompson's description of her ordeal that following her selection of Ronald Cotton from the first lineup with which she was presented, the investigator immediately told her, "That's also who we thought it was."

In summary, the pre- and post-identification processes described above are only a subset of a large category of factors that have been demonstrated to have cognitive bias and social influences upon eyewitness testimony. These range from conformity (to maintain agreement with other witnesses) to commitment effects wherein individuals hold fast to their decisions because they have announced their decisions publicly and the trial has proceeded.

IV. CAN WE DISTINGUISH BETWEEN ACCURATE AND INACCURATE IDENTIFIERS?

The question here is whether psychological research studies can help us to increase our ability to distinguish between witnesses who made accurate decisions and those who did not. One purpose of cross-examination at trial, of course, is to expose errors of identification made by witnesses. Unfortunately, trials usually occur long after identification tests and, in that period of time, the effects of feedback (as described above) combined with social commitment can greatly firm up the consistency of testimony and increase the confidence with which it is expressed. Indeed, these factors may have been so strengthened to a point where cross-examination is no longer an appropriate safeguard against unreliable testimony.²⁶ As mentioned above, collection of a witness's description of the viewing conditions and his or her ease in making an identification are not independent of the beliefs they hold about their testimony.

To establish greater independence, some researchers have examined features of the identification decisions themselves as a way of "post-dicting" a witness's accuracy of identification. We refer here to the first identification decision made by a witness at which time data are gathered in addition to the witness's specific choice, not at an in-court identification in the future. In general, there is a theoretical basis to the expectation that the speed of an identification decision, its accompanying confidence, and description of how the decision was

²⁶ John S. Shaw III, Kimberley A. McClure & Josie A. Dykstra, "Eyewitness Confidence from the Witnessed Event Through Trial" in Michael P. Toglia, J. Don Read, David F. Ross & Rod C. L. Lindsay, eds., *Handbook of Eyewitness Psychology, Volume 1: Memory for Events* (New Jersey: Erlbaum Associates, 2006).

made should be related to successful retrieval of information from memory. Specifically, if what is available in memory is matched closely by the suspect's photo, memory researchers would anticipate that an identification decision will be made more quickly, with greater confidence, and will be described as having resulted from an "automatic" or absolute judgment process (rather than by an "elimination" strategy or relative judgment decision process) than in the situation where the match is poor. And, in fact, these expectations are borne out by research: correct lineup decisions generally are made more quickly, accompanied by greater confidence, and by descriptions of decision processes suggestive of an absolute judgment process in the identification task. The difficulty is that in real-world crime situations we neither have large groups of witnesses nor multiple identification decisions by single witnesses whose correct and incorrect decisions may be compared as to their decision times. Instead, we usually have one or perhaps a few witnesses who make a single identification decision. As a result, we do not have a metric by which to assess the reaction time of one witness to that of many others who recalled similar kinds of experiences. Nonetheless, when the decision is rapid (e.g., within 15 seconds), accompanied by high rated confidence, and described as occurring automatically, there is a greater chance that the choice is an accurate one than not. This information about decision processes may be combined with an integrated analysis of other factors of eyewitness testimony described below to improve the utility and diagnosticity of expert evidence.

V. CAN EXPERT TESTIMONY ON EYEWITNESS ISSUES BENEFIT THE TRIER OF FACT?

This question arose during the Unlocking Innocence Conference and was eloquently and provocatively addressed in a pro and con fashion by Professors Mona Duckett and Lee Stuesser, respectively. It is a difficult and complex question and requires much more space than is available. There are, however, several points that I believe are worth making from the perspective of a research scientist. First a little background.

Whether expert opinion should be admitted is, of course, a decision made by the judge. Among the *Mohan* criteria to be applied to a decision regarding admissibility of opinion evidence,²⁷ the one of greatest relevance here is whether such testimony will assist the trier of fact in reaching a verdict by the provision of information that is beyond the common understanding of the trier of fact. In other words, the judge, often following *voir dire* on such admissibility, concludes that the trier of fact either does or does not have adequate familiarity with the issues and knowledge proffered by the expert. If the judge him or herself or the

²⁷ *R. v. Mohan*, [1994] 2 S.C.R. 9.

jury is determined to be lacking such knowledge, the proffered testimony may well be admitted. If instead, the conclusion is that the information offered is within the common understanding of the trier of fact, it will be deemed inadmissible. As most readers are likely aware, in Canadian courts the determinations about expert testimony on eyewitness issues have virtually always been that such knowledge is part of the common understanding of the trier of fact and, as a result, expert testimony is deemed inadmissible.²⁸ In other jurisdictions, for example, the United States, the likelihood of admissibility varies considerably across states and court circuits.²⁹ In California, for example, expert evidence on eyewitness testimony may not be excluded in cases where identification evidence is uncorroborated.³⁰

The points to be made here are these: first, the judge's determination of the common understanding is based on his or her understanding of the issues, often assessed following *voir dire*, and in a jury trial, he or she does so on behalf of the jurors. In neither case are empirical research findings usually consulted to determine what is the common understanding of judges or jurors. In the case of the judge, the declaration of non-admissibility is made following the presentation of the proffered testimony by the experts in *voir dire*. In other words, the testimony is heard by the judge and then he or she then decides whether he or she knew the information prior to having heard it. It is well known among cognitive psychologists who study decision and judgment processes that people typically overestimate what they knew prior to their reception of information about a specific topic. Generally, this is known as "hindsight bias" or sometimes the "knew-it-all-along" effect.³¹ So we have the peculiar situation of asking a judge, after hearing the information, to determine whether information was available to him or her prior to having heard it. For the judge as trier-of-fact the opportunity for overestimation of prior knowledge is perhaps of little concern because as memory researchers we anticipate that what was presented in *voir dire* will either reinforce existing knowledge or add to the judge's knowledge base and it will likely play some role in the verdict despite its ruled non-admissibility. In effect, so long as the information is heard in *voir dire*, its ruled

²⁸ Yarmey, *supra* note 8.

²⁹ For a thorough and current review of relevant court decisions in the United States, see Tanja Rapus Benton, Stephanie McDonnell, David F. Ross, W. Neil Thomas & Emily Bradshaw, "Has Eyewitness Testimony Research Penetrated the American Legal System: A Synthesis of History, Juror Knowledge, and Expert Testimony" in David F. Ross, Rod C. L. Lindsay, Michael P. Toglia & J. Don Read, eds., *Handbook of Eyewitness Psychology, Volume 2: Memory for People* (New Jersey: Erlbaum Associates, 2006).

³⁰ *People v. McDonald*, 37 Cal.3d 351, 690 P.2d 709, 208 Cal. Rptr. 236 (1984).

³¹ Paul Slovic & Baruch Fischhoff, "On the Psychology of Experimental Surprise" (1977) 3 *Journal of Experimental Psychology: Human Perception and Performance* 455.

admissibility is probably moot because it is likely to be called upon (knowingly or unknowingly) during the judge's deliberation. Is there evidence that judges have an *a priori* understanding of the kinds of eyewitness issues and research findings mentioned above? Empirical research involving various samples of judges, although limited as to their representativeness, suggests that often they do not. Surveys in the U.S. and the United Kingdom demonstrate that judges' understanding is low and rarely exceeds that achieved by samples of potential jurors in the same jurisdictions.³²

The second point is that in a jury trial, the judge also hears the proffered expert testimony in *voir dire* but now does so on behalf of the excluded jurors. The difficulty here, in addition to the hindsight bias described above, is whether the judge has sufficient knowledge of what is in the common understanding of jurors. Empirical data that question the common understanding of potential jurors on many of these issues are available but, to my knowledge, are rarely consulted. Researchers have, in fact, demonstrated that potential jurors have frequent and serious limitations in their understanding of many of these issues. Instead, the judge concludes on the basis of his or her understanding that the information would or would not be equally understood by the jurors. However, unlike the judge whose body of knowledge may have been influenced in some way by the proffered testimony, jurors will not be similarly influenced because they were not present during its presentation at *voir dire*. In short, as a result of cognitive biases and the court's reluctance to examine data gathered about juror knowledge of eyewitness issues, it is possible that in cases where expert testimony had been ruled inadmissible, jurors may have reached decisions in the absence of a level of understanding about eyewitness issues that may have been enhanced by expert testimony.

VI. AN INTEGRATION OF THE CHARACTERISTICS OF HUMAN INFORMATION PROCESSING WITH EYEWITNESS PHENOMENA

To recapitulate, when misidentifications are made or when eyewitness testimony is unreliable, the sources of the failings likely reside either in the method for testing memory or in the essential perceptual and memorial processing of eyewitnesses. Like many others, I have optimistically predicted that many of the failings of testing methods will be greatly reduced or eliminated in the foreseeable future. Of the limitations on the estimator variables, I suggest that there are three fundamental characteristics of eyewitnesses that contribute to virtu-

³² Richard A. Wise & Martin A. Safer, "What US judges know and believe about eyewitness testimony" (2004) 18 *Applied Cognitive Psychology* 427; Tanja Rapus Benton, David F. Ross, Emily Bradshaw, W. Neil Thomas & Gregory S. Bradshaw, "Eyewitness memory is still not common sense: Comparing jurors, judges, and law enforcement to eyewitness experts" (2006) 20 *Applied Cognitive Psychology* 115.

ally all of the so-called eyewitness factors, topics, or *phenomena* that are of interest to defense and Crown counsel and to eyewitness researchers.³³ Further, if understood, each of these fundamental processes (or organizing characteristics) may be applied to individual eyewitness cases in an integrated manner by an expert and, as a result, may provide something of greater value to the court beyond a listing of the phenomena associated with eyewitness error. Because the fundamental processes are broad in their effects, it is the case that each may contribute to numerous phenomena. Thus, rather than searching for a method of assigning a magnitude of impairment (or strength) to each phenomenon, they may be considered together in an interactive fashion. For example, I am aware that on occasion counsel have wished to advance the following kind of argument. If, it has been established by empirical psychological research that in general, own-race perceptual biases decrement accurate identification performance by, say, 15 percent and if the weapon focus effect on average decrements accuracy by, say, 10 percent and if a brief encoding opportunity, on average, decrements accuracy by another 15 percent, then addition of the three phenomena together should mean that an average eyewitness may experience up to a 40 percent loss in accuracy when all three sources of error are implicated in a single crime. However, the logic is faulty because these three phenomena are likely all related to the same processing feature of the case: limited opportunity to encode and process relevant information and, therefore, such an additive approach would greatly and erroneously inflate any likely loss of accuracy by witnesses.

The three organizing characteristics are (1) limited attentional resources and encoding, (2) reconstructive activities at the time of recall, and (3) metacognitive processes or a witness's inferences about his or her memory. One possible assignment to these three categories of some eyewitness phenomena mentioned and investigated by researchers would be as follows: (1) to limited encoding the phenomena of cross-categorical (e.g., race, age, sex) biases, weapon focus, event violence, stress, drug intoxication, and exposure time; (2) to reconstructive processes the phenomena of social influence and suggestibility, feedback, post-event information, wording of questions, attitudes and expectations, and delay; and (3) to metacognition the phenomena of the accuracy-confidence relationship, unconscious transference, confidence malleability, and long-term repression. Taken together, an eyewitness expert may argue that in a specific case eyewitnesses are likely to be affected by a constellation of these factors in an interactive fashion.

I will end with an example: Imagine a witness (A) observes a confrontation between several individuals known to him, however, because he only passes by the altercation at a distance he sees only a small portion of the event. Later

³³ Saul Kassin, V. Anne Tubb, Harmon M. Hosch & Amina Memon, "On the 'General Acceptance' of Eyewitness Testimony Research" (2001) 56 *American Psychologist* 405.

from this group of peers and the media he learns that one of the individuals in the altercation was fatally assaulted. Over the ensuing days the group remains silent about the details of the altercation to the police but they do discuss it among themselves and witness A is present when they do so. Eventually, first one witness and then others provides the police with recollections of the altercation. Witness A had a very limited opportunity to attend to and encode much of anything, but as a result of pressure from the police and knowledge gained from his peers, he eventually reports the event in ways that could only be the result of reconstructive processes in memory although he fully believes that he saw what he now describes. The discrepancy between what he did not see and what he now reports is explicable by reference to the convergence of limited opportunities for encoding (brief exposure time, emotional impact), and the human imperative of memory reconstruction (the need to comprehend and describe the event on the basis of other altercations in his experience, information learned from the peers for this specific altercation, and social influence) may produce a recollection that comes easily to mind such that his metamemorial description sounds very much as if the recollection is based on a true observation rather than a constructed one. If information from an early interview with the police suggests that the original opportunity to view was very limited, his later recollection may be understood in this way by the interplay of the three factors.