



YOUR BRAIN ON TRIAL

Lessons from psychology could greatly improve courtroom decision making, reducing racial bias, eyewitness errors and false confessions

By Scott O. Lilienfeld and Robert Byron

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On January 18, 2011, Kevin Benefield was convicted of the rape and murder of Barbara Pelkey in Wallingford, Conn. Benefield was deemed guilty on the basis of DNA evidence, which exonerated Kenneth Ireland, the man initially convicted of the crimes. Ireland's newfound freedom was bittersweet. It arrived only after he had spent more than 20 years in prison, having been arrested at age 18 and convicted wrongfully in 1989.

Ireland is hardly alone. Stories of people cleared of crimes following erroneous convictions have become ubiquitous fixtures of the news cycle. Many of these errors have been exposed with the aid of welcome scientific advances, especially DNA analysis. But wouldn't it be better if a systematic approach were available to help prevent wrongful convictions and other serious miscarriages of justice in the first place?

In fact, there exists such an approach: psychological science. Yet many well-established psychological findings have yet to exert much influence on the legal system, in part because of a resistance to change and in part because of differing traditions. Whereas science tends to question common intuitions regarding human nature, the legal system tends to embrace them. Our thesis is straightforward: psychological research can inform courtroom decision making and help decrease the frequency of flawed verdicts. As a psychologist (Lilienfeld) and an attorney (Byron), we are concerned by the yawning gulf between psychological

science and the law, though optimistic that this gulf can ultimately be narrowed.

In this article, we show how and, in so doing, make no pretense at comprehensiveness. Instead, to give readers a flavor of how psychological science can improve legal decision making, we survey five domains in which research in psychology can inform courtroom decisions: judges' instructions to jurors, eyewitness testimony, suspect lineups, false confessions and racial bias in jury decision making.

Please Strike That from the Record

As emeritus Princeton University psychologist and Nobel laureate Daniel Kahneman notes in his 2011 book *Thinking, Fast and Slow*, there are two basic modes of human thinking. System 1 cognition is rapid, automatic and intuitive; System 2 thinking is deliberate, controlled and analytical. At the risk of oversimplifying these two modes of information processing, let us say that System 1 initially believes what it perceives and that System 2 only later subjects it to scrutiny. In 1990 psychologist Daniel Gilbert, now at Harvard University, and his co-authors presented participants with statements based on a word from the Hopi language (such as "a *monischa* is an armadillo"); a few seconds later participants learned whether the assertion was true or false. Subjects were distracted in the intervening seconds by a challenging task—hitting a button as soon as they heard a musical tone—intended to prevent them from processing these statements mentally and, in effect, shutting down System 2. Later, when Gilbert asked distracted subjects whether each statement was true or false, they were more likely to identify the statements as true. Believing is our default state, so it comes to us naturally; disbelieving does not.

The judicial domain typically ignores the System 1–System 2 distinction. Research using simulated jurors, reviewed by psychologist Nancy K. Steblay of Augsburg College and her colleagues in 1999, shows that a judge's admonitions to jurors to disregard a

FAST FACTS

Courting Science

- 1>> Psychological research can inform courtroom decision making and help decrease the frequency of flawed verdicts.
- 2>> As of this writing, the Innocence Project has freed 301 individuals on the basis of DNA evidence. In about 75 percent of these cases, a principal cause of the wrongful conviction was faulty eyewitness testimony.
- 3>> To prevent false confessions, a video of the full interrogation should be available to substantiate any self-incriminatory statements.
- 4>> Placing blacks on the jury can defuse the biases of white jurors.



Eyewitness memory can be distorted by “facts” learned later. If a witness is told that two vehicles “smashed” into each other, she may falsely recall having seen broken glass at the scene.

piece of evidence presented during a trial are often fruitless because this information still exerts a significant influence over verdicts. False beliefs often persist long after they have been discredited. Psychologists term this phenomenon belief perseverance. Despite what judges may assume, we do not—arguably cannot—merely wipe our mental slates clean after being instructed to ignore information. The judicial system neglects belief perseverance in another way. Among the first things the judge does at a trial is read the charges to the jury. At that moment, any presumption of innocence that may have lingered in a juror’s mind can be dispelled because jurors tend to believe the charges as read.

Psychological science points to a few potential fixes to the thorny problem of belief perseverance. First, research reviewed by psychologist Tarika Dafary-Kapur of the John Jay College of Criminal Justice and her co-workers in 2010 suggests that jurors can better ignore stricken evidence once they hear a clear-cut rationale for why the information is unfair to the prosecution or to the defense. So rather than merely instructing jurors to ignore evidence, judges

should explain why they should ignore it. Second, judges should avoid reading the charges at the beginning of the trial. Besides obviating the presumption of innocence, which is a cornerstone of our criminal justice system, this practice can generate a template—what psychologists call a schema—by which jurors evaluate the evidence. This schema can fuel confirmation bias, the deeply ingrained propensity to seek out evidence that fits with what we believe, encouraging the jury to accord more weight to evi-

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dence that seems to prove the charges than to evidence that does not.

Seeing Is Not Believing

“I’ll never forget that face.” Few phrases strike more fear into the hearts of eyewitness memory experts—and with good reason. The past several decades of psychological research teach us that

CHRISTOPHE LEHENAFF/Getty Images

human memory, though a finely honed product of natural selection, is anything but perfect. Pioneering research by University of California, Irvine, psychologist Elizabeth F. Loftus and her colleagues shows that eyewitness reports of an incident can be influenced adversely by a plethora of factors, including information provided *after* the event. In classic work from 1974 by Loftus and John C. Palmer of the University of Washington, witnesses who had viewed a film of a car crash and were told that the vehicles had “smashed” into each other were more likely

to recall having seen broken glass at the scene a week later than those told that they had “hit” each other. There was no broken glass at the scene.

Research demonstrates that our memories do not operate like video cameras or tape recorders. Most neuroscientists believe that every time we recall an event, we alter our memory trace of it. Yet in a large survey of the American public in 2011, psychologists Daniel Simons of the University of Illinois and Christopher Chabris of Union College found that 63 percent of respondents believe that “memory works like a video camera.”

On occasion, eyewitness errors are merely humorous. In a New York City murder trial in 2011, Dorothy Canady insisted that she would never forget the criminal’s face. Yet when asked from the witness stand to locate him, she pointed to one of the jurors, triggering giggles in the courtroom. Other eyewitness mistakes, however, damage people’s lives. Take the 1984 case of Jennifer Thomp-

son, then a student at Elon College in North Carolina, who was raped in her off-campus apartment. In her 2009 book *Picking Cotton*, Thompson describes how she pointed to Ronald Cotton as the suspect, saying that she was “100 percent certain” when she spotted him in the courtroom. Cotton spent 11 years behind bars before another man,

AFTER INSISTING SHE WOULD NEVER FORGET THE CRIMINAL’S FACE, DOROTHY CANADY LOCATED THE MAN IN THE COURTROOM. SHE POINTED TO A JUROR.

Bobby Poole, was identified definitively by DNA evidence as the rapist. Thompson, wracked with guilt over her error, reached out to Cotton for forgiveness. They have since become friends and now tour the country giving joint presentations on the hazards of eyewitness errors.

As of this writing, the Innocence Project, a national organization focused on correcting wrongful convictions through DNA testing and judicial reform, has freed 301 individuals on the basis of DNA evidence. In about 75 percent of these cases, a principal cause of the erroneous guilty verdict was faulty eyewitness testimony. In about 35 percent of *these* cases, the testimony stemmed from two or more incorrect observers, demonstrating that consistency should not be confused with correctness—or as psychologists are fond of saying, reliability is not validity. Psychological science has homed in on the factors that consistently distort eyewitness memory. A 2001 survey of eyewitness memory experts by psychologist



In 1984 Jennifer Thompson (left) misidentified Ronald Cotton (right) as her rapist. Cotton spent 11 years in prison before being exonerated on the basis of DNA evidence.

GERRY BROOME AP Photo (left); SCOTT WITTER (right)



Police often show witnesses a line of people like this one, from which they are to pick the perpetrator. But data indicate that presenting people one at a time generally leads to fewer mistakes.

Saul M. Kassin, now at the John Jay College of Criminal Justice, and his colleagues revealed several points of consensus. All else being equal, such testimony is less accurate when witnesses are forced to identify someone who differs from them in race (for example, Thompson was Caucasian, and Cotton and Poole were African-American), when the crime involved a weapon (“the weapon focus” effect), and when interrogators ask suggestive questions (“The guy who did it had a thin moustache, right?”). Eyewitness memory also tends to be more error-prone when the crime unfolded quickly, when a long time has elapsed between the incident and its recollection, or when the witness was intoxicated during the crime.

A procedure called the cognitive interview, developed by psychologists Ronald P. Fisher of Florida International University and R. Edward Geiselman of the University of California, Los Angeles, may circumvent some of the shortcomings of eyewitness memory. The cognitive interview relies on techniques derived from scientifically supported principles of memory, such as asking open-ended rather than suggestive questions, reminding witnesses of the context of the crime, offering them retrieval cues (reminders) of the crime and discouraging them from guessing. Most evidence indicates that this procedure can enhance accurate recall of crimes.

Educating judges and jurors about the science of eyewitness testimony may also help. Triers of fact

need to understand that a witness’s recollections, though sometimes accurate, can be warped by a host of well-established factors. They also must realize that a witness’s confidence is not a foolproof bellwether of correctness. In July 2012, in a pioneering move, the New Jersey Supreme Court instructed judges to make jurors explicitly aware of many of these facts. Two months later the Connecticut Supreme Court followed suit—a pattern we hope will be repeated elsewhere. Or, as Loftus quips, the legal system might modify its oath to witnesses to read, “Do you swear to tell the truth, the whole truth or whatever it is you think you remember?”

The Usual Suspects

We can all picture the scene: the classic Hollywood movie setup of five or six people arrayed in a line as a crime victim inspects them one by one. A police officer, aware of the suspect’s identity, stands by as the victim picks out the most likely criminal. Before leaving, the officer communicates with the victim, perhaps giving him or her feedback on the

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choice (“good job”). In most U.S. police precincts, this “simultaneous” lineup procedure is the customary way of doing business, although most jurisdictions now use photographs rather than live lineups. Yet evidence from the laboratory increasingly suggests that this method is often biased against the

who is innocent. In contrast, in a sequential lineup, witnesses ask themselves, “Are any of these people identical to the suspect I remember seeing?” and feel free to answer “no.” This is another domain in which psychological science is slowly finding its way into police practice. As of this writing, two

In 2006 former schoolteacher John Mark Karr (right) confessed to killing six-year-old JonBenét Ramsey (left) a decade earlier. But DNA told a different story.



innocent and frequently associated with high error rates. In one 2001 study of simultaneous lineups in real cases, witnesses picked the wrong person about a quarter of the time.

states (New Jersey and North Carolina) mandate sequential lineups.

ERROR RATES DROP WHEN OFFICERS ARE “BLIND” TO THE IDENTITY OF THE SUSPECT AND TELL THE WITNESS THAT THE SUSPECT MAY NOT BE IN THE LINEUP.

Work by Wells and others shows that error rates drop when police officers conducting the lineup procedure are “blind” to the identity of the suspect and tell the witness that the suspect may not be in the lineup. This practice minimizes the implicit demand on witnesses to pick someone even if that person is not whom they recall seeing.

Psychological research points to a better way. Data reviewed by Iowa State University psychologist Gary L. Wells and his collaborators in 2006 demonstrate that “sequential” lineups, which present witnesses with only one person at a time, tend to yield lower error rates than do the traditional procedures. In a simultaneous lineup, witnesses rely on a rule of thumb that is relative rather than absolute: they ask themselves, “Which of these people is most similar to the suspect I remember seeing?” and feel compelled to pick the closest match even if it is far from a perfect one. As a result, they may choose someone who looks a bit like the real criminal but

In addition, witnesses should never receive feedback about whether they selected the “right” suspect because such information can bolster confidence in their pick even when it is wrong.

Constructing the lineup properly is also crucial. Although there is no simple recipe for doing so, the participants should match the suspect on key physical characteristics such as race, approximate height and weight, and presence or absence of facial hair. Psychologists have devised a clever method to ascertain whether a lineup is biased: if observers who did not see the crime and know nothing about it consistently pick out the same person as the probable sus-

MARK FIX Corbis (left); SUKREE SUKPLANG Corbis (right)

pect when asked to guess who did it, the lineup is likely to be biased, almost certainly because that person stands out physically in some way.

Like most things in life, there are trade-offs. In particular, the reforms we and others have proposed may boost the odds of false negatives—that is, overlooking the people who committed the crimes in question, a drawback highlighted by University of California, Riverside, psychologist Steven E. Clark in a 2012 article. Still, because the American judicial system should be safeguarding the innocent, in most cases, these improvements are well worth the cost.

I Confess

In 1932 the American public was transfixed by media coverage of a tragedy, soon to be known as the Crime of the Century: the abduction and murder of the 20-month-old child of famed aviator Charles Lindbergh. Horrific as the crime was, more than 200 people came forward to admit to it. In 2006 former schoolteacher John Mark Karr confessed to the widely publicized 1996 Colorado killing of JonBenét Ramsey, a six-year-old child beauty pageant contestant. Yet DNA evidence later showed that Karr could not have been the murderer.

It probably goes without saying that false confessions matter. Survey data collected by Kassin in 1998 demonstrate that judges and jurors perceive confessions as providing conclusive evidence of guilt. Complicating matters further, other evidence reviewed in 2009 by psychologists Allison D. Redlich of the University at Albany, S.U.N.Y., and Christian A. Meissner of the University of Texas at El Paso indicates that people are poor at distinguishing false from true confessions.

Many of us find the notion that a person would own up to a crime they did not commit difficult to fathom, but evidence suggests that false confessions are not rare. Data from the Innocence Project indicate that up to 27 percent of individuals initially found guilty but later cleared by DNA evidence had confessed in spite of their clean hands. Research points to both personal and situational factors that boost the odds of these admissions. False confessors are especially likely to be young and suggestible and to have histories of crime or substance abuse. Cognitive impairment and serious mental illness are also risk factors. People are particularly prone to admitting to crimes erroneously when isolated from others and confronted with evidence of their guilt even if investigators have fabricated that evidence.

Highly coercive interrogations are also a prime culprit. Many people presumed that Amanda Knox, the University of Washington student tried in Italy for



the brutal murder of Meredith Kercher in 2007, must have been guilty because she had confessed. They may, however, have underestimated the impact of a 43-hour coercive interrogation across a five-day period in a foreign country, with the final eight hours conducted overnight without food or water.

The widely used Reid technique, developed by training firm John E. Reid and Associates and taught to many U.S. police officers, is a virtual recipe for spurious confessions. Officers isolate suspects and confront them with evidence that appears to implicate them. They brush aside any denials from the suspect. Interrogators give the suspect the choice between two alternatives that both imply guilt—for example, “Did you plan out this crime for months, or was it just a spur of the moment thing?” Questioners also

Coercive interrogations that last for days put suspects in a fragile mental state that can lead to a false confession. Young people are particularly apt to admit to a crime they did not commit.

Mixed-race juries are fairer to black defendants. Diversity also appears to improve accuracy and critical thinking among jurors.



use “minimization,” mitigating the seriousness of the purported crime with statements such as “Well, it is true that you should not have robbed the bank, but we realize that you needed the money.” They also downplay the anticipated punishment, assuring suspects, for example, that “the judge and jury will understand that you were under a lot of financial and emotional strain when you stole the car.”

In most cases, these techniques are ill advised. In 2005 psychologist Melissa B. Russano of Roger Williams University and her colleagues gave undergraduates a problem to solve, while another “student” (actually a confederate in league with the experimenters) working on the same problem sat beside them. In one condition, the confederate cheated by requesting help from the subject. Following the session, the experimenter interrogated participants about whether they helped the student cheat using techniques similar to those advocated by Reid and Associates. The questioning doubled the odds of a genuine confession, but it increased the chances of a false confession much more, by a factor of more than seven. [For more on false confessions, see “True Crimes, False Confessions,” by Saul M. Kassin and Gisli H. Gudjonsson; SCIENTIFIC AMERICAN MIND, June 2005.]

Again, psychological data suggest remedies. So-called self-incriminatory statements uttered under interrogation should be accompanied by a video of the full interrogation to reveal whether coercive or

other leading practices were used, and no such statement should be admitted if an attorney for the defendant was absent. In addition, a technique dubbed PEACE, for *p*reparation and planning, *e*ngage and explain, *o*btain an *a*ccount, *c*losure and *e*valuation, developed by U.K. psychologists in collaboration with attorneys and police officers, is a promising alternative. In contrast to most standard interrogation techniques, the PEACE method has fact finding as its major goal. It emphasizes building rapport, asking open-ended questions and obtaining the suspect’s version of events.

Twelve Angry Men and Women

Last but not least is the problem of racial bias. Most problematically, some white jurors appear to be biased against black defendants. Indeed, research shows that whites tend to presume that black defendants are guilty—more so than the reverse. Research by psychologist Joshua Correll of the University of Chicago and his collaborators in 2007 further suggests that racial bias may be rapid and largely automatic. Correll showed student volunteers faces, either black or white, on a computer, followed by either a handgun or hand tool such as a hammer or a wrench, which they needed to identify as quickly as possible. The volunteers were instructed to ignore the face, the ostensible purpose of which was to signal that the image of a gun or tool was about to appear. Participants identified the handguns more

RON CHAPPLE Getty Images

rapidly when a black, but not a white, face came right before it. Moreover, when pressured to identify the object quickly, they were more likely to identify it as a gun when they had just seen a black face.

How can we defuse the biases of white jurors? Scientific evidence suggests a relatively simple remedy: placing blacks on the jury. Psychologist Samuel

WHEN THE LEGAL SYSTEM BECOMES MORE ACCEPTING OF PSYCHOLOGICAL FINDINGS, IT WILL NOT BE IMMUNE TO ERROR. BUT IT WILL BE A BETTER AND FAIRER SYSTEM.

R. Sommers of Tufts University reported actual trial data in 2006 showing that the higher proportion of whites a jury has, the harsher it is toward black defendants. Furthermore, diverse juries—those with at least two blacks on the jury panel—are not only fairer to black defendants but also fairer across the board, perhaps because they are exposed to broader perspectives. They also appear to be superior critical thinkers, possibly because white jurors know that they will need to later justify their decisions to minority jurors. White participants in Sommers's diverse juries brought up more facts about the case during deliberations, committed fewer factual mistakes and were more open to talking about race when on diverse rather than on all-white juries. Prior to the deliberations, just knowing they were about to serve on a racially heterogeneous jury made whites less likely to assume that a black defendant was guilty.

In practice, attorneys can and often will issue objections to excuse a juror without cause; these challenges have often removed black jurors. For a long time these exclusions required no explanation. In the 1986 case of *Batson v. Kentucky*, however, the U.S. Supreme Court ruled that such a challenge cannot be used to discriminate on the basis of race, and if it seems to, the side in question must offer a race-neutral explanation (such as the fact that the juror has an obvious bias). Still, the process is not foolproof, and attorneys can often generate sufficiently plausible reasons to exclude black jurors when they want to.

Bridging the Gap

In our “closing arguments,” we acknowledge that we have surveyed only the tip of a huge iceberg. We have not discussed other domains in which the melding of science and the law could prove benefi-

cial. For example, in the field of lie detection, psychologists Aldert Vrij of the University of Portsmouth in England and Bella DePaulo of the University of California, Santa Barbara, have reported that despite popular conception, nonverbal cues such as fidgeting and averting gaze are *not* telltale signs of deception. Standard police training in detect-

ing deception emphasizes these erroneous cues and therefore typically leads to *decreases* in accuracy. Investigators would do better to pay attention to verbal cues, listening for a lack of detail and minor imperfections in suspects' sto-

ries, which *are* often indicative of lying.

As a second example, when police make videos of interrogations, they typically train their cameras directly on the suspect. Yet psychologist G. Daniel Lassiter of Ohio University and his colleagues demonstrated in 1992 that this seemingly innocuous decision engenders bias against the suspect, probably because observers are prone to attributing cause—and blame—to whatever is most visually salient, a phenomenon Lassiter dubbed the “camera-perspective effect.” Lassiter's work shows that broadening the camera angle to include both interrogator and suspect diminishes this bias.

The two of us eagerly await a day when our legal system is grounded more firmly in psychological science. Although the developments we have cited in New Jersey, Connecticut and North Carolina suggest an opening of the judicial mind to psychology research, they constitute only a modest step. When the legal system finally becomes more accepting of well-established psychological findings, it will not be immune to error, because fallibility is an inescapable characteristic of the human condition. Moreover, science is itself provisional and subject to correction. But we are persuaded that it will be a better and fairer system, one that strives ruthlessly to root out biases in the interests of protecting the public. **M**

(Further Reading)

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- ◆ **Beyond Common Sense: Psychological Science in the Courtroom.** Edited by Eugene Borgida and Susan T. Fiske. Wiley-Blackwell, 2007.
- ◆ **Psychological Science in the Courtroom: Consensus and Controversy.** Edited by Jennifer L. Skeem, Kevin S. Douglas and Scott O. Lilienfeld. Guilford Press, 2009.