Bias, Subjectivity and Wrongful Convictions

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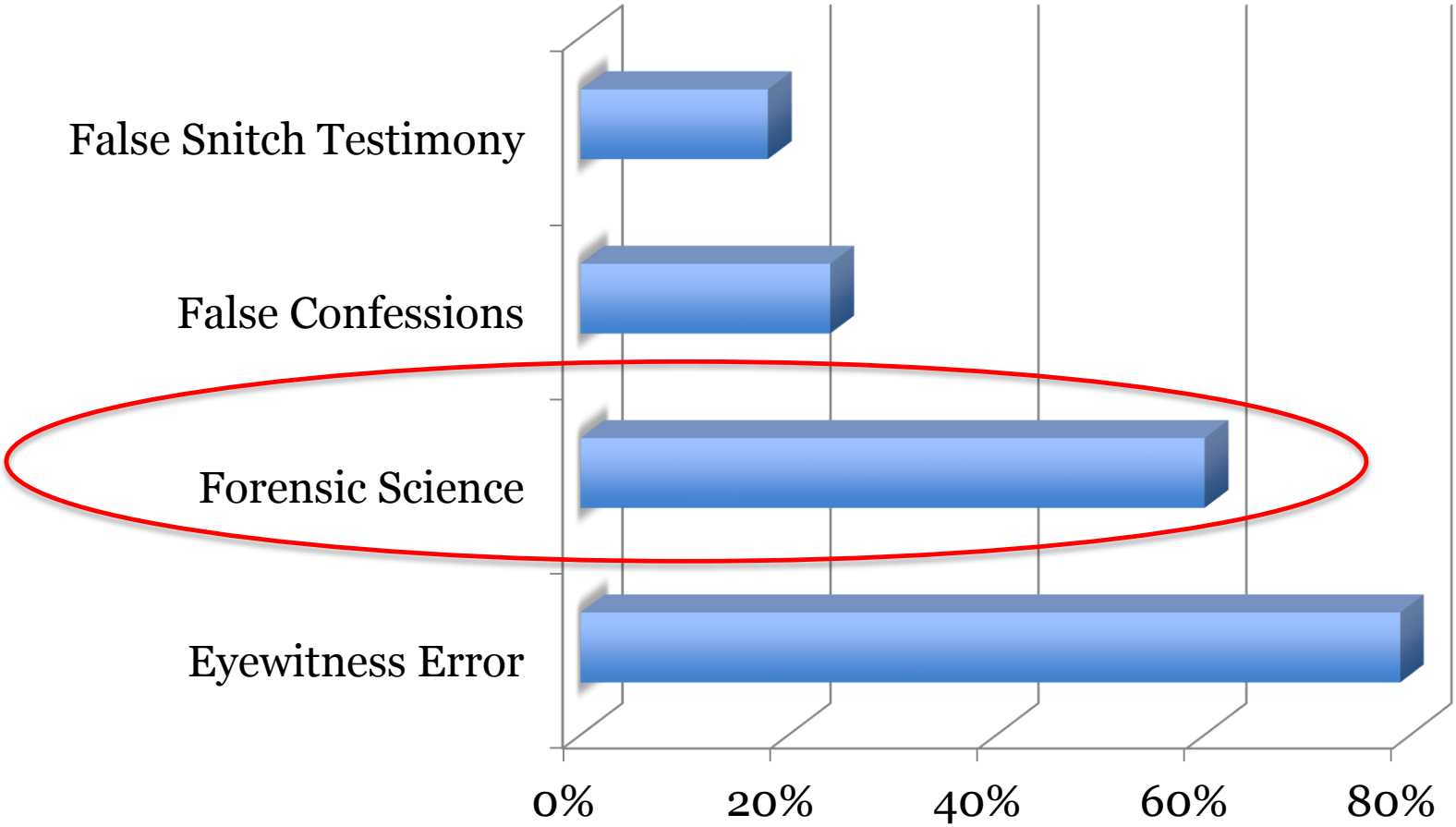
The Problems

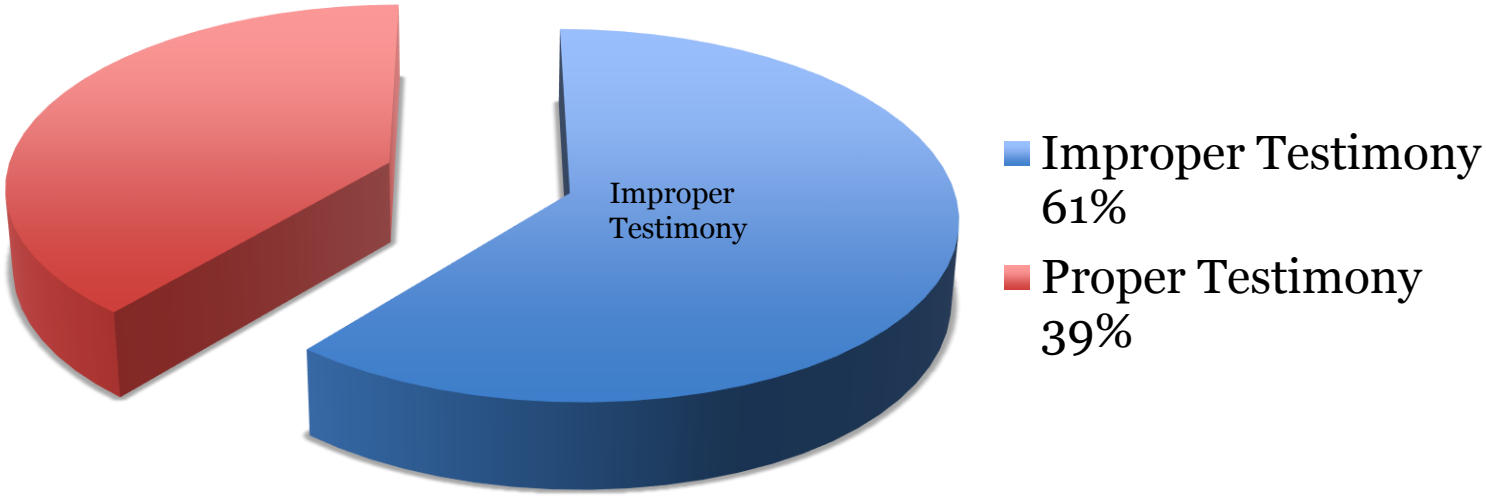
Factors contributing to wrongful convictions

Features of Wrongful Convictions



Flawed Forensics

Wrongful Convictions with Forensic Science Evidence



Source: Garrett & Neufeld, *Improper Forensic Science and Wrongful Convictions,* 95 Va. L. Rev. 1 (2009)

Research Problems

Challenges, fallacies

Bias: No One Is Immune

- Different care prescribed/provided to different groups
  - *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care* (NAP Press, 2003)
- Race, gender can affect all aspects of health care
  - Pain control, procedures, even wait times
  - *See, e.g.:* Ray et. al., Disparities in Time Spent Seeking Medical Care in the United States, JAMA Intern. Med. (October 5, 2015)

Clinical Judgment

- Proponents of the hypothesis: In the absence of high-quality research, must rely on clinical judgment. (Narang, *A* Daubert *Analysis of Abusive Head Trauma/Shaken Baby Syndrome,* 11 Hous. J. Health L. & Pol'y 505 (2011)).
- Introduces subjectivity that infects other forensic sciences
- Is different than clinical judgment in treatment contexts
- Barred by *Daubert*: "in circumstances when experience alone does not resolve the main doubts about reliability, it would be irrational, and therefore an abuse of discretion to rely upon it." (Risinger, *Defining the "Task at Hand": Non-Science Forensic Science after* Kumho Tire Co. v. Carmichael, 57 Wash. & Lee L. Rev. 767, 773 (2000).)

Confirmation Bias

- Tendency to *seek* confirming, rather than disconfirming evidence
- Tendency to *recall* confirming evidence in a biased manner
- Tendency to *interpret* ambiguous evidence in manner that confirms preexisting beliefs

Confirmation Bias in Police Investigations

- Police officers rate disconfirming or exonerating evidence as less reliable or credible than guilt-confirming evidence that supports their initial hypotheses
  - Ask & Granhag (2007); Ask, Rebelius, & Granhag(2008)
- Investigators show marked confirmation bias when asked to form hypothesis of guilt early in the evaluation of evidence, as opposed to if they are not asked for a hypothesis until end of review of all evidence.
  - O'Brien (2009)

Bias in Medical History

- "inconsistent history"
  - History does not match expectations of injury
- Significant especially if only history is of a fall or illness
- From cases: "could not have been a fall"
  - When witnesses reported a fall (sometimes multiple)
- History could be true or false
  - Guilt confirming
  - Exonerating

Tunnel Vision

That compendium of common heuristics and logical fallacies, to which we are all susceptible, that lead actors in the criminal justice system to focus on a suspect, select and filter the evidence that will build a case for conviction, while ignoring or suppressing evidence that points away from guilt.

- Keith A. Findley & Michael S. Scott, *The Multiple Dimensions of Tunnel Vision in Criminal Cases*, 2006 WIS. L. REV. 291

Role Effects

- People's perceptions of their role can influence their decisions
  - Prichert & Anderson, *Taking Different Perspectives on a Story*, 69 J. EDUC. PSYCHOL. 309 (1977); Anderson, Pichert & Shirey, *Effects on a Reader's Schema at Different Points in Time,* 75 J. EDUC. PSYCHOL. 271 (1983); Starrs, *The Ethical Obligations of the Forensic Scientist in the Criminal Justice System*, 54 J. ASS'N OFFICIAL ANALYTICAL CHEMISTS 910 (1971); Risinger, Saks, Thompson & Rosenthal, *The* Daubert/Kumho *Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation & Suggestion,* 90 CAL. L. REV. 1 (2002)
- One of the risks of embedding forensic sciences within law enforcement
- Or, conceivably, of creating child abuse investigation teams

Conformity Effects

- The "tendency to conform to the perceptions, beliefs, and behavior of others. Research on conformity shows that people rely on the views of others in order to develop their own conclusions, sometimes to gain additional information, other times merely to be in step with their peers."
  - Risinger, Saks, Thompson, & Rosenthal, *The* Daubert/Kumho *Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion,* 90 CAL. L. REV. 1 (2002)

Conformity Effects

- After testifying for the defense, expert received an email from a colleague
- "You are deluded at best and criminal at the worst…"
- "In case you never took a course in logic, that is called arguing in a circle, confirming the antecedent, a logical fallacy. That is simply put, stupid."

Group Think

- Undermines the ability to catch errors or reveal alternatives

Q And had anyone made a determination at this time what the cause or potential causes of the injuries were?

A It would be unfair if I didn't say that everybody who had seen her felt very strongly that this was likely to be abuse.

"Diagnosis Momentum"

Dr. Jerome Groopman, *How Doctors Think* (2007):

"Once a particular diagnosis becomes fixed in a physician's mind, despite incomplete evidence—or, in [some] case[s], discrepancies in evidence—the first doctor passes on this diagnosis to his peers or subordinates. … Diagnosis momentum, like a boulder rolling down a mountain, gains enough force to crush anything in its way."

Error in Medical Diagnosis

- Graber et al., *Bringing Diagnosis Into the Quality and Safety Equations,* 308 JAMA 1211 (2012)
  - "Cases of delayed, missed and incorrect diagnoses are common, with an incidence in the range of 10%-20%."
  - Error is higher in clinical diagnoses and lower with respect to diagnostic tests
- Berner & Graber, *Overconfidence as a Cause of Diagnostic Error in Medicine*, Amer. J. of Med. (2008) Vol. 121, S2-S23
  - "[I]t is clear that an extensive and ever-growing literature confirms that diagnostic errors exist at nontrivial and sometimes alarming rates. These studies span every specialty and virtually every dimension of both inpatient and outpatient care."

Cognitive Errors

- Berner & Graber:
  - *Cognitive errors*: "reflect problems gathering data, such as failing to elicit complete and accurate information from the patient; failure to recognize the significance of data, such as misinterpreting test results; or most commonly, failure to synthesize or 'put it all together.'"

- Berner & Graber on cognitive biases and diagnostic "overconfidence":
  - Faulty heuristics
  - Premature closure—narrowing the choice of diagnostic hypotheses too early in the process
  - Two alternative models:
    - The hypothetical deductive mode of diagnostic reasoning, much like the scientific method (develop an initial hypothesis and then gather more data to evaluate the hypothesis); vs.:
    - Pattern recognition process: Top-down processing common among experts, involving recall of prior similar cases, attending to prototypical features, or similar strategies

Context Biases

How much "history" should the physician consider. E.g., one pediatrician recently testified that his assessment of the history includes:

"How did the caretaker react when the child was injured? Did they go have a smoke before they called 911 after the kid stopped breathing?"

Or: "inappropriate" grief reactions; recall false confessions and training about body language, etc.

Berner & Graber

- Major source of diagnostic error, related to physician overconfidence:
  - **Inadequate feedback:** "[F]eedback that is delayed or absent may not be recognized for what it is, and the perception that 'misdiagnosis is not a big problem' remains unchallenged. That is, in the absence of information that the diagnosis is wrong, it is assumed to be correct ...."

The Problem of Absent Feedback

- Gordon D. Schiff, *Minimizing Diagnostic Error: The Importance of Follow-up and Feedback*. American Journal of Medicine (2008) Vol. 121, S38-S42
  - "An open-loop system (also called a 'nonfeedback controlled' system) is one that makes decisions based solely on preprogrammed criteria and the preexisting model of the system. This approach does not use feedback to calibrate its output or determine if the desired goal is achieved. … [Such systems] cannot engage in learning."
  - "[F]eedback on patient response is critical for knowing not just how the patient is doing but how we as clinicians are doing."

Feedback as an Antidote to Cognitive Bias

- Schiff: "Carefully refined signals from downstream feedback represent an important antidote to a well-known cognitive bias, *anchoring*, i.e., fixing on a particular diagnosis despite cues and clues that such persistence is unwarranted."

The feedback gap in medicine is especially pronounced in the diagnosis of child abuse

More Subjectivity Leaves Room for More Bias

- Without explicit, concrete criteria for decision making, individuals tend to disambiguate the situation using whatever information is most easily accessible (including stereotypes)

Research Objectives & Challenges

- Randomized controlled trials are impossible
- Research typically is retrospective case studies of suspected abuse.
  - Depends on accurately sorting cases into abuse and non-abuse categories

Methodological Challenges: Sorting Cases of Suspected Abuse

- How do you determine which cases are abuse?
- The circularity challenge
  - Inclusion criteria: SDH, RH, encephalopathy—the same clinical findings being studied

The Circularity Problem

- In most of the research, and in clinical judgments, doctors assume that, in the absence of a known medical explanation, certain findings, like subdural hematoma, must be caused by trauma. Cases are then classified as abuse if the parents cannot identify a natural cause or describe an that can explain it.
- Having defined these cases as abusive, the presence of the findings are then used to confirm the validity of the diagnosis

Piteau

Limitations of the Review

The meta-analysis for this review was made difficult by inconsistencies in the criteria used to determine the etiology for head trauma, inconsistencies in defining and reporting clinical and radiographic variables, and a moderate to high degree of statistical heterogeneity between studies. As there are no standardized criteria for the definition of abuse, most authors developed their own criteria, and many of these are fraught with circular reasoning. The di-

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Maguire

Diagnostic studies in this field are open to criticism of circularity because of their dependence on a constellation of clinical features, as opposed to a single gold-standard diagnostic test, which does not exist. Ultimately, in any individual case, a child either has, or has not, suffered AHT and, consequently, a diagnosis of AHT either is, or is not, correct. However, except in cases of independently witnessed injury, a diagnosis must rest on a probabilistic assessment of how likely it is that AHT took place. It is not possible to restrict research in this field to independently witnessed abuse, which represents a tiny proportion of cases.

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Maguire's Results

of AHT. We have shown that in a child younger than 3 with an ICI and 1 or 2 of the key clinical features, the probability of AHT varied depending on the number and specific features present, with RHs and rib fractures being the most discriminating. Three or more of the key features were highly predictive of AHT. This analysis offers the potential

even for strongly influential features, such as RHs, not all cases were because of AHT, as shown by a PPV of 58% for those children with an ICI and RHs and no other clinical features. These data includes the most challenging clinical scenario, namely the likelihood of abuse when a child has ICI but none of the other distinguishing clinical features. For a child younger than 3 with an ICI alone, the estimated probability that the brain injury is an AHT is 4% in this data set.

The Solutions

Some steps toward preventing wrongful conviction in child abuse cases

Overcoming Cognitive Biases

- Awareness & Education
  - But people cannot will away such biases
- Asking individuals to consider and articulate the opposite can mitigate hindsight bias
- Asking people to articulate reasons that counter their own position can minimize the "illusion of validity" underlying confirmation bias
- Asking people to discuss both the evidence for and against their hypotheses can reduce bias
- Asking people to delay hypothesis formation until all evidence is in can reduce bias

Overcoming Cognitive Biases

- Greater Transparency
  - Research shows those who know they are being observed and they will be publicly accountable tend to exhibit less bias
- Fuller Discovery
- Documentation, like recording interviews (and experts to properly interpret)
- Open file policies
- Increased collaboration

Proper investigation may help

But many significant flaws still exist; difficulties exaggerated by inadequate evidence base, imprecise testing

Improving Outcomes

- Recognizing problems exist
  - Recognizing bias in literature
  - Recognizing potential for error
- Recognizing false positives AND false negatives
- Mitigating bias (and what does not accomplish this)
- Lessons from other forensic sciences
- Appropriate adversarial testing of claims

Lessons From Fire Investigations

- Reliance on unsupported rules/hypotheses
- Negative corpus

Fire Causation

- [M]any…rules of thumb… typically assumed to indicate that an accelerant was used (e.g., "alligatoring" of wood, specific char patterns) have been shown not to be true.

Negative Corpus

- "Process of elimination"
- Investigator eliminates accidental causes of the fire and concludes fire must have been intentionally set, even if there is no evidence of an incendiary fire
- National Fire Protection Association (NFPA) now recognizes the practice as unscientific and unreliable

In the 7th Edition of NFPA 921

- *18.6.5 Inappropriate Use of the Process of Elimination.*
  - *[Negative corpus] is not consistent with the Scientific Method, is inappropriate, and should not be used because it generates un-testable hypotheses, and may result in incorrect determinations of the ignition source and first fuel ignited.*
- *18.6.5.1 Cause Undetermined.*
  - *. . . it is improper to opine a specific ignition source that has no evidence to support it even though all other hypothesized sources were eliminated.*

Application to child abuse cases

Lessons from other forensic sciences

In the meantime, what steps can be taken?

Recognition

- Wrongful convictions exist and can be ambiguous, but also have some known and specific causes that can be addressed
- False negatives and false positives are equally problematic in society
- Implicit bias can affect judgment (for everyone)
- Recognizing the problems that have led to wrongful convictions in the past (like false testimony before a jury, ad hominem attacks rather than scientific inquiry)

Areas of New Consensus

- No medical finding is pathognomonic of abuse
  - Encephalopathy and edema are ubiquitous—the brain's response to any insult is swelling
  - Subdural hematoma—not unique to SBS or AHT
  - Not even retinal hemorrhages, retinal folds, and retinoschisis in infants are alone pathognomonic of abuse (shaking)
- A differential diagnosis (really a differential etiology) is essential in all cases
- The list of "mimics" of abuse is extensive and growing
- Short falls can kill
- Lucid intervals can occur

Exclude Proven False Claims

- Certain symptoms are pathognomonic of abuse (cannot be caused by anything else)
- Short falls can't kill/aren't dangerous
- The force required to cause the signs commonly associated with abuse or shaking are massive, equivalent to a multistory fall or a car accident
- The last person responsible for the child before the child collapsed abused that child
- The likelihood that a particular case is abuse, given the signs present, is X% or certain