You keep using that word…I do not think it means what you think it means:
Challenges in Communication Comprehension

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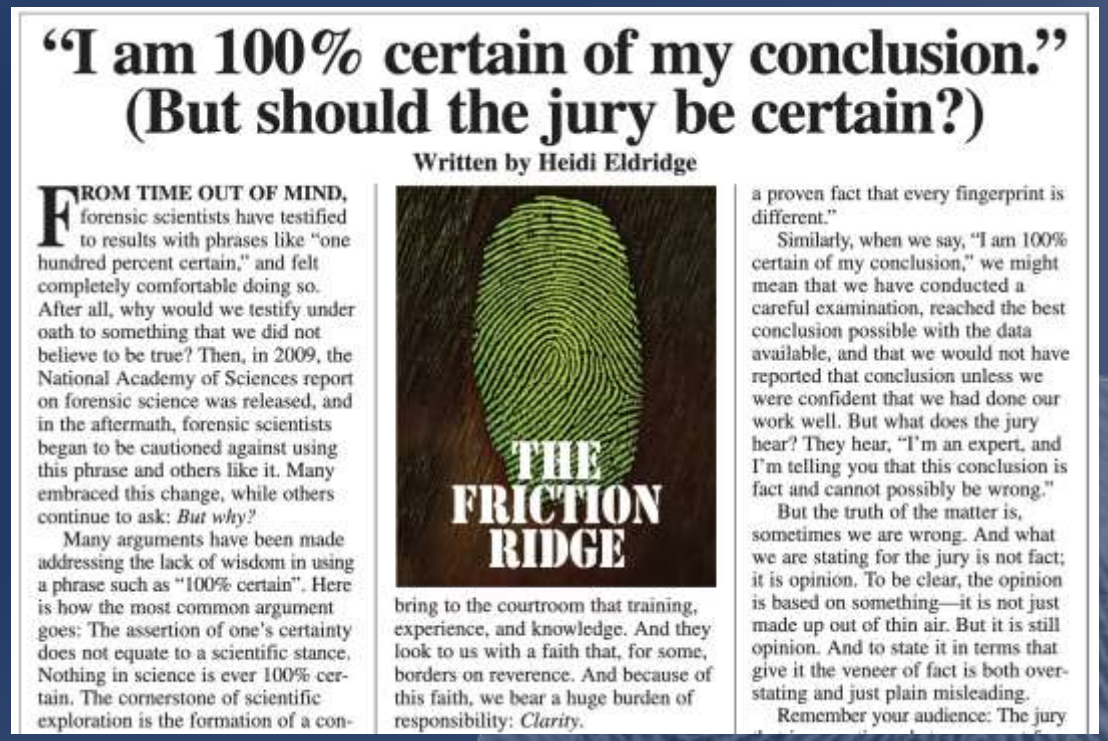
Roadmap

- What do factfinders hear?
- How do they hear it?
- Are they even listening?
- Why can’t we just speak in plain English?
- What about when others misrepresent our words?
- Where do we go from here?

What do factfinders hear?

"Our words matter. Language is a powerful weapon. It can be used to inform, but it can also be used to persuade or mislead. We must remember that many of the phrases we use as scientists are a kind of shorthand for larger concepts that other scientists understand. But juries do not have that level of understanding. Juries accept them at face value."



"I am 100% certain of my conclusion." (But should the jury be certain?)

Written by Heidi Eldridge

FROM TIME OUT OF MIND, forensic scientists have testified to results with phrases like "one hundred percent certain," and felt completely comfortable doing so. After all, why would we testify under oath to something that we did not believe to be true? Then, in 2009, the National Academy of Sciences report on forensic science was released, and in the aftermath, forensic scientists began to be cautioned against using this phrase and others like it. Many embraced this change, while others continue to ask: *But why?*

Many arguments have been made addressing the lack of wisdom in using a phrase such as "100% certain". Here is how the most common argument goes: The assertion of one's certainty does not equate to a scientific stance. Nothing in science is ever 100% certain. The cornerstone of scientific exploration is the formation of a con-

bring to the courtroom that training, experience, and knowledge. And they look to us with a faith that, for some, borders on reverence. And because of this faith, we bear a huge burden of responsibility: *Clarity.*

a proven fact that every fingerprint is different."

Similarly, when we say, "I am 100% certain of my conclusion," we might mean that we have conducted a careful examination, reached the best conclusion possible with the data available, and that we would not have reported that conclusion unless we were confident that we had done our work well. But what does the jury hear? They hear, "I'm an expert, and I'm telling you that this conclusion is fact and cannot possibly be wrong."

But the truth of the matter is, sometimes we are wrong. And what we are stating for the jury is not fact; it is opinion. To be clear, the opinion is based on something—it is not just made up out of thin air. But it is still opinion. And to state it in terms that give it the veneer of fact is both overstating and just plain misleading.

Remember your audience: The jury

Evidence Technology Magazine, March-April 2012

What do factfinders hear?

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Describing communication during a forensic investigation using the Pebbles on a Scale metaphor

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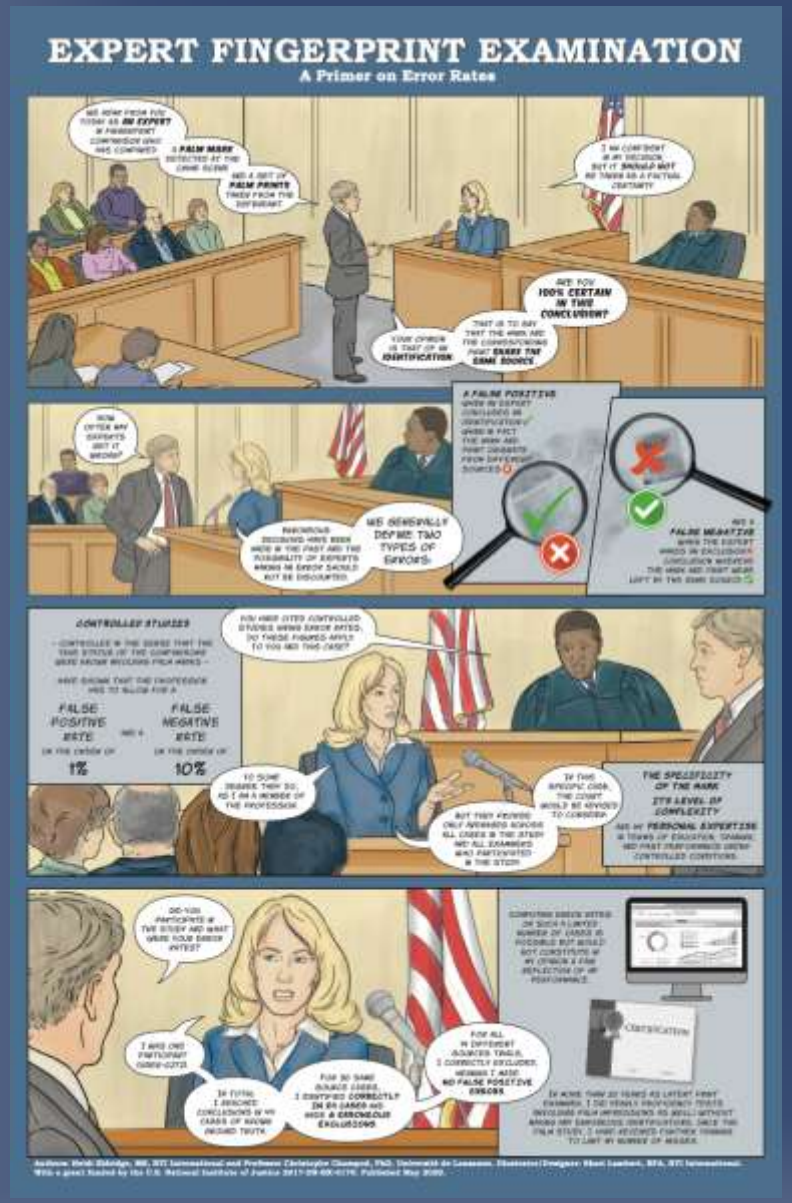
ABSTRACT

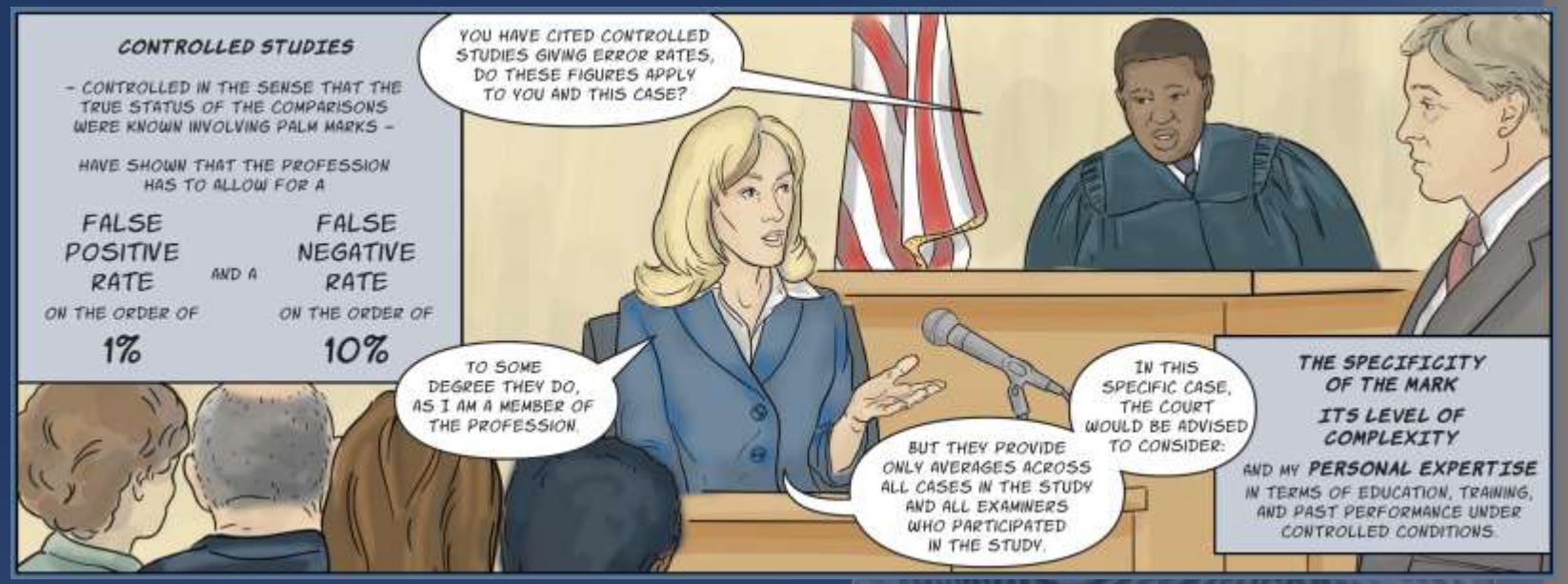
During the investigation of a crime, evidence is collected, analyzed, interpreted, and discussed by various stakeholders. This article examines the communication that may occur between two of these stakeholders: detectives and forensic analysts, and how their interaction influences the interpretation of evidence as the investigation proceeds and the theory of the case evolves. Such communication can be understood as sets of actions that are inter-dependent: for example, a request for a specific analysis by a detective leads to analyses and conclusions that the analyst shares with the detective, which leads to an assessment of these conclusions relative to the theory of the case, which leads to further analysis requests, and so forth. We present the Pebbles on a Scale metaphor, which describes how communication and the understanding of evidence takes place between the detective and analysts, and the different ways in which they consider the information as a function of their roles in the investigation. Using a hypothetical case for illustration, we discuss communicative challenges, the evolving theory of the case, the language that is used by analysts to discuss "yes", "no" and "I don't know" conclusions, and how those conclusions are used by detectives during the progression of the investigation.

Table 1
The articulation language used to convey "yes,", "no," and "I don't know" for various forensic disciplines. This list is not meant to be exhaustive but rather to demonstrate the potential variation of terms between and within forensic disciplines.

	Results and articulation language		
Discipline	Yes	No	I don't know
Seized drugs	Present, confirmation, or determined to contain	Not present or does not contain	Inconclusive
DNA analysis	Included	Excluded	Inconclusive or uninformative
(multiple rows = variation across laboratories)	Included	Cannot be included	
	Cannot be excluded	Excluded	
Firearms	Identified	Eliminated	Inconclusive
Latent print	Identified	Excluded	Inconclusive
(multiple rows = variation across laboratories)	Associated	Excluded	
Bloodstain pattern analysis/pattern classification	Yes (could be)	No (eliminated)	Undetermined
Fire investigation (ignition and source)	Included	Excluded	Undetermined

What do factfinders hear?





https://zenodo.org/records/3734560

How do they hear it?

- REPORTS
  - Written
  - Frequently used for decisions
  - Freer format, but what is read?
  - Limited to no research
- TESTIMONY
  - Oral
  - Occasionally used for decisions
  - Constrained format
  - Much research but few solutions

Are they even listening?

- Central Processing
  - Engaged
  - Focus on appropriate cues
    - Data
    - Explanations
    - Experience
- Peripheral Processing
  - Bored / zoned out
  - Focus on inappropriate cues
    - Appearance
    - Likability
    - Background

Not only must we be understandable, we must be engaging!

Why can’t we just speak in plain English?

- Scientists value precision
- Clarity is *hard*

What about when others misrepresent our words?

- Interpretation Scales
  - 3-scale vs 5-scale
  - “I can’t say it’s him” (wink wink, nudge nudge)
  - Pushing the envelope with ID
  - Giving no useful information
  - Subjectivity
  - Fully continuous scale
  - So…what’s the effect?

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PAPER

CRIMINALISTICS

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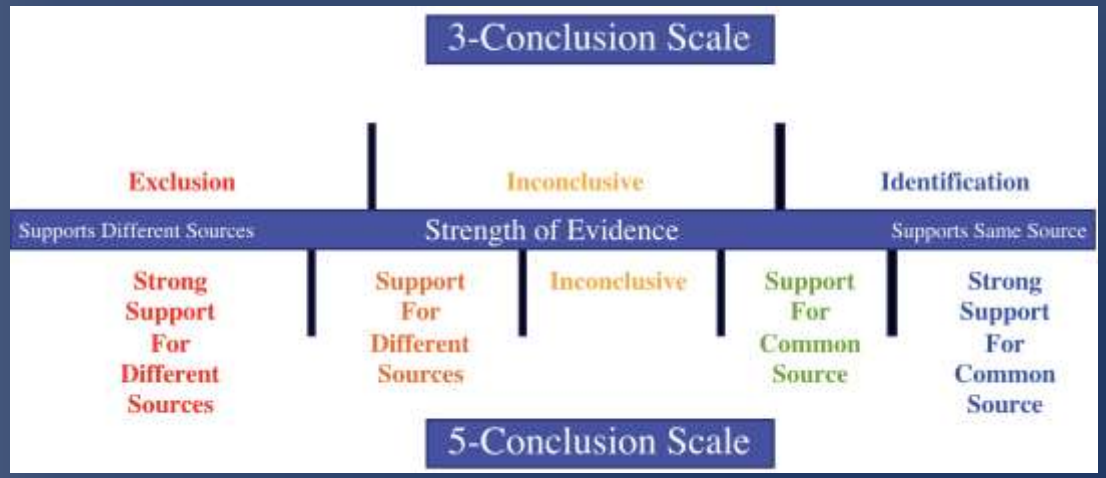
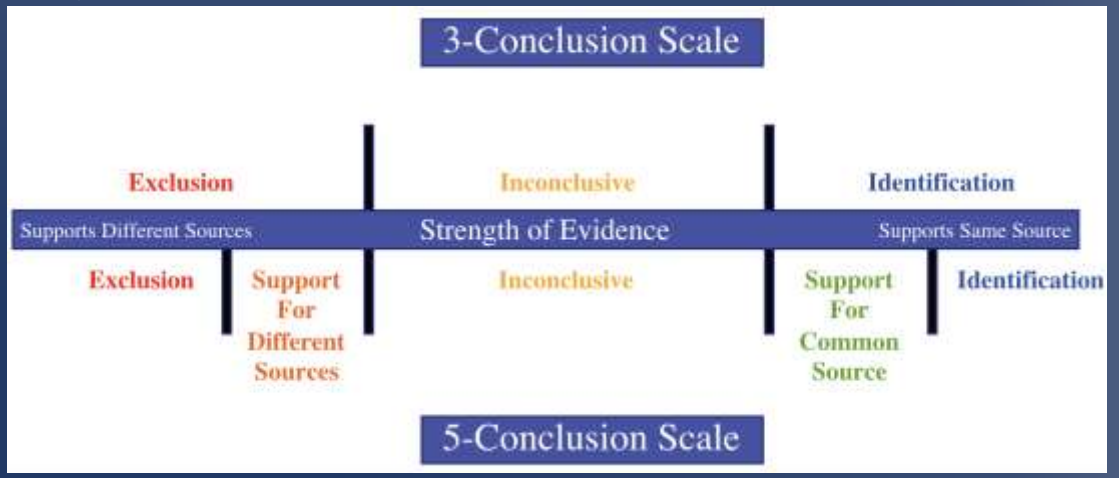
The Utility of Expanded Conclusion Scales During Latent Print Examinations

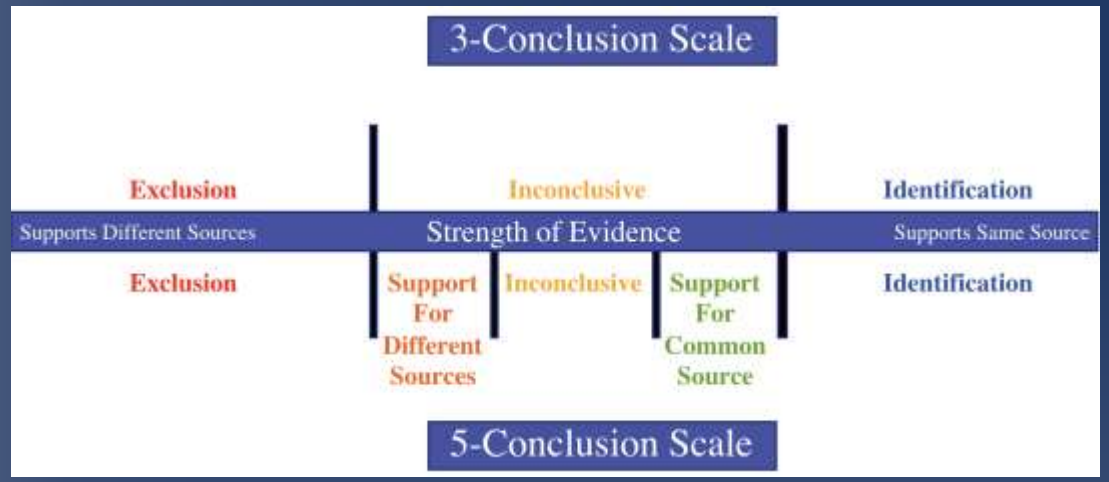
ABSTRACT: During fingerprint comparisons, a latent print examiner visually compares two impressions to determine whether or not they originated from the same source. They consider the amount of perceived detail in agreement or disagreement and accumulate evidence toward same source and different sources propositions. This evidence is then mapped to one of three conclusions: Identification, Inconclusive, or Exclusion. A limitation of this 3-conclusion scale is it can lose information when translating the conclusion from the internal strength-of-evidence value to one of only three possible conclusions. An alternative scale with two additional values, support for different sources and support for common sources, has been proposed by the Friction Ridge Subcommittee of OSAC. The expanded scale could lead to more investigative leads but could produce complex trade-offs in both correct and erroneous identifications. The aim of the present study was to determine the consequences of a shift to expanded conclusion scales in latent print comparisons. Latent print examiners each completed 60 comparisons using one of the two scales, and the resulting data were modeled using signal detection theory to measure whether the expanded scale changed the threshold for an “Identification” conclusion. When using the expanded scale, examiners became more risk-averse when making “Identification” decisions and tended to transition both the weaker Identification and stronger Inconclusive responses to the “Support for Common Source” statement. The results demonstrate the utility of an expanded conclusion scale and also provide guidance for the adoption of these or similar scales.

KEYWORDS: decision making, expanded conclusions, fingerprints, friction ridge, model comparison, identification

What about when others misrepresent our words?







- IDs of mated pairs 0.377 → 0.266
- Inc overall 0.569 → 0.351
- 17 'erroneous SSS' *but*…
- 97 correct SSS

"[W]e view it as important that consumers of investigative leads understand that these are not firm conclusions"

What about when others misrepresent our words?

- Closing arguments
- Re-stating of our testimony
- Plea bargaining from reports
- Even judges on occasion…

Regina v Bornyk (2013, British Columbia)

- *"Following a day of legal argument I reserved judgment. During reserve, I became aware of further materials…"*
- *"[m]ost of the well-known errors have occurred in cases involving a single, distorted impression."*

--Eldridge, 2011

- Judge Funt acquitted because *"While the usable portion of the latent fingerprint and the known fingerprint are quite similar, I have more than a reasonable doubt that there is a match […]"*

Where do we go from here?

- Focus on development of *understandable* language
  - Cognitive psychologists—Linguistics
- Focus on development of ways to quickly and effectively communicate complex concepts
  - Cognitive psychologists—Learning
- Focus on development of effective visual aids
- Standardization of interpretation scales
- Research into efficacy of all above

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Juror comprehension of forensic expert testimony: A literature review and gap analysis

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ABSTRACT

Forensic scientists and commentators including academics and statisticians have been embroiled in a debate over the best way to present evidence in the courtroom. Various forms of evidence presentation, both quantitative and qualitative, have been championed, yet amidst the furor over the most "correct" or "accurate" way to present evidence, the perspective of the fact-finder is often lost. Without comprehension, correctness is moot. Unbeknownst to many forensic practitioners, there is a large, though incomplete, body of literature from the cognitive psychology domain that explores the question of what jurors understand when forensic scientists testify. This body of work has begun to test different proposed methods of testimony in an effort to understand which are most effective at communicating the strength of evidence that is intended by the expert. This article is a review of that literature that is intended for the forensic scientist community. Its aim is to educate that community on the findings of completed studies and to identify suggestions for further research that will inform changes in testimony delivery and ensure that any modifications can be implemented with confidence in their effectiveness.

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