

# Expert Testimony in the U.S.

*Ruth Huntley Bahr*

*University of South Florida, Tampa, U.S.A,*

*rbahr@usf.edu*

Voice experts in the U.S. face a combination of technical, legal, methodological, and ethical challenges that collectively shape the reliability and admissibility of voice evidence. Technologically, experts grapple with non-standardized protocols, variable recording conditions, and algorithmic biases despite the advancements in AI-enhanced voice biometrics.

Legally, two principal standards for the admission of scientific evidence are employed in the U.S. courts: Frye and Daubert. The Frye Standard depends upon establishing the general acceptance of an approach by the scientific community. If the expert's evidence is accepted in the pre-trial hearings, the jurors will be asked to evaluate the quality of the evidence in reaching their decision. In contrast, the Daubert Standard requires judges to function as "gatekeepers" to ensure evidence is scientifically valid and relevant and that the expert is qualified to present the evidence. Federal courts use Daubert, but many states continue to use Frye. These frameworks shape the admissibility of forensic voice evidence, but their inconsistent application across jurisdictions creates uncertainty for analysts and courts alike.

Experts must also communicate sophisticated concepts, such as likelihood ratios and probabilistic reasoning, in ways that are accessible to non-experts while maintaining scientific accuracy and not overwhelming the jury. The inquisitory nature of courtroom proceedings heightens these challenges, as experts must defend methodological choices under cross-examination, manage potential bias, and maintain clarity under pressure. Misunderstandings by judges or jurors can diminish the perceived credibility of expert testimony and increase the likelihood of misinterpretation.

Ethical challenges arise when lawyers are seeking experts to validate their case. The relationship between the expert and the lawyer is critical. The lawyer must understand the analysis process and the findings so that they can prepare their best case. They don't want to be surprised during cross-examination.

Finally, forensic voice examiners lack the large, diverse, and standardized datasets necessary for rigorous validation, and interdisciplinary collaboration remains limited. Without coordinated efforts to strengthen empirical foundations and develop standardized best practices, forensic voice analysis risks not providing the evidentiary rigor demanded by today's courts.