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“DO YOU HEAR WHAT I HEAR?”: EMPIRICAL RESEARCH ON EARWITNESS TESTIMONY

By Jason A. Cantone†

ABSTRACT

Despite recurring empirical interest in eyewitness research, legal scholars have conducted far less research exploring the significance and limitations of earwitness testimony. Nevertheless, earwitness expert testimony serves an important purpose, which dates back many centuries. This Article analyzes empirical studies regarding earwitness testimony and places them into a recognized legal framework regarding admission of expert testimony. The result of this analysis demonstrates that, if courts believe that eyewitness testimony meets the restrictions on “junk science” employed by both Daubert v. Merrell Dow Pharmaceuticals, Inc. and the Federal Rules of Evidence, then the courts should also admit earwitness testimony under the same rationale. This Article, however, recognizes the many methodological issues in the study of earwitness testimony and addresses both the limitations in earwitness expert testimony and the hurdles it must face to meet the evidential standards of admissibility.

I. RESEARCH FINDINGS	125
A. <i>Speaker Familiarity and Disguise</i>	125
B. <i>Emotion and Tone</i>	128
C. <i>Amount of Exposure</i>	129
D. <i>Witness Confidence</i>	130
II. THE LEGAL STANDARDS FOR ADMISSIBILITY	132
A. <i>Examining the Daubert Criteria</i>	134
B. <i>Looking to the Federal Rules</i>	136
III. MISGUIDED ALTERNATIVES	139
CONCLUSION	141

“The human ear does not provide the best evidence in a murder case. But its perceptions are evidence not to be despised or dismissed, especially when the case is the murder of a president.”¹

Earwitness testimony dates back to the 1660s when the testimony of one earwitness after the killing of King Charles I almost resulted in a man’s execution. Despite the earwitness’s confidence, the true culprit

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1. Harold Feldman, *Fifty-one Witnesses: The Grassy Knoll*, FAIR PLAY (Sept.–Oct. 1996), http://www.acorn.net/jfkplace/09/fp.back_issues/12th_Issue/51_wits.html (stating how many earwitnesses reported that the bullet that killed President Kennedy came not from the book depository, but from the grassy knoll).

confessed, saving the man's life and reminding decision makers ever since of the inaccuracies of earwitness testimony.² Yet the birth of earwitness empirical analysis did not come until 1933 when Charles Lindbergh testified that he recognized the voice of the man who kidnapped his child and convinced the jury, despite the short duration of the voice sample, questionable fairness of the identification, and the misperception that Lindbergh's confidence in his identification correlated with his accuracy.³ Research soon followed to determine whether these factors impact the validity of earwitness testimony.

Put simply, an earwitness hears the voice of a perpetrator, stores that voice into memory, and then retrieves the stored vocal description when identifying the speaker in a voice line-up or while testifying.⁴ Earwitnesses play an important role in cases that only involve the defendant's voice, such as cases of telemarketing fraud and other schemes especially noted by the Federal Bureau of Investigation.⁵ In charity schemes, for example, a caller might exploit a person's desire to donate money to unemployed persons hit hard by the recession by taking down the donor's credit card number or providing a post office box for him to send a check or cash. If it is fraud rather than an actual charity, the victim can only identify the fraudulent telemarketer through his voice, especially if the phone number is blocked.

But how accurate is vocal identification of a suspect? Many courts do not allow expert testimony on how vocal misidentifications occur, even though cases based upon eye witness cases in recent years have faced increased scrutiny. Would expert testimony on the limitations of earwitness testimony be based on scientifically sound research and help the trier of fact (judge or jury) make an effective decision regarding the validity of earwitness identifications?⁶

This Article addresses the admission of earwitness expert testimony and will find that courts should allow this testimony, so jurors can receive a more complete picture of factors that could influence identifications. Part I will investigate empirical research on earwitness testimony to create a necessary background for legal analysis. Part II will explain the legal standards of admissibility and analyze whether earwitness expert testimony would meet these standards. Part III will

2. Lawrence M. Solan & Peter M. Tiersma, *Hearing Voices: Speaker Identification in Court*, 54 HASTINGS L.J. 373, 393-94 (2003).

3. *State v. Hauptmann*, 180 A. 809, 825 (N.J. 1935).

4. A. Daniel Yarmey, *The Psychology of Speaker Identification and Earwitness Memory*, in 2 THE HANDBOOK OF EYEWITNESS PSYCHOLOGY: MEMORY FOR PEOPLE 101, 101 (Rod C. L. Lindsay et al. eds., 2007) [hereinafter *Psychology of Speaker Identification and Earwitness Memory*].

5. *Common Fraud Schemes*, FBI, http://www.fbi.gov/majcases/fraud/fraud_schemes.htm (last visited Aug. 29, 2010).

6. *See, e.g., Virgin Islands v. Sanes*, 57 F.3d 338, 341 (3d Cir. 1995).

then discuss misguided alternatives some courts have utilized to exclude expert testimony and offer a conclusion.

I. RESEARCH FINDINGS

Despite an abundance of research on eyewitness testimony, empirical research on earwitness testimony pales in comparison. For example, a search within LexisNexis law reviews and journals for "earwitness" found only 22 articles, with only two articles significantly contributing to the legal literature, and only one of those articles in a traditional law review or legal journal.⁷

Starting a new program of empirical earwitness research would not require researchers to start from nothing. Instead, earwitness research can expand from an extensive body of research regarding eyewitness testimony. Earwitness research should investigate how factors relevant to eyewitnesses (i.e. familiarity, disguise, exposure time, witness confidence) affect earwitness testimony accuracy, as well as factors more relevant to earwitnesses, such as the effect of phones on recognition abilities. An empirical research program which expands from eyewitness testimony research should be admissible in courts and help assure that the trier of fact is aware of the limitations of earwitness testimony. The following section proceeds through empirical research on each factor, detailing previous methodological approaches and how earwitness testimony research can benefit from past research.

A. *Speaker Familiarity and Disguise*

If your best friend sneaks up behind you, puts her hands over your eyes and says, "guess who," your identification of the person might stem not only from the voice but also familiarity with the person. In 1995, A. Daniel Yarmey explored this relationship between identification of familiar and unfamiliar voices.⁸ Participants identified high familiar (immediate family member), moderate familiar (friend) and low familiar (acquaintance) people in their lives.⁹ Experimenters then obtained those speakers and asked them to speak a set passage for the participant. Results showed that both high familiar and moderate familiar voices were more readily identified than unfamiliar voices.¹⁰ In addition, participants falsely identified 45 percent of the unfamiliar

7. LEXISNEXIS, <http://www.lexisnexis.com/research> (follow "Law Reviews & Journals" hyperlink; then search by source "US Law Reviews and Journals, Combined" for "earwitness") (last visited Aug. 28, 2010). Both articles are discussed herein.

8. See *Psychology of Speaker Identification and Earwitness Memory*, *supra* note 4, at 117.

9. *Id.*

10. *Id.*

voices as a familiar person.¹¹ While these results confirmed past findings regarding the role of familiarity on speaker identification,¹² the research presents some concerns. When participants are asked to provide a list of highly familiar and moderately familiar voices and then, later, asked to identify voices, they very well could be focused upon the self-selected list they presented to the researchers. This could result in a heavy bias toward naming someone on their list in an ambiguous situation.

Although people are better at recognizing familiar voices, familiarity does not guarantee correct identification.¹³ What if a police officer hears a voice over the phone and then three years later, makes his identification and claims he recognized the voice? Should this be admissible? In *U.S. v Knox* (1998), the judge allowed the earwitness evidence,¹⁴ but the trier of fact should be aware of the many limitations of such testimony.

One great limitation in recognizing a familiar voice is if the person uses a vocal disguise. Researchers at Wayne State University performed a detailed analysis of different speak signals to determine whether listeners can identify disguised voices. They found that pitch and other vocal cues "are only modestly effective for identifying disguised voices."¹⁵ Additionally, the researchers noted that there is a lack of published research on the relationship between acoustic cues and identifying disguised voices.¹⁶

A criminal seeking to disguise his voice over the phone in a telemarketing case or in person, accompanied by a physical disguise as well, does not need advanced technology. Research shows that the easiest way to effectively disguise a voice is also one of the simplest: whispering. Much research has shown that whispering makes identification significantly more difficult, regardless of amount of exposure.¹⁷ Whispering conceals the most salient characteristics used for identification: pitch, inflection and intonation, and leads to a high chance of false identification.¹⁸ However, lay persons do not fully comprehend

11. *Id.*

12. Phil Rose & Sally Duncan, *Naïve Auditory Identification and Discrimination of Similar Voices by Familiar Listeners*, 2 *FORENSIC LINGUISTICS* 1, 1-17 (1995).

13. See *Psychology of Speaker Identification and Earwitness Memory*, *supra* note 4.

14. *United States v. Knox*, No. 97-5492, 1998 WL 777986, at *2-3 (6th Cir. Oct. 22, 1998).

15. Jean Andruski et al., *Identifying Disguised Voices through Speakers' Vocal Pitches and Formants*, 153rd ASA Meeting, Salt Lake City, Utah (June 7, 2007), <http://www.acoustics.org/press/153rd/andruski.html>.

16. *Id.*

17. Tara L. Orchard & A. Daniel Yarmey, *The Effects of Whispers, Voice-Sample Duration, and Voice Distinctiveness on Criminal Speaker Identification*, 9 *APPLIED COGNITIVE PSYCHOL.* 249, 250 (1995).

18. When the passage was whispered, highly familiar voices were identified correctly 77% of the time (versus 89% in a normal tone), moderately familiar voices 35%

the difficulties behind identifying a whispered voice. In a research study, listeners predicted that people would be 91 percent accurate in identifying whisperings from highly familiar voices and 74 percent accurate for unfamiliar voices. This differed significantly from the study's actual findings of 77 percent and 20 percent correct identification, respectively.¹⁹ Differences such as these, between common perceptions about earwitness testimony and empirical results about such identifications, further exhibit how expert testimony can aid the trier of fact. Criminals can also simply disguise their voices with a tone or pitch change; both impair recognition and result in an increased number of false identifications.²⁰ Just as whispering can be done easily, disguising a voice to a point where recognition is severely hampered also requires minimal effort. Brazilian kidnappers once placed pencils in their mouths to disguise their voices and prevent identification.²¹ Furthermore, people's voices change with age; if a long time passes between hearing the voice and identifying the voice, age effects can naturally change the suspect's voice. This is yet another reason why a judge should understand limitations of earwitness testimony before allowing an earwitness to testify about a voice he heard years before, such as in *United States v. Knox*, described *supra*.²² The *United States v. Knox* case is certainly not the only case where a great amount of time separated hearing the voice and identifying it.

In *United States v. DiMuro*, which focused on an illegal gambling business and the use of a wiretap, an agent identified the defendant's voice four years after he claimed he first heard the voice.²³ The appellants complained that the "considerable lapse of time" between the wiretapped interceptions and the identifications made the voice identifications at trial "unreliable and improper."²⁴ The court found that the four-year gap did not affect the validity of the identification because the agent had spoken to the defendant twice and identified the defendant's voice from the original tapes.²⁵ While the Federal Rules were not in effect at the time of the trial, the judge noted that Federal Rules of Evidence (FRE) 901(b)(5) provided that "[i]dentification of a voice, whether heard firsthand or through . . . electronic . . . recording,

(versus 75%), voices with low familiarity 22% (versus 66%), and unfamiliar voices were acknowledged as such 20% (versus 61%). A. Daniel Yarmey et al., *Common-sense Beliefs and the Identification of Familiar Voices*, 15 APPLIED COGNITIVE PSYCHOL. 283, 285, 294 (2001).

19. *Id.* at 294.

20. Frank Schlichting & Kirk P. H. Sullivan, *The Imitated Voice—A Problem for Voice Line-Ups?*, 4 FORENSIC LINGUISTICS 148, 149 (1997).

21. Ricardo Molina de Figueiredo & Helena de Souza Britto, *A Report on the Acoustic Effects of One Type of Disguise*, 3 FORENSIC LINGUISTICS 168 (1996).

22. *United States v. Knox*, No. 97-5492, 1998 WL 777986, at *2-3 (6th Cir. Oct. 22, 1998).

23. *United States v. DiMuro*, 540 F.2d 503, 513 (1st Cir. 1976).

24. *Id.* at 513-14.

25. *Id.*

by opinion based upon hearing the voice *at any time* under circumstances connecting it with the alleged speaker is sufficient for the admissibility of voice identification evidence.”²⁶ The court permitted the identification and allowed the jury to decide the accuracy.²⁷ Yet, it is difficult to assume that an identification made one day later is as reliable as one made ten years later. Under FRE 901, the court can admit the identification with “sufficient reliability,” which is often any identification, regardless of suggestive procedures, because FRE 901 presumes all identifications are accurate.²⁸ Using the same logic, one would presume all eyewitness testimony is accurate, especially if the identifier claims to have seen the defendant.²⁹ However, this presumption is clearly false, as the media continually reports on death row inmates exonerated after guilty verdicts based at least in part on misidentifications. The Innocence Project finds that eyewitness misidentification is the leading cause of wrongful convictions, a factor in 75 percent of post-conviction DNA exoneration cases.³⁰ Thus, while the Advisory Committee Notes to FRE 901 state, “. . . aural voice identification is not a subject of expert testimony,”³¹ one should still act with caution before relying on earwitness testimony exclusively and consider the many factors which could impact the validity of such an identification.

B. *Emotion and Tone*

Few studies have explored how emotions and stress can impact earwitness memory.³² For a better identification, the vocal line-up should match the emotion and tone of the suspect at the time of the crime. For example, if a suspect yelled, “Give me your money!”, providing a vocal line-up of men saying those words in normal conversational tone will lead to significantly poorer identification accuracy.³³ It would be two different voices being considered as one. If admissible to the court, an expert could explain discrepancies in emotion and tone and offer the limitations of earwitness testimony based upon these emotional factors and also the familiarity and disguise concerns mentioned *supra*.

26. *Id.* at 513.

27. *United States v. Plunk*, 153 F.3d 1011, 1026 (9th Cir. 1998).

28. FED. R. EVID. 901(a); *People v. Griffin*, 592 N.E.2d 930, 934 (Ill. 1992).

29. *See supra* Part I. In future research, this author intends to investigate how juries analyze this identification of voices on tape, and how perception's of the speaker's race (i.e. black, white, Latino) impacts the identification and perception of severity of the crime.

30. The Innocence Project, *Facts on Post-Conviction DNA Exonerations*, <http://www.innocenceproject.org/Content/351.php>.

31. FED. R. EVID. 901 advisory committee's note subdiv. (b), ex. 5.

32. *Psychology of Speaker Identification and Earwitness Memory*, *supra* note 4, at 114.

33. *See* Howard Saslove & A. Daniel Yarmey, *Long-Term Auditory Memory: Speaker Identification*, 65 J. APPLIED PSYCHOL. 111, 111–12 (1980).

Earwitness experts can also offer insight when there is a tape of the suspect's voice to be compared with a vocal line-up including the defendant. Experts can play more than one role here, either commenting on an earwitness's identification or making their own identification. Research found that experts (those trained in phonetics) were less likely to misidentify voices because of emotional factors, and more likely to make accurate identifications than those with no background or moderate training.³⁴ Additional studies confirm that experts are more reliable at making auditory identifications.³⁵ Experts appear less misguided by emotions and tone of the speaker and might also be more accurate because victims of more violent crimes, where the perpetrator gave only vocal cues, might also be biased from the stress of the situation. Thus, whether to inform jurors about factors impacting identification accuracy or to provide their own identification, earwitness experts have much to offer the judicial system.

C. Amount of Exposure

Often, earwitnesses only have a brief exposure to the voice and no corresponding exposure to facial features or other physical identifiers. Research has supported common sense notions that longer exposure to the criminal's voice leads to greater accuracy in identifications.³⁶ However, that does not mean longer exposure leads to guaranteed correct identifications. In fact, some researchers believe this body of literature is inconclusive and state that there is no set correlation between the voice-sample duration and the chance of mistaken identification.³⁷

When someone is asked to make an identification, people are disposed to make one—even if they are not necessarily confident in their choice. This leads to false alarms, even if people listen to the criminal talk at length. But what if the telemarketing fraud is based not on one phone call, but two or three shorter calls? Research has found that two, but not three, distributed calls might lead to significantly better identifications than only one exposure to the voice.³⁸ A third exposure might be redundant and not offer additional information.³⁹ Ad-

34. Harry Hollien & Reva Schwartz, *Aural-Perceptual Speaker Identification: Problems with Noncontemporary Samples*, 7 FORENSIC LINGUISTICS 199, 206–07 (2000).

35. See Olaf Kumoster et. al., *The Correlation Between Auditory Speech Sensitivity and Speaker Recognition Ability*, 5 FORENSIC LINGUISTICS 22 (1998) (indicating that experts performed identifications with more success).

36. See *Psychology of Speaker Identification and Earwitness Memory*, *supra* note 4.

37. *Psychology of Speaker Identification and Earwitness Memory*, *supra* note 4, at 120; see Orchard & Yarmey, *supra* note 12, at 258–59.

38. See Erica E. Proctor & A. Daniel Yarmey, *The Effect of Distributed Learning on the Identification of Normal-Tone and Whispered Voices*, 13(1) THE KOREAN JOURNAL OF THINKING & PROBLEM SOLVING 17 (2003).

39. *Id.*

ditionally, the researchers found that identification accuracy depended upon the tone of the voice and length of the voice sample (18 seconds or 6 minutes).⁴⁰

In 1937, Frances McGehee found that, regardless of how long the criminal is heard, earwitness identifications rapidly deteriorate over a two-week period and then remain relatively stable.⁴¹ More recent research has found that voice identification remains at fifty percent after one week, but falls dramatically to nine percent accuracy after three weeks.⁴² These studies should encourage caution in judges and juries willing to accept identifications made as long as three years⁴³ or four years after the event,⁴⁴ especially when an earwitness's memory could deteriorate by half as little as seven days later. But what if the special agent identifying a voice four years later states to the court that he is entirely confident in his identification?

D. Witness Confidence

The Supreme Court stated, in *Neil v. Biggers*, that an eyewitness's certainty should be examined when assessing accuracy for the identification.⁴⁵ This corresponds with the commonly held belief that a more confident witness is also a more accurate one.⁴⁶ However, this belief is not supported in empirical research. In one meta-analysis, only twenty-one of forty studies found a relationship between eyewitness confidence and accuracy.⁴⁷ A more recent review of the literature showed a small to moderate positive relationship between eyewitness confidence and accuracy.⁴⁸ Earwitness studies have found similar results—that there is not a reliable correlation between an earwitness's confidence and the accuracy of his identification.⁴⁹ Yet jurors still rely

40. *Id.*

41. Frances McGehee, *The Reliability of the Identification of the Human Voice*, 17 J. GEN. PSYCHOL. 249, 261–62, 268 (1937).

42. Brian R. Clifford, *Memory for Voices: The Feasibility and Quality of Earwitness Evidence*, in EVALUATING WITNESS EVIDENCE 189, 200 (1983).

43. See, e.g., *United States v. Knox*, No. 97-5492, 1998 WL 777986 (6th Cir. Oct. 22, 1998).

44. *United States v. DiMuro*, 540 F.2d 503, 513 (1st Cir. 1976).

45. *Neil v. Biggers*, 409 U.S. 188, 199 (1972).

46. See Gary L. Wells et al., *The Tractability of Eyewitness Confidence and Its Implications for Triers of Fact*, 66 J. APPLIED PSYCHOL. 688 (1981).

47. See *Psychology of Speaker Identification and Earwitness Memory*, *supra* note 4; BRIAN L. CUTLER & STEVEN D. PENROD, *MISTAKEN IDENTIFICATION: THE EYEWITNESS, PSYCHOLOGY, AND THE LAW* 95 (1995).

48. *Id.* at 94–95; Michael R. Leippe & Donna Eisenstadt, *Eyewitness Confidence and the Confidence-Accuracy Relationship in Memory for People*, in 2 THE HANDBOOK OF EYEWITNESS PSYCHOLOGY: MEMORY FOR PEOPLE 377, 413 (Rod C. L. Lindsay et al. eds., 2007).

49. Kenneth A. Deffenbacher et al., *Relevance of Voice Identification Research to Criteria for Evaluating Reliability of an Identification*, 123 J. PSYCHOL. 109, 115 (1989).

on an earwitness's confidence in their own judgments of accuracy.⁵⁰ If a judge admits tape recorded evidence under FRE 901 and allows the jury to decide if the voice on the tape is indeed the defendant's, the earwitness's confidence might play an exaggerated role in the jury's decision. An expert should be able to convey relevant empirical research regarding witness confidence not to bias the jury in each direction but to provide caution before relying on a factor research continually questions. These are not always easy empirical studies to summarize, and there are many factors which can be relevant and confuse a juror as much as they are meant to aid the trier of fact, but if jurors rely too heavily on an earwitness's confidence and are not better informed of these factors, misidentifications can lead to innocent people found guilty.

Telephone conversations also involve their own issues. Research exploring identification of voices over the telephone has found that in-person and telephone voices have different frequencies, which can impact the components of tone and pitch for earwitness memory.⁵¹ Due to these divergent frequencies, important encoding dimensions might not be heard and earwitness memory of the voice could be biased by the means in which the earwitness hears the voice. Different speakers might also sound the same when distortions due to telephone communications (i.e. losing reception) are taken into account.⁵² Telephone conversations can also involve other aural cues which could improve identification (either by the earwitness or by those listening to a recording later). Recent films include countless examples of police hearing noises in the background such as the elevated "El" trains in Chicago or the sound of a boat going to sea and hearing these oral stimuli can help track *where* the call is made, although not necessarily *who* made the call. Yet, research finds that background noise and other distractions such as sirens or background voices actually hurt recognition accuracy, as they can reduce the listener's focus on the speaker.⁵³

Just as earwitness identification is better when the vocal line-up is congruent to the emotion and tone of the alleged criminal at the time of the crime, vocal line-ups stemming from telephone conversations should also be congruent. Research found that when the earwitness first heard the person through a tape recorder, identification was more

50. Cf. Amy L. Bradfield & Gary L. Wells, *The Perceived Validity of Eyewitness Identification Testimony: A Test of the Five Biggers Criteria*, 24 LAW & HUM. BEHAV. 581 (2000) (although this study focuses upon eyewitness testimony, the research on earwitness testimony would hypothesize similar results; future research should confirm this hypothesis).

51. *Psychology of Speaker Identification and Earwitness Memory*, *supra* note 4, at 122–23.

52. *The Effects of Whispers, Voice-Sample Duration, and Voice Distinctiveness on Criminal Speaker Identification*, *supra* note 17.

53. PHILIP ROSE, *FORENSIC SPEAKER IDENTIFICATION* (2002).

successful when based upon a vocal line-up of tape recorded rather than in-person voices.⁵⁴ Overall, research finds that congruency is important, and this is a relevant factor for the jury to consider.

II. THE LEGAL STANDARDS FOR ADMISSIBILITY

To allow any of the evidence illustrated in Part I, the court must determine that the evidence is admissible based upon set legal criteria.⁵⁵ Jurors should rely on the greatest amount of admissible information possible when making a decision. But some judges might believe that earwitness testimony experts might not be “beyond the ken of the juror”⁵⁶ and would provide unnecessary and sometimes unreliable testimony. The court attempted to balance these concerns in the 1923 ruling of *Frye v. United States*.⁵⁷ In *Frye*, the court addressed the admissibility of the precursor to the modern and still contested polygraph test.⁵⁸ The court held that the test “has not yet gained such standing and scientific recognition among physiological and psychological authorities as would justify the courts in admitting expert testimony deduced from the discovery, development, and experiments thus far made.”⁵⁹ The court then established that this standing and scientific recognition requires general acceptance in the relevant field.⁶⁰ This came to be known as the *Frye* general acceptance test. Although *Frye* provided guidance on expert testimony, it also created confusion. *Frye* did not provide judges with guidance on how to determine general acceptance and brought more subjectivity into the courtroom. In addition, a general acceptance standard denies the utility of new methods, as it often takes a long time for a new method to become generally accepted by the academic community as a whole. Thus, the judge could exclude relevant and probative evidence because it was too new and not yet generally embraced by the relevant academic community.

Seeking to address these concerns, the framers of the Federal Rules of Evidence codified a specific rule regarding expert testimony. FRE 702 states that the testimony must help the trier of fact to understand the evidence or determine a fact in issue and be based upon sound methodology.⁶¹ This rule does not mimic the *Frye* general acceptance standard. Thus, although for seventy years expert testimony was inad-

54. H. A. Rathborn et al., *Voice Recognition Over the Telephone*, 9 J. POLICE SCI. & ADMIN. 280, 283–84 (1981).

55. Cassandra H. Welch, Note, *Flexible Standards, Deferential Review: Daubert's Legacy of Confusion*, 29 HARV. J.L. & PUB. POL'Y 1085, 1085 (2006).

56. FED. R. EVID. 702.

57. *Frye v. United States*, 293 F. 1013, 1013–14 (D.C. Cir. 1923), *superseded by statute*, Fed. R. Evid. 702.

58. *Id.*

59. *Id.* at 1014.

60. *Id.*

61. FED. R. EVID. 702.

missible unless the principles gained general acceptance, courts now were unsure whether to apply *Frye* or FRE 702.⁶² The U.S. Court of Appeals for the Third Circuit found *Frye* “overly-vague, and to require a type of ‘nose-counting’ that is inconsistent with sound judicial policy” and developed a new test very similar to the approach the U.S. Supreme Court would take eight years later.⁶³

In *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, the plaintiffs alleged that their mother’s use of a drug led to birth defects.⁶⁴ In order to prove their claim, the plaintiffs sought to introduce new expert scientific testimony that the drug caused defects in laboratory tests. However, because of the tests’ newness, the district court found that the empiricism did not meet the *Frye* general acceptance standard and denied the expert. The court then granted the defendant’s motion for summary judgment because the plaintiffs could not otherwise prove the causal link.⁶⁵ The appellate court affirmed.⁶⁶ The Supreme Court then found that FRE 702 superseded *Frye*, and that a court basing expert testimony under the *Frye* general acceptance test with no deference to the FRE would be in error. The Court also looked to the intent of the FRE drafters. While the FRE sought to “relax the traditional barriers to opinion testimony,” the *Frye* test would keep the court guarded.⁶⁷ The Court in *Daubert* then created a two-prong test for admissibility. To admit the evidence, the judge must find (1) the testimony reliable, as explained by *Daubert* and (2) be able to assist the trier of fact, as explained by FRE 702.⁶⁸ Returning to the main *Daubert* criteria, for earwitness testimony evidence to be admissible, the empirical point should be testable and must be falsifiable through examination. In addition, factors such as publication and peer review, as well as known or potential error rate, help to secure that the research is methodologically sound.⁶⁹ The Court also retained the *Frye* “general acceptance” language, although placed it as one of many factors rather than the sole requirement as in *Frye*.⁷⁰ In 2000, experts amended FRE 702 to read:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in

62. Welch, *supra* note 42, at 1087.

63. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 589–90 (1993); Thomas L. Cooper, *Expert Witness Testimony — Frye Revealed — The Impact of Trach-Fellin II*, 75 PA. B. ASS’N Q. 10, 11 (2004) (citing *United States v. Downing*, 753 F.2d 1224, 1238 (3d Cir. 1985)).

64. *Daubert*, 509 U.S. at 582.

65. *Id.* at 583–84.

66. *Id.* at 584–85.

67. *Id.* at 588–89.

68. *Id.* at 592–94.

69. *Id.* at 592–95.

70. *Id.* at 594. Later, in *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 148 (1999), the Court expanded *Daubert*’s definition of “scientific knowledge” to engineers and those in technical or mechanical fields.

issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.⁷¹

Thus, the judge must determine the reliability of not only the testimony, but also the methodology behind the empirical analyses. This can be a difficult task without a strong background in research methods and could lead to unintentional errors. Still, judges have a large breadth of case law on the *Daubert* criteria and Federal Rules to assure that the testimony meets both tests.⁷²

A. Examining the Daubert Criteria

Before determining if earwitness empirical research is admissible in courts, it is important to assess whether it meets the *Daubert* criteria. While an eyewitness case, *United States v. Lester* is instructive for earwitness analysis. In *U.S. v. Lester*, the court went through an intensive analysis to determine if eyewitness expert Dr. Brian Cutler could testify in the case about six different factors impacting eyewitness identification.⁷³ Among these factors are exposure time, witness stress/emotional state, retention retrieval, and the relationship between witness confidence and accuracy, all discussed *supra* in earwitness research.⁷⁴

The court found that the trial court must first assess the significance of the identification in the prosecution's case. Expert evidence will be more probative if the case relies more exclusively on the identification. Second, the trial court must assure that the factors are relevant and beyond the common knowledge of the average juror, as required by FRE 702. Third, the court must find that the probative value of the evidence substantially outweighs the danger of unfair prejudice, as required by FRE 403. All are also relevant for an earwitness inquiry. Regarding the four of six factors mentioned in *U.S. v. Lester* and in this Article *supra*, the court found that Dr. Cutler could testify regarding the witness's stress and emotional state and the correlation (or lack thereof) between confidence and accuracy.⁷⁵

71. FED. R. EVID. 702.

72. Some jurisdictions still rely on *Frye*, which will be assessed during discussion of the *Daubert* criteria.

73. *United States v. Lester*, 254 F. Supp. 2d 602 (E.D. Va. 2003) (mem. op.).

74. *Id.*

75. *Id.* The court also found that Dr. Cutler could testify regarding the weapon focus, where research has found that an eyewitness to a crime that features a deadly weapon will focus upon that weapon, reducing the accuracy of the identification. For a meta-analysis reviewing weapon focus effect, and finding a significant difference between identifications with and without a weapon, see Nancy M. Steblay, *A Meta-Analytic Review of the Weapon Focus Effect*, 16 LAW & HUM. BEHAV. 4 (1992).

Expanding from this decision, experts seeking to introduce earwitness testimony into courts should make clear that such testimony is probative (perhaps if there is a discrepancy in earwitness identifications or if the defendant's guilt or innocence will depend upon the identification) and should explain why each empirical effect goes beyond the ken of the jury.⁷⁶ Finally, the expert should either quantify the relevance of the research and do so with "sufficient clarity" or provide a "benchmark sufficient to allow [jurors] to make a reasoned assessment."⁷⁷ It is not the expert's job to make the jury's final decision; experts must work to reduce confusion, increase understanding of empirical findings, and allow jurors to make intelligent decisions.

Judges do not often wade through complicated methodological questions regarding the reliability of the utilized research methods. For example, in *U.S. v. Libby*, a case involving expert testimony, the government did not contest that empirical research would meet the scientific rigor requirements elucidated in *Daubert*.⁷⁸ Instead, the case focused upon the second tier of the argument, arguing that expert testimony does not meet the requirements under FRE 702.⁷⁹ As shown through the *Lewis* case, eyewitness evidence on similar factors as those necessary for earwitness cases is admissible; accordingly, earwitness evidence should be admissible under a *Daubert*, FRE 702, and FRE 403 multi-part inquiry. But legal actors still need to consider the *Daubert* empirical factors to assure that the research used is the best possible evidence, especially when guilt or innocence is on the line.

Earwitness studies should be in peer-reviewed journals, preferably ones highly respected in the relevant legal, psycholegal, or psychological communities. While peer reviewed journals will generally prevent the publication of results based upon methodologically suspect designs, it is still important to assess the reliability and falsifiability of the results, as required by *Daubert*.⁸⁰ Expanding from more common eyewitness cases, judges should find that earwitness research follows recognized scientific standards, meets requirements of general acceptance, and should be admissible under *Daubert* and the relevant Federal Rules of Evidence.

Courts relying on *Frye* must focus on general acceptance. Judges generally have very little knowledge of eyewitness research and are not a good gauge of what is generally accepted in the academic com-

76. The judge found that the testimony had probative value, but found that some of the factors were intuitive and within expected common sense (*Lester*, 254 F. Supp. 2d 602).

77. *Id.*

78. *United States v. Libby*, 461 F. Supp. 2d 3, 8 (D.D.C. 2006) (mem. op.).

79. *See id.* at 9; FED. R. EVID. 702.

80. A. Daniel Yarmey, *The Psychology of Speaker Identification and Earwitness Memory*, in 2 THE HANDBOOK OF EYEWITNESS PSYCHOLOGY: MEMORY FOR PEOPLE 101, 101 (Rod C. L. Lindsay et al. eds., 2007) [hereinafter *Psychology of Speaker Identification and Earwitness Memory*].

munity.⁸¹ High caliber psychology journals are rarely read by those in the legal community and a stronger effort is needed for psychology researchers to publish their results in law reviews and legal periodicals more commonly read by judges. Although no research has explicitly asked judges of their earwitness knowledge, one might assume even less knowledge of earwitness research and how individual factors can impact the accuracy of earwitness testimony.

Even though the government conceded the methodological *Daubert* tier in *United States v. Libby*, a footnote explained that eyewitness research meets general acceptance standards.⁸² The court also acknowledged that “there can be little doubt” the research is well-established and generally accepted in the scientific community.⁸³ Because much of the research for earwitness testimony matches the methodologies and results of eyewitness testimony, judges should find general acceptance for earwitness research as well. Although earwitness testimony may be discussed in fewer publications, it has been studied the last seventy years with consistent results and the results often mimic the same biasing factors in accepted eyewitness testimony. Thus, earwitness should satisfy both the *Daubert* and *Frye* standards and proceed to the Federal Rules analysis.

B. Looking to the Federal Rules

Even if earwitness research meets the *Daubert* criteria, the testimony must also meet FRE 702. While much of this analysis is explained *supra* regarding *U.S. v. Lewis*, it is important to re-iterate that expert testimony must assist the trier of fact to understand or determine the facts at issue.⁸⁴ Judges are cautious to intrude upon the role of the jury and do not wish to admit evidence that might not assist them or assist them to determine the ultimate inquiry, which is not legally permissible.⁸⁵ While FRE 702 cautions judges to limit expert witnesses that would intrude on the providence of the jury, concern with earwitness expert testimony is misguided.

First, earwitness testimony *would* assist the trier of fact in analyzing the accuracy of the earwitness identification and in making their decision. FRE 702 limits testimony that does not offer the jury new information and remains within the ken of the jury, but research finds that factors impacting earwitness identification are not always known by the jury. For example, jurors often incorrectly assume that a witness's

81. Richard A. Wise & Martin A. Safer, *What US Judges Know and Believe About Eyewitness Testimony*, 18 APPLIED COGNITIVE PSYCHOL. 427 *passim* (2004).

82. *Libby*, 461 F. Supp. 2d at 8 & n.6 (citing *Robertson v. McCloskey*, 676 F. Supp. 351, 355 (D.D.C. 1988)).

83. *Id.* at 8 n.6 (listing four peer-reviewed studies this assumption is based upon).

84. FED. R. EVID. 702.

85. See *United States v. Lumpkin*, 192 F.3d 280, 288–89 (2d Cir. 1999).

confidence corresponds with his accuracy.⁸⁶ In addition, a substantial number of potential jurors have misconceptions about what can bias identifications.⁸⁷ The average juror (or average judge, for that matter) does not fully understand what affects eyewitness or earwitness reliability.

Research studies do not always involve the same facts as the presented case, which can lead judges to believe that empirical results are irrelevant.⁸⁸ Furthermore, college students asked to look at videos or pictures and then identify a suspect will not likely have the same emotional investment as an actual victim seeking to find who took advantage of him. Still, those assessing the validity of empirical results should also consider when research findings are replicated broadly across different contexts and different types of participants before determining if it is irrelevant because it does not involve the specific facts of the case.

Furthermore, empirical research on earwitness testimony might offer more ecological validity than eyewitness testimony research, as fewer external stimuli could impact judgments. For example, an eyewitness in a bank robbery would be emotionally impacted by being part of a bank robbery, resulting in many different variables which would need to be assessed in a laboratory study. While not perfect, an earwitness might be sitting in his or her own home, with the criminal speaking over the phone. This situation is easier to replicate in a laboratory.⁸⁹ Earwitness research often involves some of the same cognitive and psychological factors as eyewitness testimony, and similar legal analyses should apply. Thus, while the judicial concern of ecological validity is a valid concern, expert testimony should be permissible so the trier of fact can hear about factors relevant to earwitness identification. All of this detailed, empirical knowledge would indeed assist the juror to understand the accuracy of the identification and meet the standard of FRE 702.

Second, even if a judge finds that earwitness expert testimony is not beyond the ken of the jury and can assist the trier of fact,⁹⁰ the judge might exclude the testimony if it goes directly to the ultimate issue in the case—that the voice heard is the defendant’s. FRE 704(a) addresses this very issue. FRE 704(a) states, in part: “testimony in the form of an opinion or inference otherwise admissible is not objectionable because it embraces an ultimate issue to be decided by the trier of fact.”⁹¹ Psychological expert testimony can expand jurors’ knowl-

86. See *supra* Part I.D; see also Bradfield & Wells, *supra* note 37.

87. Richard S. Schmechel et al., *Beyond the Ken? Testing Jurors’ Understanding of Eyewitness Reliability Evidence*, 46 JURIMETRICS J. 177 *passim* (2006).

88. *Libby*, 461 F. Supp. 2d at 10–11.

89. The Author intends to explore these judicial concerns in upcoming research projects.

90. FED. R. EVID. 702.

91. FED. R. EVID. 704(a).

edge without impacting the ultimate inquiry beyond what is legally permissible.⁹² In a robbery trial with mock jurors, Dr. Cutler and colleagues found that the witnesses provided with knowledge about influencing factors such as the confidence-accuracy correlation were less likely to rely on the witness's reported confidence when determining the accuracy of the identification.⁹³ The study did not, however, find a significant relationship between the expert testimony and the final verdict. Some critics might argue that this shows expert witnesses are *not* helpful and are solely a hindrance. However, keen analysis would show that this study proves experts are doing their job of informing the jury of empirical issues that could impact identification without violating the Federal Rules and deciding the ultimate issue in the case. It is still the jury's ultimate decision.

Even if the judge finds the evidence meets the requirements of *Daubert* and FRE 702, the judge could still prevent the evidence under FRE 403, which allows a judge to exclude evidence if its "probative value is substantially outweighed" by dangers such as unfair prejudice, confusion, undue delay or waste of time.⁹⁴ To avoid unfair prejudice, earwitness experts should speak directly to the research and not offer opinions such as "Mr. Smith is not an accurate witness." In addition, while some judges might wish to exclude testimony under FRE 403 as a waste of time because it is solely confusing and not at all helpful, much research has disproved this assumption. Arguments that expert opinions hold no probative value and only offer what jurors already know are faulty. As long as the expert provides general empirical knowledge that might lend assistance to the jury making the ultimate inquiry, the earwitness expert testimony should be admissible.

The suggestion for earwitness expert testimony is not revolutionary. Some courts find that earwitness experts parallel experts who point out visual similarities between a defendant's appearance and a surveillance photo. Courts have found it reversible error to not permit that type of expert. In *United States v. Drones*, the defendant was convicted, but new counsel brought in a voice identification expert to show that the voice of the criminal was not the defendant's.⁹⁵ This led to a reversal of the conviction and the defendant filing a claim for ineffective assistance of counsel.⁹⁶ While this case by no means created a mandate for earwitness expert testimony, it sheds light on the importance of a safeguard to prevent erroneous earwitness identifica-

92. Brian L. Cutler et al., *The Eyewitness, the Expert Psychologist, and the Jury*, 13 LAW & HUM. BEHAV. 311 *passim* (1989).

93. *Id.*

94. FED. R. EVID. 403.

95. *United States v. Drones*, 218 F.3d 496, 498 (5th Cir. 2000); see Solan & Tierma, *supra* note 2, at 415.

96. *Id.*

tions. Overall, earwitness expert testimony should meet the *Daubert* criteria, assist the trier of fact under FRE 702 and not overstep the legal limits; thus, courts should find earwitness expert testimony admissible.

III. MISGUIDED ALTERNATIVES

Despite the assistance expert earwitness testimony can provide, judges often believe that cross-examination and jury instructions offer a significant safeguard that does not warrant additional aid such as expert testimony.

One of the first recognized cases involving expert testimony found that cross-examination adequately explores credibility issues and that expert testimony can determine the reliability of identifications and that empirical knowledge is not beyond the ken of the average juror.⁹⁷ Courts have determined that jurors listening to cross-examination can determine the reliability of identifications and that empirical knowledge is not beyond the ken of the average juror.⁹⁸

The research in Part I showed that jurors often enter trial with common misperceptions about earwitness testimony and could benefit from empiricism. The Court in *U.S. v. Knox* held that the defense attorney should not have the entire burden of proving the identification false.⁹⁹ Cross-examination cannot be very effective if the attorney doing the cross-examination of the earwitness is ignorant of the influential factors. This lack of insight could cause attorneys to select poorly constructed studies, as attorneys will not often know the best methodologies or error rates, which are important factors under the *Daubert* standard. In addition, attorneys and judges often mischaracterize what is not beyond the ken of the jury and might erroneously believe earwitness evidence is unnecessary and would fail the FRE 702 requirement. Earwitness expert testimony will not only teach the jury about impacting factors but also provide the most relevant research to the court.

An additional problem with the reliance on cross-examination is the lack of a neutral party. Jurors might not know all the relevant empirical evidence regarding earwitness identification, but it is well within their ken to know each attorney is fighting zealously for his client. If a defense attorney utilizes scientific evidence to discredit the earwitness, juries will rightfully ponder: *Is this to make me aware of the science or just to trick me into a not-guilty verdict?* The defense attorney may place greater importance on convincing the jurors of the defendant's innocence than on educating jurors about the utility of empirical evi-

97. *Criglow v. State*, 36 S.W.2d 400 (Ark. 1931).

98. *United States v. Smith*, 122 F.3d 1355, 1357–58 (11th Cir. 1997) (per curiam).

99. *United States v. Knox*, No. 97-5492, 1998 WL 777986, at *2–3 (6th Cir. Oct. 22, 1998) (where a special agent provided earwitness testimony regarding having heard the defendant's voice three years before).

dence. Thus, even if attorneys do attempt to inform jurors of inaccuracies in testimony, cross-examination should not supersede the importance of expert testimony.

Some legal minds believe that even when cross-examination is not effective, jury instructions can ensure accurate evaluation. Eyewitness cases such as *United States v. Hicks* have held that comprehensive jury instructions are more than adequate to inform jurors of everything they need to know.¹⁰⁰ However, instructions often contain statements that are inconsistent with the research, such as asking jurors to focus upon the witness's confidence. This could potentially bias jurors even further by re-enforcing inaccurate previously held beliefs about eyewitness testimony.

Even if jury instructions were perfectly written and agreed upon by psychologists, to accurately portray cognitive biases and teach jurors about factors beyond their ken, jury instructions are rarely effective to solely combat previously held beliefs. Michael Hoffheimer sought to examine the role of jury instructions on understanding eyewitness expert testimony. In his study, some mock jurors received jury instructions which informed jurors about factors they should consider in assessing the accuracy of the identification, while some mock jurors received no instructions.¹⁰¹ Mock jurors with the instructions were more likely to convict, especially when informed about the witness's high confidence in his identification.¹⁰² Thus, the author concluded that the supposedly informative jury instructions actually perpetuated problems with assessing eyewitness testimony, and jury instructions alone cannot combat incorrect information. Future legal actors should not assume that jury instructions would fare any better for eyewitness identifications.

This does not mean that instructions hold no place in educating jurors about the factors that can impact the accuracy of eyewitness identifications. After hearing the eyewitness testimony and an expert, jury instructions can guide the jurors to consider the factors impacting accuracy. This must be done carefully. The instructions should not re-enforce incorrect assumptions about the relationship between eyewitness confidence and accuracy. Instead, the instructions should re-enforce the expert's testimony to show that the witness's testimony is not, as some judges state, "an acceptable means for establishing a speaker's identity."¹⁰³

100. *United States v. Hicks*, 103 F.3d 837, 847 (9th Cir. 1996), *overruled on other grounds by United States v. Grace*, 526 F.3d 499 (9th Cir. 2008) (en banc).

101. Michael H. Hoffheimer, *Effect of Particularized Instructions on Evaluation of Eyewitness Identification Evidence*, 13 LAW & PSYCHOL. REV. 43 (1989).

102. *Id.* at 54.

103. *United States v. Magana*, 118 F.3d 1173, 1208 (7th Cir. 1997).

CONCLUSION

Research consistently finds that factors can impact the accuracy of eyewitness identifications and much of this research is directly applicable to earwitness identifications as well. This disconfirms the decisions of some courts which refuse testimony on earwitness identification because there is "no extensive scientific basis that earwitness' identification is as susceptible to" misidentification.¹⁰⁴ If judges are ignorant regarding earwitness testimony, how can one expect lay jurors to be keen to the expanding programs of research about factors that impact earwitness identification accuracy?

Through *Frye* and *Daubert*, the courts have specific formulas to assess the admissibility of expert testimony. By looking at sound methodology investigating how misidentifications can occur, experts should meet the *Daubert* standard. Earwitness expert testimony will not only aid the trier of fact to meet FRE 702, but also clear up misconceptions and not cause undue confusion. Just as the court in *U.S. v. Lewis* found that not all of the eyewitness research went beyond the ken of the jury and met the standards for legal admissibility, not all earwitness testimony will be admissible. This is why the judge retains discretion to withhold unnecessary testimony.¹⁰⁵ Furthermore, cross-examination and jury instructions will not be adequate safeguards or a substitute for expert testimony. While some courts do not permit earwitness testimony, an intensive analysis should find that earwitness testimony meets all of the legal admissibility requirements under *Daubert* and the Federal Rules. Allowing jurors to hear sound, empirical research that goes beyond common sense and provides sufficient clarity should help prevent over-reliance on factors such as witness confidence and reduce the likelihood of earwitness misidentifications. Eyewitness misidentifications are pervasive in the news because of admirable groups such as The Innocence Project.¹⁰⁶ While earwitness misidentifications do not have the same prevalence either in the media or in the judicial system, it is still important to use empirically sound research to reduce the chance of biases which could send innocent people to jail.

104. See, e.g., *State v. Burnison*, 795 P.2d 32, 40 (Kan. 1990).

105. See David L. Faigman et al., *The Judicial Response to Proffered Expert Testimony on Talker Identification*, in 2 MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY 190 (West Group 1997); D. Michael Risinger, *Navigating Expert Reliability: Are Criminal Standards of Certainty Being Left on the Dock?*, 64 ALB. L. REV. 99, 142 n.171 (2000); Solan & Tiersma, *supra* note 2, at 432.

106. The Innocence Project, *Facts on Post-Conviction DNA Exonerations*, <http://www.innocenceproject.org/Content/351.php>.