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## Scientific Evidence Admissibility: Improving Judicial Proceedings to Decrease Erroneous Outcomes

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# Scientific Evidence Admissibility: Improving Judicial Proceedings to Decrease Erroneous Outcomes

## **Abstract**

In the United States, Federal Rules of Evidence 702, the Frye and Daubert standards govern the admissibility of scientific evidence in the courtroom. Some states adopted Frye while others adopted Daubert, causing varying judicial outcomes. The verdicts in some cases may be erroneous due to a nationally used standard. Frye has broad criteria of requiring scientific evidence to be generally accepted. While Daubert contains more requirements for the evidence to be admissible, such as peer review, publication, and scientific principles. Daubert, alongside FRE 702, provides a thorough guideline for trial judges who have the gatekeeping role to decide admissibility aiming for reliable and relevant scientific evidence. To increase efficiency and validity in the court, use of Daubert and utilization of regular court appointed experts should be implemented in a new uniform standard across the United States.

## **Keywords**

Frye, Daubert, court-appointed experts, scientific evidence, admissibility

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In the United States, Federal Rules of Evidence 702, the Frye and Daubert standards govern the admissibility of scientific evidence in the courtroom. Some states adopted Frye while others adopted Daubert, causing varying judicial outcomes. The verdicts in some cases may be erroneous due to a nationally used standard. Frye has broad criteria of requiring scientific evidence to be generally accepted. While Daubert contains more requirements for the evidence to be admissible, such as peer review, publication, and scientific principles. Daubert, alongside FRE 702, provides a thorough guideline for trial judges who have the gatekeeping role to decide admissibility aiming for reliable and relevant scientific evidence. To increase efficiency and validity in the court, use of Daubert and utilization of regular court appointed experts should be implemented in a new uniform standard across the United States.

## **Introduction**

In the United States, the two dominant standards of determining evidence admissibility are the Frye standard and *Daubert* standard. *Frye v. United States* (1923) involved James Alphonzo Frye, who was charged with second-degree murder. Frye's defense was to submit a passed lie detector test as proof of his innocence, which was appealed to the Supreme Court of the District of Columbia. The lie detector test was a new technique, so the Supreme Court questioned whether there was acceptance in the scientific community and scientific studies to support Frye's argument. Frye's argument was that the measurement for changes in blood pressure may accurately show whether an individual was giving honest answers. The Supreme Court had excluded the lie detector as evidence because it was not generally accepted. General acceptance of the Frye test was established from this time forward.

### **FRE 702**

The Federal Rule of Evidence (FRE) 702 was adopted by Congress in 1975. It consists of three main ways to determine admissibility of scientific evidence. Evidence had to meet the circumstances of reliability and relevance to be accepted. Expert testimony and scientific evidence could also be allowed if it was deemed helpful. Courts could use FRE 702 instead of Frye to decide whether evidence would be considered admissible in court. FRE 702 allowed for more flexibility than the general acceptance based on the Frye standard did not have in admissibility of expert

testimony. This new emphasis would later lead to the next standard of evidence admissibility, the Daubert standard.

### **Daubert**

The Daubert standard was established from the Supreme Court's decision in *Daubert v. Merrell Dow Pharmaceuticals Inc.* (1993). The parents of Jason Daubert and Eric Schiller took legal actions against Merrell, arguing their drug, Bendectin, caused birth defects in their babies. Merrell Dow moved the suit to the federal district court and provided experts testimony that their drug was incapable of causing birth defects. The plaintiffs responded with expert testimony using animal studies and reexamining the published studies for their proof that Bendectin did cause birth defects. The plaintiff's claims were dismissed because it did not pass the *Frye* standard and they appealed to the Supreme Court.

The Supreme Court agreed with the plaintiffs' notion that FRE 702 had revised the previous *Frye* standard. In their findings, they placed the responsibility of gatekeeper of evidence to the trial judges. The Supreme Court established standards of admissibility of evidence, requiring it to be reliable and relevant. Their decision is referred to as the Daubert standard. Under Daubert, evidence's technique or theory will undergo a checklist of having been: tested, peer reviewed and published, known error rate, standards of technique's operation, and determining if there is general acceptance in the relevant scientific community. The *Daubert v. Merrell Dow Pharmaceutical Inc.* (1993) case

was sent back to the appellate court where they reevaluated the exclusion of the plaintiff's testimony and reinstated the trial courts' decision to exclude their evidence.

### **Importance in and out of the Courts**

The Frye and Daubert standards are still used, with many states adopting Daubert. The Daubert standard expanded upon FRE 702, and this standard now applies to federal courts and most state courts. Ramo, Callier, Swann, and Harvey (2016) studied genomic tests results evaluations by judges in the courtroom. Their findings indicated that around forty states adopted Daubert, while the rest of the states such as California, New York, and Illinois follow the Frye standard (Ramo et al., 2016). Different jurisdictions using *Frye* or *Daubert* result in different judicial outcomes by allowing certain types of scientific evidence into the court under the standard they adhere to.

There is a significant amount of pressure on judges whose role is to be an evidence gatekeeper. Judges often rely on testimony of experts to understand the court case because they are not equipped with the knowledge of the scientific method and background typically included in cases with scientific evidence. The challenges go beyond a lack of appropriate and reliable sources of evidence, which can already impact the court proceedings to convict someone based on erroneous techniques or theories. The inconsistency in trials without improvements is a disservice to the justice system and to those who must rely on it. A lack of national standards for scientific evidence admissibility

can lead to variation in judicial outcomes; therefore, the possibilities exist for some of these outcomes to be erroneous. This paper will analyze several cases that illustrate this specific problem and advocate for a single unifying standard regarding scientific evidence admissibility.

## Literature Review

### Frye

The Frye standard determines admissibility when scientific testimony or evidence meets general acceptance in the relevant scientific community. Luyster (2007) studied Frye cases where she noticed conflicting interpretations of these evidence admissibility standards. In *Marsh v. Valyou* (2007), the plaintiff was involved in multiple and unrelated automobile accidents in which she claims caused her to suffer from fibromyalgia, a debilitating syndrome that involves chronic pain. The defendants argued that the linkage between the automobile accidents leading to an onset of fibromyalgia was not a theory that was generally accepted in the scientific community. The cases expert testimony of the automobile accident being connected to the plaintiff's fibromyalgia indeed met the Frye standards as the defendant challenged the expert's assumptions.

In a similar case, *State Farm Mutual Automobile Ins. Co. v Johnson* (2004), the expert testimony was allowed to testify that trauma caused the plaintiff's fibromyalgia because his opinion could not be excluded through a *Frye* challenge. However, the expert was testifying partly based

on the novel principle, which in relation to the case should have been subjected to Frye, in which the defense was also trying to argue that the linkage does not have general acceptance (Luyster, 2007). Referring to *Marsh*, some of the plaintiff's documents and articles did not show a connection between fibromyalgia and trauma, displaying no consensus in the scientific community for the linkage. This inconsistency has occurred despite some courts adhering to Frye as the standard for evidence and expert testimony admissibility.

### **Daubert**

Moving away from novelty and general acceptance in scientific evidence and towards reliability was largely possible because of the Daubert standard. Daubert's standards in admissibility such as error rate, peer review, and publication are more structured compared to Frye. Daubert's standards are like a check and balance, as it should not allow "admission of unreliable evidence that was once generally accepted" (Rodrigues, 2010, p. 312). Reviews and updates are important to ensure that the proper implementation will meet the current state of workflow. An example of a situation that should be reviewed and amended is studied by Pressman and Caudill (2013) regarding alcohol blackout. An alcohol blackout is the memory loss during a drinking episode that should be weighed for admissibility using the appropriate standard. Their analysis looked at a murder and arson case to determine whether Frye or Daubert was the most appropriate standard to use.



The case of quadruple murder and arson was not recalled by the man held responsible for killing women and children because of his justification that he had an alcohol blackout from drinking. Under Frye, for alcohol blackout to be accepted as evidence it requires at least the concept and evaluation methods to be generally accepted by the scientific community. The rules are further based on the jurisdiction of the laws regarding voluntary intoxication (Pressman & Caudill, 2013). Based solely on self-reporting from the fact that there were three bottles of vodka at his home, an expert calculated that his blood alcohol level was 0.35, which supported his story of a blackout. However, it was difficult to accept his testimony, because no accurate and exact determination of when the bottle of alcohol was consumed could be made, in addition to reducing the credibility of the testimony.

The critical issue of this case was its lack of reliability. The primary defense expert, “was unable to cite established methods or standards for the retrospective diagnosis of alcoholic blackout” (Pressman & Caudill, p. 934, 2013). Laws specific to certain jurisdictions regarding alcohol involving behavior may affect the acceptance in courts, thus it is probable it will be allowed in some cases but not others. Studies for alcoholic blackout have been conducted but their limitations and variables could not be fully controlled to determine validity and scientific reliability. Some studies were also old and had few study subjects to make strong conclusions of alcohol blackout. No

consensus in this field has supported the idea that a state of an alcohol blackout is equivalent to unconsciousness. Essentially, the studies cannot confirm claims about alcoholic blackout and as a result should be inadmissible under Frye, Daubert, and FRE 702 (Pressman & Caudill, 2013).

### **Need for Improvements to Standards**

Ramo, Callier, Swann, and Harvey (2016) studied courtroom trends as well as the roles judges and experts have in circumstances that involve genomic test results in evaluations and testimony. DNA testing, also referred to as genetic testing, is often an accepted type of evidence to aid in criminal investigations. Genetic testing is also used in liability and medical malpractice cases; however, when applied to human injury cases it is untested and unknown. New technology related to genetic and later genomic tests that expand the field of examination to not only a small or specific set of an individual's genes introduce variables that make it difficult to assess their admissibility. These variables can cause conflict depending on the issue presented at the trial and the expert's ability to separate probability from fact (Ramos, et al., 2016). Judges gatekeeping roles can be challenging because some knowledge in scientific methods or familiarity is critical for the proper implementation of either *Frye* or *Daubert*. Most would agree that *Daubert* was an improvement to strengthen scientific evidence in court (Ramos, et al., 2016).

In *McDaniel v. Brown* (2009), DNA evidence from the crime scene matched the defendant's DNA but the prosecution claimed that a random DNA match was statistically impossible. Still, under Daubert, the DNA evidence was relevant and could be used as identification for the case so it was allowed even with the low probative value. Two solutions were discussed in evidence admissibility, first, limiting testimony and allowing juries to have more say rather than being influenced by experts and the parties (Ramos, et al., 2016). Second, the application of FRE 702 to appoint experts in a modified and frequently used way to assist in the assessment of Frye or Daubert (Ramos, et al., 2016).

### **Court Appointed Experts, FRE 706**

FRE 706 allows for judges to call upon a court appointed expert who are not hired from either party. Court appointed experts help provide information that is not biased to judges and juries. Court appointed experts differ from the experts selected by either the prosecution or the defense parties who are paid to answer questions and testify on their respective parties' behalf. Court appointed experts are valuable because they provide insightful knowledge to aid in the court proceedings with a neutral point of view. Domitrovich (2016) studied the use of court appointed experts and the assistance it provided in cases. FRE 706 is underutilized, when utilized the possible benefit of limiting how skewed certain experts testify in a court case can provide meaningful perspective (Domitrovich, 2016).

In *Eastern Air Lines v. McDonnell Douglas Corp* (1976), profit loss for this major airline was the central focus. A claim estimated a profit loss of \$24.5 million due to long delays over three years and involved a portion of their aircraft, which was challenging to comprehend when each party's experts held different views. The Fifth Circuit Court found that a neutral expert was necessary due to not having ties or any stakes to either party. In many situations, judges may need assistance to understand the presented evidence, which can be confusing because it requires educational background on science and health. Complicated cases such as *Walker v. American Home Shield Long Term Disability Plan* (1999) and *Genetech, Inc. v. Boehringer Mannheims* (1997) dealt with contradictory evidence involving fibromyalgia and recombinant DNA technology respectively.

### **Discussion**

The complexity in the courtroom and the evidence involved can be difficult to comprehend not only for the judges, but for the juries as well. The situation is further complicated by the current duality of standards existing in the United States. Rules for evidence admissibility such as Frye, Daubert, and FRE 702 set a foundation, but could ultimately use some improvements. There is a lack of being more conscientious by continuing as is with the impactful inconsistencies and not implement a better framework for the justice system's procedures. In courtroom proceedings,

it is required for judges to be objective and lead a fair trial, eliminating a standard or modifying the standard to use.

The broad Frye standard has many weaknesses in a tradeoff to be simpler in implementation. Sometimes judges can have a poor mindset that values the trial cost and time which may incentivize the practice of admitting low quality evidence when it should not be this way. As Rodrigues (2010) stated Frye is not judicially manageable and does not save time and resources. Reliability and relevance are important factors which Daubert lays out in its criteria and should be the only standard used in the United States. In an attempt to create a better system for evidence admissibility and assisting in the judge's role of gatekeeper of evidence, court appointed experts should be assigned to cases whenever it is possible.

### **Conclusion**

Judges' gatekeeping role can be overwhelming because of their potential lack of understanding in the scope, magnitude, and validity of the evidence. Forensic science evidence and admissibility decisions should ideally adhere to *stare decisis* (Shelton, 2010). Despite the possible savings in time and expenses for judges, sacrificing a proper evidence review should not be favored when past decisions are outdated with current research and technology. The complexity of evidence admissibility has many factors.

“[e]ven within the same jurisdiction, substantial disagreement exists among judges about when and how to admit and

compel genetic tests. Across jurisdictions, state court judges substantially disagree about the differences between the *Frye* /*Daubert* tests and even the application of the *Daubert* standard itself.” (Ramos, et al., p. 205, 2016).

This discrepancy will continually propagate more inability to maintain an agreement in evidence admissibility as well as a needlessly intricate system that will waste time and create barriers for understanding not only for those not fluent in law but also for the jurors.

The aforementioned differences pose conflicts in the justice system which are responsible for determining the livelihoods of people. The justice system is perceived as a system committed to fairness, so a need for it to also be reliable and accurate is critical. Lowering the variations of evidence admissibility to improve the judicial court proceedings can better the circumstances in unifying the United States under one evidence admissibility standard. The *Frye* standard is vague, but with *Daubert* and FRE 702 the quality of scientific evidence and testimony can be more readily assured. Judges’ would typically gain their understanding over the course of the litigation (Ramos, et al., 2016). Additional assistance for judges and juries can be in the form of FRE 706, outside expert testimony, which should be integrated regularly in a new system. Therefore, under the banner of a single uniform scientific evidence admissibility

standard combining *Daubert*, FRE 702 and 706 the likelihood of improving judicial outcomes by decreasing the variations and increasing integrity may be very beneficial for everyone.

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