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1. *Synopsis to CHAPTER 7 : ARTICLE VII. TENNESSEE LAW OF EVIDENCE—OPINIONS AND EXPERT TESTIMONY*
   Client/Matter: -None-
2. *§ 7.01 Rule 701. Opinion Testimony by Lay Witnesses*
   Client/Matter: -None-
3. *§ 7.02 Rule 702. Testimony by Experts*
   Client/Matter: -None-
4. *§ 7.03 Rule 703. Bases of Opinion Testimony by Experts*
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5. *§ 7.04 Rule 704. Opinion on Ultimate Issue*
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6. *§ 7.05 Rule 705. Disclosure of Facts or Data Underlying Expert Opinion*
   Client/Matter: -None-
7. *§ 7.06 Rule 706. Court-Appointed Experts*
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CHAPTER 7 ARTICLE VII. TENNESSEE LAW OF EVIDENCE—OPINIONS AND EXPERT TESTIMONY

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§ 7.01 Rule 701. Opinion Testimony by Lay Witnesses

[1] Text of Rule

Rule 701 Opinion Testimony by Lay Witnesses

Generally.

(a) If a witness is not testifying as an expert, the witness's testimony in the form of opinions or inferences is limited to those opinions or inferences which are:

(1) rationally based on the perception of the witness and

(2) helpful to a clear understanding of the witness's testimony or the determination of a fact in issue.

(b) Value. A witness may testify to the value of the witness's own property or services.

1996 Advisory Commission Comment:

This rule was amended because the former rule precluded any lay opinion if the lay witness could substitute facts for opinion.

[2] In General

Rules 701–706 deal with opinion testimony in general and the parameters of expert testimony.[1] Rule 701 discusses opinion testimony by lay witnesses. Rule 702 describes what qualifications are required to make someone an expert and when experts may testify. Rule 703 deals with the types of facts that can provide the basis for expert testimony. Rule 704 indicates that a lay or expert witness's testimony is not barred simply because it embraces an ultimate issue. Rule 705, eliminating the need to use a hypothetical question in examining an expert, provides that an expert witness may testify on direct-examination without disclosing the facts underlying the testimony. Rule 706 describes procedures for court-appointed expert witnesses.

[3] Policy and Scope of Rule 701: In General

Both English and American jurisprudence have long been reluctant to permit a lay witness to testify about the witness's personal opinion. In recent centuries, a lay witness was generally limited to testimony about facts learned through personal knowledge. Lay witnesses could describe what they have seen and heard, but could not opine or infer from the facts.[2]

There are several reasons for the limits on a lay witness's opinion testimony. First, the accuracy of a witness's testimony can be more easily assessed if the witness testifies about facts rather than opinions. Facts can be investigated and countered by rebuttal proof or tested on cross-examination, but a witness's opinion may be difficult to evaluate. Second, a witness's testimony about observed facts may be more reliable than testimony

[1] *See generally* J. Houston Gordon, *The Admissibility of Lay and Expert Opinions, 57 Tenn. L. Rev . 103 (1989)*.

[2] *See* McCormick On Evidence 24 (6th ed. 2006); *Blackburn v. Murphy, 737 S.W.2d 529 (Tenn. 1987)*; *Walden v. Wylie, 645 S.W.2d 247 (Tenn. Ct. App. 1982)*.

relating the witness's opinion. With fact evidence, one can determine precisely what the witness observed. The limits of memory and perception can be explored in detail.

Although American law traditionally has treated lay opinion testimony as an unpopular relative who keeps appearing at family reunions, there is now a recognition that this relative not only should be invited to the gathering but may be a contributing part of the family. The clear trend in this century has been to allow the admission of testimony in the form of lay opinion under certain limited circumstances.[3] The reason for this is simple: sometimes lay opinion testimony is both necessary and valuable. The lay witness may not be able to provide helpful proof without giving an opinion. For example, how could a witness testify about age, identity, speed, or height without delving into the realm of opinion? What is helpful is the witness's total impression, not the constituent elements. Moreover, the lay witness's perceptions may be based on the witness's personal knowledge and provide information needed by the trier of fact. The rules of evidence now recognize this and have materially softened the ban against lay opinion testimony.

When the Tennessee Rules of Evidence were first enacted, the standards for admission of lay opinion were more specific and more restrictive than the Federal Rules of Evidence.[4] As discussed in more detail below, Tennessee Rule 701(a) has been relaxed and now permits a lay witness to give testimony in the form of an inference or opinion that is rationally based on the witness's perception and helpful to a clear understanding of the witness's testimony or a fact in issue.[5] This part of Tennessee Rule 701 is identical to a portion of Federal Rule 701.[6] The Tennessee rule contains an additional provision that is much more expansive than the federal counterpart. In accordance with traditional Tennessee law, Tennessee Rule 701(b) permits a witness who is not an expert in valuation to testify about the value of the witness's own property or services.[7]

[4] Limitations on Lay Opinion Testimony

[a] In General

Rule 701(a) establishes the general rule that a lay witness should ordinarily testify about facts the witness observed, not about the witness's opinions or inferences. For example, a lay witness in an automobile-train crash case was not permitted to testify about options available to the railroad company or about problems with the design of the train engine.[8] But the rule is not absolute. Some lay opinion testimony is both

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[3] *See, e.g.*, *Cumberland Tel. & Tel. Co. v. Dooley, 110 Tenn. 104, 72 S.W. 457 (1903)*.

[4] *Tenn. R. Evid. 701(a)* formerly provided:

> Generally.
>
> If the witness is not testifying as an expert, the witness's testimony in the form of opinions or inferences is limited to those opinions or inferences where:
>
> The opinions and inferences do not require a special knowledge, skill, experience, or training;
>
> The witness cannot readily and with equal accuracy and adequacy communicate what the witness has perceived to the trier of fact without testifying in terms of opinions or inferences; and
>
> The opinions or inferences will not mislead the trier of fact to the prejudice of the objecting party.

[5] *Tenn. R. Evid. 701(a)* (1996).

[6] Federal Rule 701 provides:

> If the witness is not testifying as an expert, the witness's testimony in the form of opinions or inferences is limited to those opinions or inferences which are (a) rationally based on the perception of the witness and (b) helpful to a clear understanding of the witness's testimony or the determination of a fact in issue, and (c) not based on scientific, technical or other specialized knowledge within the scope of Rule 702.

Tennessee Rule 701 does not include subpart (c) of Federal Rule 701.

[7] *See below § 7.01[7]*.

admissible and of importance to the trier of fact. Evidence law now permits a lay witness to give his or her opinions and inferences, as long as based on the witness's personal knowledge and helpful to the trier of fact.[9]

[b] Rationally Based on Perception of Witness

Tennessee Rule 701(a), which tracks federal Rule 701, permits a lay witness to testify about the lay witness's opinions and inferences which are "based on the perception of the witness." In general terms, this means the witness must base the opinion testimony on the witness's own personal knowledge. To satisfy this requirement, the lay witness may be required to first provide a foundation as to the basis of his or her personal knowledge of the facts forming the basis of the opinion or inference.[10] Rule 602 further reinforces this notion by requiring that the witness, unless an expert, have personal knowledge of the matter that is the subject of the testimony.[11]

Testimony by the lay witness in the form of facts is preferred over testimony in the form of opinion or inference.[11.1] Although one commentator has referred to this provision in the federal rule as being a "mild rule of preference," it is well established that Federal and Tennessee Rules 701 do not authorize lay testimony on subjects that require special skill or knowledge outside the realm of common experience.[12] Thus, Tennessee continues to recognize the preference for expert testimony in appropriate circumstances

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[8] *Emery v. Southern Ry. Co., 866 S.W.2d 557 (Tenn. Ct. App. 1993)*.

[9] The personal knowledge rule still applies. *See* *Tenn. R. Evid. 602*.

[10] MICHAEL H. GRAHAM, 2 HANDBOOK OF FEDERAL EVIDENCE 4-11 (6th ed. 2006). *See also* *State v. McKenzie, 2020 Tenn. Crim. App. LEXIS 412 (Tenn. Crim. App. June 16, 2020)* (witness's observations about what she saw on a security video were not "interpretations" of the video as defendant claimed, but were inferences that were rationally based on her perception of the video and, therefore, admissible under Rule 701); *State v. Millan, 2018 Tenn. Crim. App. LEXIS 810 (Tenn. Crim. App. 2018)* (where defendant, a former officer with the Cleveland Police Department (CPD), was charged with evidence tampering and fraudulently filing an insurance claim for a stolen vehicle, Tennessee Highway Patrol (THP) sergeant who investigated the vehicle theft could properly testify under Rule 701 as to protocols followed by the THP, since he testified based on his own "personal experience" as a lay person, not as a qualified expert; he also did not specifically provide testimony about the protocols followed by the CPD—a matter that would have arguably been outside his personal knowledge under *Tenn. R. Evid. 602*—but only as to the protocols followed by the THP); *Robinson v. State, 2013 Tenn. Crim. App. LEXIS 251 (Tenn. Crim. App. 2013)* (gang member's opinion that petitioner ordered a victim killed when petitioner said, "Y'all know what to do," was rationally based on the gang member's own perceptions and, therefore, was proper); *State v. Taylor, 2014 Tenn. Crim. App. LEXIS 920 (Tenn. Crim. App. 2014)* (officers' opinions regarding the "staged" nature of the crime scene were admissible, as they were rationally based on their observations and were helpful to a determination of whether defendant's version of the events was credible).

[11] *Tenn. R. Evid. 602*. *Cf.* *Bandeian v. Wagner, 970 S.W.2d 460, 461 (Tenn. Ct. App. 1997)* (ordinary witness generally must confine testimony to narration of facts based on first-hand knowledge and avoid stating personal opinion).

[11.1] *State v. Taylor, 2014 Tenn. Crim. App. LEXIS 920 at 88–89 (Tenn. Crim. App. 2014)* ("[g]enerally, non-expert witnesses must confine their testimony to a narration of the facts based on first-hand knowledge and avoid stating mere personal opinions or their conclusions or opinions regarding the facts about which they have testified") (*quoting* *State v. Brown, 836 S.W.2d 530, 550 (Tenn. 1992)*).

[12] CHRISTOPHER B. MUELLER & LAIRD C. KIRKPATRICK, 3 FEDERAL EVIDENCE 749 (3d ed. 2007). This concept is now explicitly set forth in FED. *R. EVID. 701(C)* but is not in Tennessee Rule 701.

requiring scientific, technical or specialized knowledge,[12.1] and many cases decided under common law or under the prior version of Rule 701 are illustrative of this principle.

The restrictive approach to lay opinion testimony set forth in Rule 701(a) is consistent with Tennessee common law. In *Cumberland Telegraph & Telephone Co. v. Dooley*[13] the Tennessee Supreme Court in 1903 found reversible error when two nonexpert witnesses testified that they could have brought a fire under control if the burning building had not contained dynamite that exploded in the midst of their efforts. Following the basic rule that opinion testimony is generally limited to expert witnesses, the court determined that no effort had been made to qualify these witnesses as experts and that "[e]very fact constituting an element in the opinion of those witnesses was capable of being presented to the jury."[14]

Expert Unnecessary. In many circumstances only lay witness testimony is required to establish a cause of action. In *Lawrence County Bank v. Riddle*,[15] the Tennessee Supreme Court held that no expert testimony was necessary to demonstrate the defendant's negligence in leaving an open construction trench for a number of days, resulting in flood damage when the trench collapsed after heavy rain. The court found that "the consequences of leaving [a ditch] open for several days is a matter within the knowledge and understanding of ordinary laymen."[16] Similarly, in a medical malpractice action, the Tennessee Supreme Court has held that "[w]here the act of alleged malpractice lies within the common knowledge of a layman, expert testimony is not required."[17]

In another case, a lay witness was permitted to testify about an experiment she conducted to determine how fast her car could accelerate between two points.[18] And in a tort action for the intentional infliction of emotional distress, the plaintiff's mental harm may be proven by lay witnesses who are considered to be

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[12.1] *See, e.g.,* Flagg v. Hudson Constr. Co., 2019 Tenn. App. LEXIS 264, *13 (Tenn. Ct. App. May 28, 2019) explaining as follows: "Although not expressly stated in the Tennessee rule, our courts will not permit lay witnesses to provide opinion testimony that is otherwise admissible under Rule 701 if that opinion is based on "scientific, technical, or other specialized knowledge … The distinction between an expert and a non-expert witness is that a non-expert witness's testimony results from a process of reasoning familiar in everyday life and an expert's testimony results from a process of reasoning which can be mastered only by specialists in the field." *Flagg* involved a motorcycle accident where the plaintiff contended that his accident was caused by loose gravel left behind by workers after a state highway paving project. The trial court excluded lay testimony as to the source of the gravel under Rule 701, but the Court of Appeals held that expert testimony was not required since (1) the lay opinions were based on personal observation of the gravel and previous experience with newly paved roads, (2) the opinions had a rational basis—*i.e.*, the gravel's color and consistency, and (3) the testimony was helpful in understanding what the witnesses observed and in determining the source of the gravel. *Id.*

[13] 110 Tenn. 104, 72 S.W. 457 (1903).

[14] *Id.* at 110, 72 S.W. at 459.

[15] 621 S.W.2d 735 (Tenn. 1981).

[16] *Id.* at 737. However, the court refused to permit the opinion testimony of the plaintiff bank's corporate president regarding the defendant's negligence, not because he was not an expert, but because he failed to demonstrate a sufficient knowledge of the relevant facts and because he attempted to give "a layman's conclusion as to whether the defendant's conduct amounted to negligence. This was the ultimate issue the jury was required to determine." *Id.* at 738.

[17] Baldwin v. Knight, 569 S.W.2d 450, 456 (Tenn. 1978).

[18] Harwell v. Walton, 820 S.W.2d 116 (Tenn. Ct. App. 1991).

capable of assessing the kinds of emotional distress remedied by the tort.[19] There are many other illustrations of lay witnesses offering an opinion based on the witness's perception.[20]

[c] Helpful to Clear Understanding of Testimony or Determination of Fact

Rule 701 also requires that the witness's testimony in the form of an opinion or inference be "helpful to a clear understanding" of his or her testimony or to "the determination of a fact in issue."[21] Implicit in this provision is the concept of relevance, as irrelevant testimony would presumably not be helpful.

Permissible General Opinion Testimony. The types of general opinion testimony that might, if relevant, be helpful and admissible under Rule 701 include that an individual is "drunk," "angry, frightened, upset, aroused or shocked" or "tall or short, old or young, dark or fair, apparently healthy or sick, [or] strong or weak."[22] With regard to objects, the rule permits opinion testimony that the item is heavy or light, that it moved quickly or slowly, that it was light or dark, or that it was loud or soft.[23] A layperson can also give an opinion about the nature of a bruise, such as that it was consistent with a handprint pattern,[23.1] or that marks were fingerprints,[23.2] or that the injury looked like a shoe print.[23.3] In determining whether to allow a

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[19] *See, e.g.*, *Miller v. Willbanks, 8 S.W.3d 607, 615–16 (Tenn. 1999)*.

[20] *See, e.g.*, *State v. Greer, 2017 Tenn. Crim. App. LEXIS 406 (Tenn. Crim. App. 2017)* (officer's lay testimony about cell phone towers was properly admitted, because the testimony did not require specialized knowledge); ***State v. Schiefelbein, 230 S.W.3d 88, 118 (Tenn. Crim. App. 2007)*** (mother permitted to testify that her daughter did not tell the mother about the daughter's sexual abuse because the daughter "was afraid"; testimony about the daughter's fear was admissible lay opinion because the mother testified she had a close relationship with her daughter and had insight into her daughter's behavior; daughter also testified she did not tell her mother because the daughter was afraid; these facts established that the mother's testimony was rationally based on the mother's perceptions and helpful to a clear understanding of her testimony).

[21] *Tenn. R. Evid. 701(a)(2)*. *See also*, *State v. Cole, 2018 Tenn. Crim. App. LEXIS 824 (Tenn. Crim. App. 2018)* (investigator's testimony that inmates frequently use prepaid debit/credit cards for illegal transactions was an opinion that was "rationally based" on his perception as a corrections officer and was "helpful to a clear understanding" of his testimony, as well as the jury's determination of whether defendants had conspired to possess methamphetamine; similarly, detective's opinion testimony regarding the meaning of text messages sent between the defendants was also admissible, since his opinion that the texts referenced dollar amounts and bank account numbers was based on his years of personal experience as a detective and the testimony was relevant to establishing a financial relationship between the defendants); *State v. Pompa, ___ S.W.3d ___, 2017 Tenn. Crim. App. LEXIS 196 (Tenn. Crim. App. 2017)*, appeal denied, *___ S.W.3d ___, 2017 Tenn. LEXIS 453 (Tenn. 2017)* (detective's opinion testimony was rationally based on his perception of the victim and was helpful to a clear understanding of his testimony, considering the confusing and repetitive line of questioning used by defense counsel; rather than objecting to the testimony, defense counsel continued to question the detective about the issue, and thus, the detective was allowed to explain his answer); *Trammell v. Peoples, ___ S.W.3d ___, 2017 Tenn. App. LEXIS 682 (Tenn. Ct. App. 2017)*. (investigators' affidavits and the opinions contained therein were inadmissible because, whether considered as lay or expert opinion testimony, the evidence was not helpful; the trier of fact could view a videotape and draw its own conclusions).

[22] CHRISTOPHER B. MUELLER & LAIRD C. KIRKPATRICK, 3 FEDERAL EVIDENCE 768–70 (3d ed. 2007).

[23] *Id*. Under the prior Tennessee Rule, there were specific exceptions in the Advisory Commission Comment: allowing a witness to testify that someone was drunk or that a car went fast. However, outside of these exceptions, the prior rule required a witness to describe all of the elements of an action or event without stating an opinion. For example, if a child was skipping and laughing, a literal reading of the rule required the witness to described each of the elements of skipping and each of the elements of laughing without using the word "skipping" or "laughing."

[23.1] *State v. Bishop, 2016 Tenn. Crim. App. LEXIS 939 (Tenn. Crim. App. 2016)*.

[23.2] *State v. Thomas Fancher Greenwood, 2014 Tenn. Crim. App. LEXIS 1060 (Tenn. Crim. App. 2014)*.

[23.3] State v. Jeffrey Scott, Tenn. Crim. App. LEXIS 446 (Tenn. Crim. App. 2011). *See also* below 7.01[6], regarding lay opinions of physical condition.

particular lay opinion, the court will consider whether the testimony "utilized a process of reasoning familiar in everyday life rather than a process of reasoning which could be mastered only by specialists in the field."[23.4]

Excluded General Opinion Testimony. The type of opinion that might be excluded under Rule 701 includes lay opinions as to legal conclusions. In *Tire Shredders, Inc. v. ERM-North Central*,[24] for example, plaintiffs sought damages for the negligent destruction of a tire shredding machine. The Tennessee Court of Appeals upheld the exclusion of a lay witness's deposition in which the lay witness opined that one party was negligent in failing to provide a safe work area, to exercise due care, to properly supervise work, and to comply with applicable safety regulations. The Court of Appeals held that the lay witness's legal conclusions would not have been helpful to the jury and were inadmissible under Rule 701. Another illustration of often-excluded lay testimony is a lay opinion whether a particular witness lied during testimony.[25]

Another illustrative case involved a police officer who testified as a lay witness that the defendant was the driver of a vehicle involved in an accident.[26] The officer based his opinion on two facts: the defendant suffered greater injuries than the other occupant and those injuries were on the defendant's left side. The Tennessee Court of Appeals rejected the lay testimony under Rule 701 because the jury could have drawn this conclusion on its own after hearing the facts about the defendant's injuries.

[5] Sanity and Soundness of Mind

[a] In General

Tennessee law has long permitted an expert to testify about a person's mental health,[27] though a Tennessee statute now limits an expert's testimony about the ultimate issue of criminal insanity.[28] Tennessee law also has traditionally permitted a lay witness to give an opinion about another person's mental health. In some cases the sanity or mental condition of an individual is in issue.

[b] Criminal Insanity

According to the Tennessee Supreme Court, the state can establish that a criminal accused was sane:

> [B]y expert testimony, lay testimony based on a proper foundation, and evidence of conduct consistent with sanity and inconsistent with insanity.[29]

[23.4] *State v. Bishop, 2016 Tenn. Crim. App. LEXIS 939, 28, (Tenn. Crim. App. 2016)*.

[24] *15 S.W.3d 849 (Tenn. Ct. App. 1999)*.

[25] *See, e.g.*, *United States v. Robinson, 473 F.3d 387 (1st Cir. 2007)* (improper for witness to testify that another witness lied while testifying; jury's job is to assess credibility). It should be noted that a lay witness may testify about his or her opinion of a witness's general character for truthfulness. *Tenn. R. Evid. 608(a)*.

[26] *State v. McCloud, 310 S.W.3d 851, 865 (Tenn. Crim. App. 2009)*.

[27] *See, e.g.*, *State v. Taylor, 645 S.W.2d 759 (Tenn. Crim. App. 1982)* (clinical psychologist and clinical specialist in psychiatry both permitted to testify as experts on issue of criminal defendant's insanity). *See below § 7.04[4]* for a discussion of limits on such testimony.

[28] *Tenn. Code Ann. § 39-11-501* (2010).

[29] *State v. Sparks, 891 S.W.2d 607, 617 (Tenn. 1995)*. *See* ***State v. Hammock, 867 S.W.2d 8 (Tenn. Crim. App. 1993)*** (under prior law, when defense offered expert testimony that defendant was insane, state could not satisfy its burden of proving sanity beyond a reasonable doubt by the use of only lay witnesses); *State v. Jackson, 890 S.W.2d 436 (Tenn. 1994)* (under prior law); ***Edwards v. State, 540 S.W.2d 641, 646 (Tenn. 1976)***, *cert. denied*, ***429 U.S. 1061 (1977)*** (under prior law). Under current

Although the jury in Tennessee can discount expert testimony that conflicts with the facts of the case, it cannot rely on improper lay testimony and ambiguous facts while ignoring the expert testimony.[30] The facts that a jury may consider on the issue of insanity include the offender's actions before, at, and immediately after the commission of the offense.[31]

Tennessee law permits a lay witness to testify regarding the sanity of an individual if a factual foundation is laid that is sufficient to justify the lay opinion and to give it credibility.[32] This means that the lay witness's testimony regarding sanity "must be based on the knowledge of facts which reflect the person's mental condition."[33] In *State v. Sparks*[34] the Tennessee Supreme Court indicated that a lay witness may need more than a brief opportunity to observe someone in order to testify about that person's mental condition:

> [O]bservation by a lay witness for a short period of time rarely can constitute a reliable foundation for the expression of an opinion about the mental condition of the person observed. On the other hand, a household member, a near neighbor, a close friend, a fellow worker, anyone who is well acquainted with the person observed, probably will have sufficient knowledge on which to express a reliable opinion.

Even with an adequate opportunity to observe a person, however, a lay witness may find it difficult to testify about that person's sanity, according to *Sparks*. In a sentence that was ignored in the rest of the opinion, the Tennessee Supreme Court in *Sparks* observed:

> [T]he symptoms or indicia of sanity or insanity, observable by non-experts in mental health, are the usual activities and personal interactions which can be described readily, accurately, and adequately by a lay witness without resort to the expression of an opinion.[35]

If taken literally, this statement could severely limit lay opinion in sanity cases.

[c] Diminished Responsibility and Lack of Mental Element

In Tennessee, a criminal defendant's mental condition may be relevant on the defense of insanity, as discussed elsewhere in this chapter.[36] It may also be pertinent on whether he or she had the mental state (such as premeditation) required for the offense. There are two approaches to offering proof to counter the

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Tennessee law, however, an expert may not testify that a criminal accused was sane or insane. *Tenn. Code Ann. § 39-11-501* (2003). *See below § 7.04[4]*.

[30] *State v. Sparks, 891 S.W.2d 607 (Tenn. 1995)*. *See also State v. Holder, 15 S.W.3d 905, 912 (Tenn. Crim. App. 1999)*.

[31] *State v. Holder, 15 S.W.3d 905, 912 (Tenn. Crim. App. 1999)*.

[32] ***Edwards v. State, 540 S.W.2d 641 (Tenn. 1976)***, *cert. denied*, ***429 U.S. 1061 (1977)***; *Norton v. Moore, 40 Tenn. 480 (1859)*; *Gibson v. Gibson, 17 Tenn. 329 (1836)*. Some older, pre-rules Tennessee decisions softened the foundation needed for a lay witness testifying about insanity. In *Humphreys v. State, 531 S.W.2d 127, 135 (Tenn. Crim. App. 1975)*, *citing Davis v. State, 161 Tenn. 23, 36–38, 28 S.W.2d 993, 997 (1930)*, the court held that "a nonexpert witness can testify to the sanity of another without setting out the facts upon which his opinion rested" because such an opinion is the culmination of observing an entire course of conduct. But still lay opinion as to insanity requires a factual foundation. *Id.*

[33] *State v. Sparks, 891 S.W.2d 607, 614 (Tenn. 1995)*.

[34] *Id.*

[35] *Id.*

[36] *See above § 7.01[5][b]*, *below § 7.04[4]*.

mental state: diminished responsibility (or capacity) and proof negating the existence of the *mens rea*. Expert testimony may be offered under either approach.[37]

In *State v. Hatcher*,[38] the Tennessee Supreme Court clearly delineated the two theories. Diminished responsibility is applicable only if the accused can establish that a "*mental disease or defect* … affected his or her *capacity* to form the requisite mental state."[39] The defendant in *Hatcher* argued his fear of his brother prevented the defendant from having premeditation needed for first degree murder. The Tennessee Supreme Court held that the defendant was not entitled to a jury instruction on diminished capacity because his fear did not constitute a mental disease or defect. However, the evidence was admissible to negate the culpable mental state needed for the charged offense.[40]

Under either theory, if expert testimony is used it must satisfy both the ordinary standards of relevance plus those regulating expert testimony.[40.1] In *State v. Maraschiello*,[41] the criminal accused sought to have a nurse testify in general about the problems of Gulf War Veterans. Although the accused was such a veteran, the nurse-witness could not testify that the defendant actually suffered from Gulf War Syndrome. The Tennessee Court of Criminal Appeals upheld the exclusion of the testimony because the witness could not relate her expertise to the particular facts of the case. Moreover, she did not opine how Gulf War Syndrome would affect the defendant's capacity to form the requisite mental state. Her testimony was struck as being irrelevant.

[d] Waiver of Rights

In assessing whether a waiver of constitutional rights was knowingly and intelligently executed, the state may satisfy its burden of proving a valid waiver without reliance on expert testimony, even if the defendant offers expert testimony to the effect that the defendant was not competent to make a knowing and intelligent waiver.[42] The state's burden is simply to prove a waiver by a preponderance of the evidence, not by the more rigorous standard of beyond a reasonable doubt. This can be accomplished by lay testimony as to the defendant's appearance and actions at the time of the waiver.

[e] Will Contest

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[37] State v. Hall, 958 S.W.2d 679 (Tenn. 1997); State v. Phipps, 883 S.W.2d 138 (Tenn. Crim. App. 1994); State v. Vaughn, 279 S.W.3d 584 (Tenn. Crim. App. 2008) (expert testimony admissible on whether voluntary intoxication negated the defendant's premeditation and intent to kill); State v. Ferrell, 277 S.W.3d 372 (Tenn. 2009) (expert testimony on whether defendant escaped from jail recklessly, knowingly, or intentionally; error to disallow expert testimony); State v. Scott, 275 S.W.3d 395 (Tenn. 2009) (expert testimony permitted by physician that defendant lacked criminal intent for various sexual crimes because defendant committed them while experiencing sleep parasomnia, causing him to sleep through the crimes).

[38] State v. Hatcher, 310 S.W.3d 788 (Tenn. 2010).

[39] *Id.* (emphasis in original).

[40] Id. at 807 n. 10 (*citing* State v. Hall, 958 S.W.2d 679, 690 (Tenn. 1997)).

[40.1] *See, e.g.,* State v. Lawson, 2015 Tenn. Crim. App. LEXIS 836 (Tenn. Crim. App. 2015) (in defendant's murder trial, trial court properly excluded doctor's expert testimony for irrelevancy because, although defendant suffered from significant and serious mental illnesses, the testimony was not offered to show that defendant lacked the capacity to form the requisite intent because of a mental disease or defect; the doctor could only state that he believed defendant was "very significantly impaired" at the time of the homicides, an could not say that the defendant was "unable to premeditate").

[41] 88 S.W.3d 586, 607 (Tenn. Crim. App. 2000).

[42] State v. Bush, 942 S.W.2d 489, 500 (Tenn. 1997) (waiver of *Miranda* rights).

In a will contest, the testator's soundness of mind at the moment of execution of the will is a critical issue and one that would, in many cases, be impossible to prove by expert testimony after the testator's death. Tennessee law has traditionally permitted the lay witness to opine as to the testator's soundness of mind if the opinion is based on reliable facts, "such as details of conversations, appearances, conduct, or other particular facts from which the state of mind" can be evaluated.[43]

[f] Mental Harm in Tort Action

Tennessee recognizes various tort actions for the infliction of mental harms. For a tort involving the *negligent* infliction of emotional distress, under Tennessee law the plaintiff must present expert medical or scientific proof of damages.[44] This requirement is designed to assist in limiting frivolous litigation. The opposite approach is taken for the tort of *intentional* infliction of mental distress, where "plaintiffs normally will not be required to support their claims of serious mental injury by expert proof."[45] The plaintiff in an intentional infliction case may rely on his or her own testimony, that of other lay witnesses acquainted with the claimant, physical manifestations of emotional distress (such as nightmares, insomnia, and depression), the seeking of psychiatric treatment, and expert testimony.[46]

[6] Physical Condition; Intoxication

Lay testimony regarding physical condition is admissible under Tennessee law if a sufficient factual foundation is laid.[47] If the conclusion as to physical condition requires skill or medical expertise, a lay opinion is excluded and expert testimony is required.[47.1] For example, a plaintiff's mother should not have been permitted to testify that the plaintiff had suffered a fractured skull, a condition diagnosed and reported to the witness by a treating physician and, therefore, hearsay.[48] By way of contrast, a daughter was permitted to describe her mother's physical condition, and a lay witness in general may testify that another person is physically impaired.[49] Another case allowed a police officer, testifying as a lay witness, to state that a mark on an assault victim's neck was of recent vintage.[50] The court held that the officer's experience as a mother was an important factor in making the

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[43] *In re Estate of Elam, 738 S.W.2d 169, 172 (Tenn. 1987)*; *Bills v. Lindsay, 909 S.W.2d 434, 439 (Tenn. Ct. App. 1993)* (in will contest, having detailed the conversation, appearance, conduct, or other particular fact from which the testator's state of mind may be judged, nonexpert witnesses may state their conclusion or opinion about the testator's soundness of mind, but the opinion is not evidence).

[44] *Camper v. Minor, 915 S.W.2d 437, 446 (Tenn. 1996)*.

[45] *Miller v. Willbanks, 8 S.W.3d 607, 615 (Tenn. 1999)*.

[46] *Id.*

[47] *See American Surety Co. v. Kizer, 212 Tenn. 328, 369 S.W.2d 736 (1963)*; *Norton v. Moore, 40 Tenn. 480, 483 (1859)*.

[47.1] *See, e.g., Sampson v. Wellmont Health Sys., 228 S.W.3d 124 (Tenn. Ct. App. 2007)* (appellate court could not consider a patient's affidavit with respect to her assertions regarding the effects of the medications she was taking, or her belief that the medications caused confusion during her deposition regarding the dates and substance of conversations, because the patient, as a lay person, was not competent to offer an opinion about the effects of medications).

[48] *See Gardner v. Burke, 28 Tenn. App. 119, 187 S.W.2d 25 (1944)*.

[49] *See State v. Boggs, 932 S.W.2d 467, 474 (Tenn. Crim. App. 1996)*.

[50] *State v. Samuel, 243 S.W.3d 592 (Tenn. Crim. App. 2007)*.

recentness of the mark a matter of common knowledge. Tennessee courts have allowed lay opinions relating to many other types of injuries.[50.1]

Another illustration is a medical malpractice case where the plaintiff-patient, a lay witness, was permitted to testify which medicines she was taking, but was barred from relaying the effect of the medications on her perception, understanding, and mental abilities, which should have been presented by expert testimony.[51]

Lay testimony is also admissible on proximate cause in negligent food contamination cases.[52]

The lay witness typically may testify that an individual was "drunk" or intoxicated. Existing case law recognizes that this is a condition that the ordinary individual is capable of evaluating and incapable of describing without expressing an opinion.[53] But a lay witness may not testify that the blood alcohol content was rising at the time blood was withdrawn.[54]

A few Tennessee cases have permitted a lay witness to testify as to the cause of death.[55] Although the parameters of lay opinion on this issue are not clear, a lay witness should not be permitted to testify about anything more than the most obvious causes of death. Anything remotely subtle about the cause of death should be established by an expert.[56] In a related area, a lay witness has been permitted to testify that a certain substance appeared to be blood.[57]

In Tennessee workers' compensation cases, vocational disability is an issue. The extent of any such disability can be established by lay testimony.[58] Of course, expert testimony on this issue is also permissible.

[7] Value

It is well established in Tennessee law that lay opinion testimony regarding the value of the witness's own real or personal property or services is admissible.[59] Lay testimony may also be admissible on lost profits and wages.[60]

[50.1] *See, e.g.,* State v. Bishop, 2016 Tenn. Crim. App. LEXIS 939 (Tenn. Crim. App. 2016) (officer's lay opinion that bruises appeared to be handprints); State v. Thomas Fancher Greenwood, 2014 Tenn. Crim. App. LEXIS 1060 (Tenn. Crim. App. 2014) (pediatrician's lay opinion that bruises on a child looked like finger and shoe prints; the court noted that such testimony was admissible "[b]ecause a lay witness could have offered the same opinions without error"); State v. Jeffrey Scott, Tenn. Crim. App. LEXIS 446 (Tenn. Crim. App. 2011) (lay opinion that injury looked like a shoe print).

[51] Sampson v. Wellmont Health System, 228 S.W.3d 124, 137 (Tenn. Ct. App. 2007).

[52] *See* McCarley v. West Quality Food Service, 948 S.W.2d 477, 479 (Tenn. 1997) (in case involving allegedly contaminated food served by a restaurant, plaintiff need not rely solely on expert testimony on issue of cause of food poisoning).

[53] *See* McCandless v. Oak Constr., Inc., 546 S.W.2d 592, 598 (Tenn. Ct. App. 1976) (lay witness competent to testify another person was intoxicated); Daniels v. State, 155 Tenn. 549, 553, 296 S.W. 20, 22 (1927) (lay witness may testify that person was "drunk" or sober). *See* Kirksey v. Overton Pub, Inc., 804 S.W.2d 68, 75 (Tenn. Ct. App. 1990) (lay witness may give opinion testimony whether person was intoxicated or drunk).

[54] State v. Greenwood, 115 S.W.3d 527, 530 (Tenn. Crim. App. 2003).

[55] *See, e.g.*, Owens v. State, 202 Tenn. 679, 308 S.W.2d 423 (1957); State v. Bragan, 920 S.W.2d 227, 245 (Tenn. Crim. App. 1995) (witness does not have to be an expert to testify as to cause of death; dictum). *See below* § 7.02[17].

[56] *See* Franklin v. State, 180 Tenn. 41, 171 S.W.2d 281 (1943) (nonexpert may testify as to cause of death unless it is apparent that expert knowledge is necessary to form an intelligent opinion). *See* Tenn. R. Evid. 702.

[57] *See, e.g.*, State v. Mabon, 648 S.W.2d 271 (Tenn. Crim. App. 1982); Schweizer v. State, 217 Tenn. 569, 399 S.W.2d 743 (1966). *See below* § 7.02[19].

[58] Perkins v. Enterprise Truck Lines, Inc., 896 S.W.2d 123, 127 (Tenn. 1995); Hinson v. Wal-Mart Stores, Inc., 654 S.W.2d 675 (Tenn. 1983).

Owner's Testimony. Rule 701(b) clearly and simply states that a witness may testify about the value of the witness's own property or services,[60.1] although it makes no provision for similar testimony by a non-owner, even if an extensive factual foundation is laid. For example, Rule 701(b) does not appear to permit the lay witness who is extensively familiar with a parcel of real estate or an item of property owned by someone else to express an opinion as to its value.[61] However, a conservator of an absent or deceased party's property is considered to "stand in the shoes" of the absent or deceased party and may testify about the value of the property.[62]

The Tennessee Court of Criminal Appeals has somewhat softened the definition of "owner" by permitting a husband to use Rule 701 to admit his testimony concerning the value of a car registered in his wife's name.[63] The court noted that the car was the couple's joint marital property and the husband was intimately familiar with the vehicle.

An owner's opinion as to value is not rendered inadmissible simply because it is an estimate, rather than a precisely computed figure.[64] The owner's evaluation is not conclusive proof. It is to be given appropriate weight considering the circumstances of the case.[64.1] Of course, any bias the owner has may be explored through

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[59] *See, e.g.*, State *ex rel. Smith v. Livingston Limestone Co., 547 S.W.2d 942 (Tenn. 1977)* (mere ownership qualifies a witness to testify about value; the managing officer of a corporation is qualified to give opinion testimony regarding the value of corporate property); *Adams v. Duncan Transfer & Storage of Morristown, 757 S.W.2d 336, 339 (Tenn. Ct. App. 1988)*; *Clift v. Fulton Fire Ins. Co., 315 S.W.2d 9 (Tenn. Ct. App. 1958)*; *Murray v. Grissim, 290 S.W.2d 888 (Tenn. Ct. App. 1956)*; *Airline Constr., Inc. v. Barr, 807 S.W.2d 247, 254 (Tenn. Ct. App. 1990)* (owner of property may testify as to value of the property; owner's expertise is factor in weight to be given owner's evaluation); *Maddux v. Cargill, Inc., 777 S.W.2d 687, 693 (Tenn. Ct. App. 1989)* (*generally*, a person may testify as to value of personal property, even if the person is not an expert on the subject; farmer permitted to testify about value of corn he received from defendant); *Reid v. State, 9 S.W.3d 788, 795 (Tenn. Ct. App. 1999)* (prisoner, as owner of lost radio, is competent to testify about value of the radio); *Whitelaw v. Brooks, 138 S.W.3d 890, 893 (Tenn. Ct. App. 2003)* (owner of real property is competent to state facts about the property and to give opinion about value of the property).

[60] *See* *Waggoner Motors, Inc. v. Waverly Church of Christ, 159 S.W.3d 42, 60 n. 32 (Tenn. Ct. App. 2004)* (in many circumstances, lost profits may be established without presenting expert testimony).

[60.1] *Delta Gypsum, LLC v. Felgemacher, 2017 Tenn. App. LEXIS 261 (Tenn. Ct. App. 2017)* (defendant could testify that the value of his business was its goodwill, introducing into evidence a page from a business tax return showing the book value of goodwill as $12,000); *State v. Williams, 2016 Tenn. Crim. App. LEXIS 745 (Tenn. Crim. App. 2016)* (victim of theft could testify as to value of items stolen by defendant).

[61] This is consistent with existing law. *See* *Baker v. Nationwide Mut. Fire Ins. Co., 646 S.W.2d 440, 443 (Tenn. Ct. App. 1982)*, in which an insurance adjuster's testimony and exhibit regarding the value, after depreciation, of plaintiff's personal property was excluded because the witness was neither the owner of the personalty nor an expert in the field of depreciation and valuation of personal property.

[62] *See* *Levine v. March, 266 S.W.3d 426, 440 n. 15 (Tenn. Ct. App. 2007)*.

[63] *State v. Holt, 965 S.W.2d 496 (Tenn. Crim. App. 1997)*.

[64] *Adams v. Duncan Transfer & Storage of Morristown, 757 S.W.2d 336, 339 (Tenn. Ct. App. 1988)*.

[64.1] *See* *Parker v. Parker, ___ S.W.3d ___, 2019 Tenn. App. LEXIS 173 (Tenn. Ct. App. 2019)* (where wife testified the value of the camper $20,000 and husband testified the camper did not have "much value" and "you can't get nothing for them," but no Kelly Blue Book amount was entered into evidence, trial court properly valued camper at $14,612; the value assigned was within the range of the values presented by the husband and wife, and when the parties present conflicting evidence of a property's value, the trial court may place a value on the property that is within the range of the values presented); *State v. Sears, 2018 Tenn. Crim. App. LEXIS 686 (Tenn. Crim. App. 2018)* (owners of real estate testified as to their observations of the neighborhoods properties were located in, the size of the residences and the lots, renovations that had been made to each property, and their opinion that the value of each property was higher than the real estate experts' appraisals; appellate court ruled testimony was admissible under Rule 701(a)(2), since it was helpful to the jury's determination of the value of the stolen property and the jury could compare owners' testimony with the appraisal testimony of the parties' real estate experts to

impeachment and will be a factor in assessing the weight to be accorded the owner's testimony. An owner's testimony based on pure speculation will be given little or no weight.[65] Similarly, when the owner's testimony is based solely on a third-party's statement, the testimony may be challenged as inadmissible hearsay.[65.1]

Expert Testimony. A qualified expert may also testify about the value of property.[66] A property assessor's appraisal is admissible as to the value of the property in cases where a governmental entity accidentally or negligently causes substantial property damage.[67] The property owner must have had no prior knowledge that the damages would occur and must have no reasonably current appraisal preexisting the date of the property damage.

Bailee. Neither the language of Tennessee Rule 701 nor the Advisory Commission Comment addresses the question of valuation testimony by a bailee of property who is not an expert on valuation. Prior to the enactment of the Tennessee Rules of Evidence, the bailee, as opposed to the owner, was permitted to give a lay opinion regarding the property's value in the situation where property was stolen from the bailee.[68] However, since the implementation of Tennessee Rule 701, this is apparently no longer appropriate; only the "owner" or a valuation expert will be permitted to give valuation testimony.[69]

It should be noted that Tennessee Rule 701 specifically addresses testimony regarding the witness's opinion of the value of his or her own property or services. No such language is present in the federal rule, although federal case law provides for essentially the same result.[70]

[8] Experiments

On occasion a lay witness has been permitted to perform an experiment and then testify about the results. Tennessee case law indicates that appropriately conducted experiments are competent, favored evidence.[71]

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determine which testimony was most credible); *State v. Williams, 2016 Tenn. Crim. App. LEXIS 745 (Tenn. Crim. App. 2016)* (where defendant stole victim's wallet from her handbag, and victim testified that the wallet contained $900 in cash and that the wallet itself was worth $160, jury could properly accredit the victim's valuation of the property in finding defendant guilty of theft of property worth more than $1000 but less than $10,000).

[65] *Airline Constr., Inc. v. Barr, 807 S.W.2d 247, 256 (Tenn. Ct. App. 1990)* (owner's opinion as to damages was based on pure speculation and was insufficient to provide a reasonable or rational basis for the award of damages; trial court should have given no weight to owner's testimony about the value of harm to the owner's property).

[65.1] *See, e.g.*, *State v. Hurt, 2020 Tenn. Crim. App. LEXIS 213 (Tenn. Crim. App. Apr. 1, 2020)* (where vandalism victim testified that the cost of repairs to his vehicle was $8,700, but relied on what the insurance company told him; because the victim merely repeated what someone else said the cost of the repairs were, without having first-hand knowledge of the information, his testimony was inadmissible hearsay and could not be admitted under Rule 701); *State v. Pilgram, 2005 Tenn. Crim. App. LEXIS 1338 (Tenn. Crim. App. Mar. 14, 2005)* (although an owner may give an opinion as to the property's diminution in value under Rule 701, the assessment must be based on personal knowledge, not hearsay; thus, where the plaintiff estimated her vehicle's value based on several repair estimates she was given, the testimony was inadmissible to prove the value of the vehicle).

[66] *See, e.g.,* *State v. Fritts, 626 S.W.2d 713 (Tenn. Crim. App. 1981)* (expert may testify about fair market value); State *ex rel. Commissioner v. Williams, 828 S.W.2d 397 (Tenn. Ct. App. 1991)* (experts may testify about the value of land; the factors an expert may consider include the potential for commercial use and present zoning rules).

[67] *Tenn. Code Ann. § 29-16-201*.

[68] *Norris v. State, 475 S.W.2d 553 (Tenn. Crim. App. 1971)*.

[69] *State v. Bridgeforth, 836 S.W.2d 591 (Tenn. Crim. App. 1992)*.

[70] *See, e.g.*, *Robinson v. Watts Detective Agency, 685 F.2d 729 (1st Cir. 1982)*, *cert. denied*, ***459 U.S. 1105, 1204 (1983)***; *Justice v. Pennzoil Co., 598 F.2d 1339 (4th Cir. 1979)*, *cert. denied*, ***444 U.S. 967 (1979)***.

[71] *Harwell v. Walton, 820 S.W.2d 116, 118 (Tenn. Ct. App. 1991)*.

The rules for assessing the admissibility of an experiment are the same whether the experiment is conducted in or out of court.[72] In general terms, to be relevant the experiment must be made under conditions or circumstances substantially similar to those existing at the time of the event involved in the trial.[73] Minor variations in the facts affect the weight but not admissibility of the experiment.

A good illustration is *State v. Robertson*[74] where a lay witness, who was a TBI agent, was permitted to testify about an experiment he conducted at the house of the homicide victim. To ascertain whether cooked beans on the victim's stove were in a condition consistent with having been cooked for seventeen hours (hence supporting his theory of the time of death), the witness cooked beans on the same stove for seventeen hours. The results confirmed that the experimentally cooked beans were in the same condition as those found at the victim's house. The court also found that the experiment was within the capacity of a lay witness; no expert qualifications were necessary.

[9] Miscellaneous Topics

Lay opinion testimony has also been offered on many other topics. Illustrations include cause of a slip-and-fall injury,[75] cause for an insurer's cancellation of insurance policies,[76] speed of an automobile,[77] practice of

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[72] *See* State v. Robertson, 130 S.W.3d 842, 855 (Tenn. Crim. App. 2003).

[73] *See* State v. Robertson, 130 S.W.3d 842, 855 (Tenn. Crim. App. 2003).

[74] 130 S.W.3d 842, 855 (Tenn. Crim. App. 2003). *See also* Harwell v. Walton, 820 S.W.2d 116, 118 (Tenn. Ct. App. 1991) (maximum speed of car between two streets); Luckey v. Gowan, 46 Tenn. App. 392, 330 S.W.2d 45 (1959) (admitting defendant's experiment conducted at scene of accident using a car approximately the same as that of plaintiff); Byers v. Nashville C. and St. L. Ry. Co., 94 Tenn. 345, 29 S.W. 128 (1895) (permitting experiment involving time it would take to stop a train); Fisher v. Traveler's Ins. Co., 124 Tenn. 4550, 138 S.W. 316 (1911) (excluding experiment by handwriting expert who duplicated a signature while testifying; experiment irrelevant because not probative on issue whether a less skilled person could make a similar imitation).

[75] *See* Scheerer v. Hardee's Food Sys., 148 F.3d 1036 (8th Cir. 1998), *cert. denied*, ***525 U.S. 1105 (1999)*** (slippery shoes).

[76] Agro Air Assocs. v. Houston Cas. Co., 128 F.3d 1452 (11th Cir. 1997) (insurance executive and brokers testified as lay witnesses about reasons for termination of insurance and increase in insurance rates).

[77] *See, e.g.*, Gust v. Jones, 162 F.3d 587 (10th Cir. 1998); Kim v. Boucher, 55 S.W.3d 551, 556 (Tenn. Ct. App. 2001) (14 year-old auto accident eyewitness, who had no driver's license, is competent to testify about speed of plaintiff's car at time of collision; witness's age and lack of license affect weight not admissibility of his testimony).

encouraging brutality,[78] age,[79] identification of handwriting,[80] and identification of a person.[81] There are many other examples.[82]

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[78] *Samples v. City of Atlanta, 846 F.2d 1328 (11th Cir. 1988)*.

[79] *See, e.g.*, *United States v. Yazzie, 976 F.2d 1252 (9th Cir. 1992)*.

[80] *See, e.g.*, *United States v. Barker, 735 F.2d 1280 (11th Cir. 1984)*. *See* *Tenn. R. Evid. 901(2)* (authentication of handwriting by nonexpert).

[81] *See, e.g.*, *United States v. Ellis, 121 F.3d 908 (4th Cir. 1997)* (identification of person from photo by shape of the body).

[82] *See, e.g.*, *State v. Sweeney, 2018 Tenn. Crim. App. LEXIS 232, *24–25 (Tenn. Crim. App. Mar. 29, 2018)* (officer's testimony about the victim's condition was admissible under Rule 701; the court also cited other examples of lay witness testimony held admissible in Tennessee); *State v. Santelli, 2016 Tenn. Crim. App. LEXIS 445 (Tenn. Crim. App. 2016)* (police officer's opinion that defendant was unsafe to drive was rationally based on his observations and was helpful to a determination of a fact in issue—namely, whether defendant was driving under the influence of an intoxicant that impaired his ability to safely operate a motor vehicle); *State v. Dooley, 29 S.W.3d 542 (Tenn. Crim. App. 2000)* (lay witness permitted to testify that person she observed "begged for his life"); *State v. Davidson, 121 S.W.3d 600 (Tenn. 2003)* (lay witness allowed to give her opinion that, while defendant was a customer in the bar where she worked, lay witness felt "wary," had a "gut feeling" or a "bad feeling" and was "frightened"; these statements were not opinions but were statements of her state of mind relevant to explain her reasons for examining defendant's truck; also any opinions she gave were rationally based on her perceptions and were helpful to the jury in understanding why the witness acted as she did when defendant was in the bar).

§ 7.02 Rule 702. Testimony by Experts

[1] Text of Rule

Rule 702 Testimony by Experts

If scientific, technical, or other specialized knowledge will substantially assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise.

2001 Advisory Commission Comment:

The *Frye* test no longer exists in Tennessee. In *McDaniel v. CSX Transportation, Inc., 955 S.W.2d 257 (1997)*, the Tennessee Supreme Court listed five nonexclusive factors taken from the federal case of *Daubert v. Merrell Dow Pharmaceuticals, 509 S.W.2d 579 (1993)*:

(1)

whether scientific evidence has been tested and the methodology with which it has been tested;

(2)

whether the evidence has been subjected to peer review or publication;

(3)

whether a potential rate of error is known;

(4)

whether, as formerly required by *Frye,* the evidence is generally accepted in the scientific community; and

(5)

whether the expert's research in the field has been conducted independent of litigation.

[2] Admissibility of Expert Testimony; Substantial Assistance

Tennessee law, like that of every American jurisdiction, accepts expert testimony in many situations.[83] In general terms, the trial judge is the "gatekeeper" who decides whether experts should be permitted to testify.[84]

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[83] *See generally* DAVID KAYE, DAVID BERNSTEIN, AND JENNIFER MNOOKIN, THE NEW WIGMORE: A TREATISE ON EVIDENCE, EXPERT EVIDENCE (2d ed. 2011).

[84] *Johnson v. John Hancock Funds, 217 S.W.3d 414, 425 (Tenn. Ct. App. 2006)*. *See also* *Littleton v. TIS Ins. Servs., 2019 Tenn. App. LEXIS 13 (Tenn. Ct. App. 2019)* (while a trial court's role as a gatekeeper with regard to the admissibility of expert

Types of Expert Witnesses. Expert witnesses generally fall into three categories: (1) those who are fact witnesses, such as a treating physician who observed the plaintiff's injury and can testify about the observations; (2) the fact witness who also has opinion testimony, such as the treating physician who projects necessary future treatment and permanent disability;[84.1] and (3) the expert who has no personal knowledge of the facts, but has an opinion regarding a technical aspect of the issues or can essentially "teach" jurors about general principles in the expert's field so that jurors are better able to understand the issues and testimony.[84.2]

Opinion Testimony. Unlike the typical lay witness who traditionally has been virtually limited to relating facts and observations, the expert witness has been permitted to testify in the form of an opinion if certain requirements are met. However, expert opinion testimony is not admissible simply because a party or an attorney has located a qualified expert and seeks to have the expert testify. The expert witness may be barred for a party's failure to follow various procedural rules.[85]

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testimony is critical, it is not unconstrained, and a trial court abuses its discretion when it excludes testimony that meets the requirements of *Tenn. R. Evid. 702* and *703*); *Breen v. Sharp, 2017 Tenn. App. LEXIS 742 (Tenn. Ct. App. 2017)* (it is the trial court's responsibility to determine that a witness qualifies as an expert and that the expert's testimony is reliable; the objective of the trial court's gatekeeping function is to ensure that "an 'expert', whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field"); *Benson v. S. Elec. Corp., 2016 Tenn. LEXIS 917 (Tenn. 2016)* (trial courts act as gatekeepers when it comes to the admissibility of expert testimony); *State v. Lowe, 2016 Tenn. Crim. App. LEXIS 497 (Tenn. Crim. App. 2016)* (trial court's gatekeeping function is meant to ensure that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field); *Jacobs v. Nashville Ear, Nose, and Throat, 338 S.W.3d 466, 479 (Tenn. Ct. App. 2010)* (trial courts act as gatekeepers with regard to expert testimony; court should not weigh or choose between two conflicting, legitimate scientific opinions, but should assure itself that the opinions are based on relevant scientific methods, processes, and data, and not upon an expert's mere speculation). The Tennessee Supreme Court has also explained that the essential role of the judge, as the neutral arbiter in the trial, is to govern the admission of the evidence within the rules, permitting only that expert testimony which substantially assists the jury in its consideration of the issue. *State v. Copeland, 226 S.W.3d 287 (Tenn. 2007)*.

[84.1] Courts generally favor the medical testimony of treating physicians, where relevant. *See, e.g., Benson v. S. Elec. Corp., 2016 Tenn. LEXIS 917 (Tenn. 2016)* (trial courts have long accepted opinions from treating providers to assess causation, permanence, and impairment, and the Tennessee Supreme Court has chosen to give greater weight to the opinions of treating physicians, based on the facts of specific cases); *Orman v. Williams Sonoma, Inc., 803 S.W.2d 672, 677 (Tenn. 1991)* (it is reasonable for the trial court to infer that "physicians having greater contact with the plaintiff would have the advantage and opportunity to provide a more in-depth opinion, if not a more accurate one").

[84.2] *See, e.g., State v. Gonzalez-Fonesca, 2016 Tenn. Crim. App. LEXIS 526 (Tenn. Crim. App. 2016)* (where state was required to prove that defendant knowingly possessed heroin for sale or delivery, officer's testimony concerning the heroin trade "certainly informed the jury's determination" of whether defendant possessed the heroin for sale or delivery).

[85] *See, e.g.*, *Tenn. R. Crim. P. 12.2(d)* (expert may be barred from testifying if a criminal defendant fails to give required notice of intent to use expert testimony, or fails to submit to court ordered mental examination); *Tenn. R. Crim. P. 16(d)(2)* (court may prohibit party from introducing evidence of expert examination if it fails to follow discovery rules); *TENN. R. CIV. P. 26.05* (a "party is under a duty seasonably to supplement the party's response with respect to any question directly addressed to … the identity of each person expected to be called as an expert witness at trial, the subject matter on which the person is expected to testify, and the substance of that testimony"); *TENN R. CIV. P. 37.03* (a party is not permitted to use as evidence at trial any witness or information not disclosed in accordance with *Tenn. R. Civ. P. 26.05*). *See also Lewis v. Brooks, 66 S.W.3d 883, 886 (Tenn. Ct. App. 2001)* (expert testimony may be barred for failure to list identity of expert pursuant to *Tenn. R. Civ. P. 26.05*); *Nelson v. Justice, 2019 Tenn. App. LEXIS 35 (Ct. App. 2019)* (a trial court's decision to impose sanctions under Tenn. R. Civ. P. 37 is reviewed for an abuse of discretion; if reasonable minds could disagree as to the soundness of a discretionary decision, the appellate court will ordinarily permit the decision to stand); *Mayo v. Shine, 392 S.W.3d 61 (Tenn. Ct. App. 2012)* (expert witness was not properly disclosed as an expert on the standard of nursing care and whether the hospital's nurses complied with that standard of care, because the hospital's adopted expert disclosures did not state that the expert was expected to offer any opinion with regard to the nursing standard of care and whether the hospital's nurses complied with that standard of care; because the issue was not properly preserved, however, the court did not reach the issue of whether the failure constituted reversible error).

In addition, the expert witness must satisfy the rules of evidence. Under Rule 702, the threshold question for determining whether the opinion testimony of an expert witness is admissible is whether such a witness's testimony "will substantially assist the trier of fact to understand the evidence or to determine a fact in issue."[85.1] This evidentiary standard allows courts to admit or exclude testimony based on the facts of each particular case.[85.2]

[a] Pre-Rules Tennessee Law

This language from Rule 702 demonstrates a significant departure from Tennessee common law. Historically, Tennessee courts have required a showing that the expert's testimony is "necessary," as opposed to providing "substantial" assistance to the trier of fact, which is the requirement of the current rule. In 1952, the Tennessee Supreme Court held that in order for expert opinion testimony to be admissible, "the subject under examination must be one that requires that the court and jury have the aid of knowledge or experience such as men not specially skilled do not have, and such therefore as cannot be obtained from ordinary witnesses."[86] An obvious illustration of this principle is a medical malpractice case where experts will testify about the standard of care, deviation from that standard, and proximate cause.[87] Another illustration is a tort action for the negligent infliction of emotional distress where expert medical or scientific proof is necessary to prove serious mental injury.[88]

[b] Compared with Federal Approach

Under Rule 702, the necessity requirement has been replaced with a more lenient "substantially assist" standard. It is interesting to note that the relaxed Tennessee standard is similar to, but apparently stricter than, the comparable federal rule. Under Federal Rule 702, evidence must merely "assist the trier of fact," rather than "substantially" assist in the understanding of evidence. The addition of the word "substantially" in the Tennessee rule demonstrates an intent to implement a more stringent standard than is contained in the federal rule. This means that expert testimony that would have been admitted in a federal court will be

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[85.1] *See, e.g.*, State v. Burton, Tenn. Crim. App. LEXIS 425 (Tenn. Crim. App. 2016) (although error was ultimately harmless, trial court should have excluded doctor's expert testimony as to the ultimate issue in case, because the jury could have readily drawn its own conclusion about whether defendant's conduct constituted neglect without the expert's opinion and, therefore, the evidence was not the kind that would have "substantially assisted" the jury; moreover, admission of the testimony created a risk of jury confusion and a temptation for the jury to disproportionately rely on the expert's opinion).

[85.2] *See, e.g.,* *State v. Crawford, 2017 Tenn. Crim. App. LEXIS 791 (Tenn. Crim. App. 2017)* (where there was no evidence that defendant's statements to police had been coerced, trial court properly concluded that evidence relating to defendant's susceptibility to coercion would not substantially assist the trier of fact; defense expert's testimony on the issue was properly excluded); *Benson v. S. Elec. Corp., 2016 Tenn. LEXIS 917 (Tenn. 2016)* (where defendant's expert testified that "it's never credible for a treating psychologist to become involved in forensic issues for someone they are treating," and relied on relevant AMA Guidelines stating that physicians "should avoid serving as an expert witness or IME examiner for legal purposes on behalf of their patients" due to its "detrimental effect on the therapeutic relationship" and potential for bias, the court held that it would be impractical to automatically bar expert evidence based on a general conclusion set forth in a professional treatise; additionaly, the court noted that Tennessee has a long history of admitting treating physician testimony, where relevant, and that a rule barring treating-physician testimony would be particularly impractical in worker's compensation cases).

[86] *Casone v. State, 246 S.W.2d 22, 26 (Tenn. 1952)*. *See also* *Cocke Cty. Bd. of Hwy. Comm'rs v. Newport Utils. Bd., 690 S.W.2d 231, 235 (Tenn. 1985)*; *National Life Ins. Co. v. Follett, 80 S.W.2d 92, 96 (Tenn. 1935)*, *citing* *Gibson v. Gibson, 17 Tenn. 329 (1836)*.

[87] *See, e.g.*, *Jennings v. Case, 10 S.W.3d 625, 627 (Tenn. Ct. App. 1999)*. *See below* *§§ 7.02[4]*, *7.02[17]*.

[88] *Miller v. Willbanks, 8 S.W.3d 607, 614 (Tenn. 1999)*.

barred in some Tennessee cases.[89] These will be cases where expert testimony could be of some limited assistance to the trier of fact, but not sufficiently helpful to satisfy Tennessee's substantial assistance rule.

[c] Definition of "Substantial Assistance": Jurors' Knowledge Adequate

The term "substantially assist" is not defined in Rule 702. The trial court's decision will be given great weight. There are a number of interrelated dimensions. One is whether the juror's own experiences and perceptions are adequate to resolve the fact issues without input from an expert.[90] Sometimes this is characterized as invading the province of the jury.

Eyewitness Identification. This principle is illustrated by *State v. Wooden,*[91] a pre-rules case reversed by later decisions, in which the Tennessee Court of Criminal Appeals held that an expert would not be permitted to testify about the unreliability of eyewitness identification. The court noted that the jury could listen to the eyewitness's testimony on direct and cross-examination and then use its own common sense processes to determine the weight to give the eyewitness's testimony. If this case arose under Rule 702, the *Wooden* court would have reasoned that the expert's testimony was barred because it would not substantially assist the trier of fact in assessing the credibility of an eyewitness.

Another illustration is *State v. Coley*,[92] also later reversed, where the Tennessee Supreme Court held that expert testimony on eyewitness identification was not necessary to help jurors understand the eyewitness's testimony because the expert testimony had no scientific or technical underpinnings outside the common understanding of the jury. Moreover, the *Coley* Court held, expert testimony about whether the eyewitness should be believed is a determination of credibility rather than a "fact in issue." However, in *State v. McKinney*[93] the Tennessee Supreme Court left open the possibility that excluding such expert testimony

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[89] The approach taken by federal courts has changed dramatically since the United States Supreme Court decided *Daubert v. Merrell Dow Pharmaceuticals, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993)*, which abolished the *Frye* test in federal court. Federal cases following *Daubert* seem to find the determination of admissibility of expert testimony more tedious and substantially more difficult than in pre-*Daubert* cases. *See, e.g.*, *Daubert v. Merrell Dow Pharmaceuticals, 43 F.3d 1311 (9th Cir. 1995)* (*Daubert* on remand); *Glaser v. Thompson Medical Co., Inc., 32 F.3d 969 (6th Cir. 1994)*; ***Cook v. American Steamship Co., 53 F.3d 733 (6th Cir. 1995)*** (as many as three separate standards of review may be involved in determining whether decisions on admissibility of expert opinion was proper). The *Frye* test is specifically mentioned in the Advisory Commission Comment to Tennessee Rule 702, but was replaced as the Tennessee Standard in *McDaniel v. CSX Transp., Inc., 955 S.W.2d 257 (Tenn. 1997)*. *See below § 7.02[14]*.

[90] *State v. Ayers, 200 S.W.3d 618, 621 (Tenn. Crim. App. 2005)* (expert must possess a thorough knowledge that is not within the general knowledge and experience of the average person; statistical probability evidence is outside the common understanding of the jury). *See also*, *Penklor Props. LLC v. Buehler, ___S.W.3d___, 2019 Tenn. App. LEXIS 158 (Tenn. Ct. App. 2019)* (no expert testimony concerning the duty of an escrow agent was necessary, because an escrow agent's breach of fiduciary duty was easily gleaned based on deductions made and inferences drawn from ordinary knowledge, common sense, and practical experience gained in the ordinary affairs of life); State v. Burton, Tenn. Crim. App. LEXIS 425 (Tenn. Crim. App. 2016) (expert testimony unnecessary regarding whether defendant's conduct constituted neglect, since jury could determine issue without the expert's opinion); *Usher v. Charles Blalock & Sons, 339 S.W.3d 45, 61 (Tenn. Ct. App. 2010)* (availability of expert testimony does not mean an expert witness must be used; expert testimony is necessary only when the subject of examination requires knowledge or experience that persons lacking special skills do not have and that cannot be obtained from ordinary witnesses; if finder of fact can comprehend the subject of expertise without expert testimony, then expert witness is not necessary, *quoting* *Miller v. Willbanks, 8 S.W.3d 607 (Tenn. 1999))*.

[91] *658 S.W.2d 553 (Tenn. Crim. App. 1983)*. *See also* *State v. Bragan, 920 S.W.2d 227, 245 (Tenn. Crim. App. 1995)* (forensic pathologist's "ideas" about cause of death do not rise to level of evidence and would not have substantially assisted the jury in assessing cause of death).

[92] *32 S.W.3d 831 (Tenn. 2000)*. *See also* *State v. McKinney, 74 S.W.3d 291 (Tenn. 2002)* (following *Coley* in holding that expert testimony regarding eyewitness identification is *per se* inadmissible in Tennessee).

[93] *74 S.W.3d 291 (Tenn. 2002)*.

could violate due process right to a fair trial if the excluded evidence was critical to the defense, was sufficiently reliable for admission, and if the interest supporting exclusion of the evidence was substantially important.[94]

The issue of expert testimony on eyewitness identification was resolved in *State v. Copeland*,[95] where the Tennessee Supreme Court reversed *Coley* and held that expert testimony on the reliability of eyewitness identification could be admitted if it otherwise satisfied the standards for expert witnesses. The Court specifically noted the significant amount of research on the topic and concluded that in some situations the expert testimony would be reliable and would substantially assist the trier of fact in evaluating eyewitness evidence.

In another pre-rules Tennessee decision, a clinical psychologist was not permitted to testify about child sexual abuse syndrome.[96] The court held that the testimony invaded the province of the jury by providing evidence on credibility. Moreover, the court found that the jury did not need to hear the psychologist's testimony since the jury was well qualified to determine the issue without expert testimony on this issue.[97] The Tennessee Supreme Court later took the same approach in another case involving sexual abuse of a child, finding the expert's testimony regarding post-traumatic stress syndrome to carry a high risk of prejudice to the defendant and not enough reliability to substantially assist the trier of fact. The expert opinion evidence was inadmissible.[98] It was also inadmissible in a case involving an *adult* defendant who sought to introduce expert testimony that he suffered from post-traumatic stress disorder because he was the victim of a rape rather than the rapist.[99]

A related case involved an expert prepared to testify that a criminal defendant, who made several harmful admissions, was particularly susceptible to suggestion. While noting that sometimes expert testimony about susceptibility to suggestion may substantially assist the trier of fact and be admissible, the trial judge's decision to exclude the testimony was held to be within the trial judge's discretion.[99.1] The Tennessee Court of Criminal Appeals reasoned that the psychologist's testimony was confusing and limited in that he would not opine about the accuracy of information provided by the defendant or state whether the defendant was more or less likely than the average person to provide inaccurate information.

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[94] *Id. at 302* (defendant failed to make offer of proof to preserve issue for appellate review).

[95] *State v. Copeland, 226 S.W.3d 287 (Tenn. 2007)*. *Copeland* is not retroactive. *Thomas v. State, 298 S.W.3d 610, 616 (Tenn. Crim. App. 2009)*. See generally Tanja Rapus Benton *et al.*, *On the Admissibility of Expert Testimony on Eyewitness Identification: A Legal and Scientific Evaluation*, 2 TENN. J.L. & POL'Y 392 (extensive survey of admissibility of expert testimony on eyewitness identification).

[96] *State v. Schimpf, 782 S.W.2d 186, 193–94 (Tenn. Crim. App. 1989)*. *See also State v. Ballard, 855 S.W.2d 557 (Tenn. 1993)* (expert testimony describing the behavior of a sexually abused child is not sufficiently reliable to substantially assist the trier of fact); *State v. Bolin, 922 S.W.2d 870, 874 (Tenn. 1996)* (social worker barred from testifying about one symptom in child sexual abuse syndrome: the child abuse victim's difficulty in remembering the specific dates of the abuse; following *Ballard*). *But cf. Estelle v. McGuire, 502 U.S. 62, 112 S.Ct. 475, 116 L.Ed.2d 385 (1991)* (under California law, experts may testify about battered child syndrome to prove child was not injured accidentally; this evidence is probative on the issue of intent and can be introduced without violating the United States Constitution).

[97] *Cf. State v. Dickerson, 789 S.W.2d 566 (Tenn. Crim. App. 1990)* (testimony about child abuse syndrome inadmissible; citing *Schimpf*).

[98] *State v. Ballard, 855 S.W.2d 557 (Tenn. 1993)*; *see also State v. Anderson, 880 S.W.2d 720 (Tenn. Crim. App. 1994)* (relying on *Schimpf* and *Ballard* to exclude expert testimony regarding characteristics typical of sexually abused children); *State v. Keel, 2017 Tenn. Crim. App. LEXIS 14 (Tenn. Crim. App. 2017)* (lack of reliable scientific evidence and methodology behind expert's conclusions justified the trial court's determination that the expert opinion would not "substantially assist" the trier of fact).

[99] *State v. Ashburn, 914 S.W.2d 108, 111–13 (Tenn. Crim. App. 1995)* (extensive citations to cases in other jurisdictions).

[99.1] *State v. Ackerman, 397 S.W.3d 617 (Tenn. Crim. App. 2012)*.

In another illustrative Tennessee case based on Rule 702, a psychologist was not permitted to testify that the defendant in a sexual battery case had no predisposition to commit the crime. This was viewed as not substantially assisting the jury, which heard the defendant deny the offense and the victim testify that the crime occurred.[100] By way of contrast, in another case a physician was allowed to testify about the extent and cause of a child's injuries.[101] The case was distinguished from the post-traumatic stress cases because the physician testified about the injuries she observed rather than behavior she had not observed.

This rule is further illustrated by *Howell v. State,*[102] a post-conviction proceeding where the defendant sought to call an experienced criminal defense lawyer to testify as an expert concerning effectiveness of trial counsel in the case. The Tennessee Supreme Court upheld the trial court's ruling that the expert testimony would not "substantially assist" the court in assessing the quality of defense services since the judge had had extensive experience as both a criminal defense lawyer and criminal court judge and knew the standards for ineffective assistance of counsel.

A pre-rules decision barred experts from testifying whether defendant pub owners exercised reasonable judgment in permitting a drunk customer's friends to care for the customer. The court held that the jurors were as capable as the experts to assess the evidence and draw conclusions.[103]

Another illustrative case involved the standard of care of a road contractor. The Tennessee Court of Appeals held that expert testimony was not needed on whether it was negligent for the contractor to leave the metal end of a guardrail exposed to approaching traffic.[103.1] A layperson is capable of making this determination. Still another case dealt with the need for expert testimony on the meaning of terms in an insurance policy.[103.2] Since the standard for interpreting the wording is the ordinary meaning which the average policy holder would attach to the policy language, expert testimony is not necessary in such cases.

Another case, high on the gutsy lawyer scale, involved a lawyer whose law license was suspended for not representing a client diligently.[103.3] The lawyer unsuccessfully sought to testify as an expert at his own disciplinary hearing. The Tennessee Supreme Court held his testimony would not have substantially assisted the trial judge, who was an expert.

A related issue involved a forensic pathologist who had prepared a report for the defendant in a civil suit, then switched sides and became a state witness on the same issue, the cause of the victim's death.[103.4] The Tennessee Court of Criminal Appeals held that the test of whether the expert should be permitted to testify for the state is a "modified appearance of impropriety standard." The question is whether an ordinary person who knows the relevant facts would conclude the switch of sides "poses a substantial risk of disservice to the public interest or the defendant's right to a fair trial."

Using a presumption in favor of disqualification in criminal cases, the appellate court held the expert should have been excluded. This disqualification would not have disadvantaged the prosecution which had other options. Also, the defendant did not hire this expert in order to create a conflict that would deprive the state

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[100] *State v. Campbell, 904 S.W.2d 608, 616 (Tenn. Crim. App. 1995)*.

[101] *State v. Lacy, 983 S.W.2d 686, 695 (Tenn. Crim. App. 1997)*.

[102] *Howell v. State, 185 S.W.3d 319 (Tenn. 2006)*.

[103] *Kirksey v. Overton Pub, Inc., 804 S.W.2d 68, 75 (Tenn. Ct. App. 1990)*.

[103.1] *Usher v. Charles Blalock & Sons, 339 S.W.3d 45, 61 (Tenn. Ct. App. 2010)* (citing other road contractor cases).

[103.2] *Artist Bldg. Partners v. Auto-Owners Mut. Ins. Co., 435 S.W.3d 202 (Tenn. Ct. App. 2013)*.

[103.3] *Mabry v. Bd. of Prof'l Responsibility, 458 S.W.3d 900 (Tenn. 2014)*.

[103.4] *State v. Larkin, 443 S.W.3d 751 (Tenn. Crim. App. 2013)*.

of the expert's services. Other factors argued for and against disqualification, but the totality of factors required disqualification.

[d] Definition of "Substantial Assistance": Relevance of Expert Testimony

Another factor in assessing "substantial assistance" is whether the expert's testimony addresses an issue in the case,[103.5] such as the applicable standards. Thus, a defense clinical psychologist was not permitted to testify about a rape defendant's lack of specific intent since specific intent was not an element of rape.[104] Similarly, in defendant's trial for smuggling a controlled substance into a penal institution, the trial court properly excluded proposed testimony of a nurse practitioner about the effects of opiate pain medication withdrawal, because the evidence was not relevant to any issue in the trial and, therefore, the testimony would not have "substantially assisted" the jury to understand the evidence or determine any fact at issue.[104.1] In another case it was held that an expert in a medical malpractice case who testifies about causation must do so to a reasonable degree of medical certainty in order to "substantially assist" the trier of fact.[105]

The same is true when a medical expert testifies about damages in a tort case. The expert testimony about the need for future surgery must be made with a "reasonable degree of medical certainty" in order to substantially assist the trier of fact.[105.1]

On the other hand, in a capital sentencing case where it must be determined whether the defendant has sufficient intellectual disabilities to be ineligible for the death penalty, expert testimony is generally required since a person's I.Q. is not a matter within the common knowledge of lay persons.[105.2]

The expert may testify that "a particular test score does not accurately reflect a person's functional I.Q. or that the raw score is artificially inflated or deflated."[105.3] More generally, the expert may address any factors affecting the accuracy, reliability, or fairness of instruments used to assess the defendant's IQ.[105.4]

Sometimes the connection between the expert's testimony and a "fact at issue" in the case is less direct, but if the court determines that the testimony will help the jury understand evidence in the case, it is relevant and, generally, admissible.[105.5]

[103.5] *See, e.g.,* *State v. Stevens, 78 S.W.3d 817 (Tenn. 2002)*; *State v. Blue, 2009 Tenn. Crim. App. LEXIS 366 (Tenn. Crim. App. 2009)* (both cases holding that the determining factor is whether the witness's qualifications authorize him or her to give an informed opinion "on the subject at issue"). *See also* *Schwager v. Messer, ___S.W.3d___, 2019 Tenn. App. LEXIS 477 (Tenn. Ct. App. Sept. 27, 2019)* (expert testimony was admissible in child support modification proceedings because (1) the testimony assisted the court in determining a fact in issue, *i.e.*, whether the father's alleged business expenses were actually personal expenses, and (2) the testimony was based on facts known at or before the hearing and reasonably relied on by experts in the field).

[104] *State v. Holcomb, 643 S.W.2d 336 (Tenn. Crim. App. 1982)*.

[104.1] *State v. Boles, 2015 Tenn. Crim. App. LEXIS 477 (Tenn. Crim. App. 2015)*.

[105] *Bara v. Clarksville Memorial Health Systems, 104 S.W.3d 1 (Tenn. Ct. App. 2002)*.

[105.1] *Singh v. Larry Fowler Trucking, Inc., 390 S.W.3d 280, 287–88 (Tenn. Ct. App. 2012)* (physician's testimony was inadmissible as too speculative on need and cost of future surgeries since physician could not provide any level of certainty as to the need for the future medical intervention).

[105.2] *Coleman v. State, 341 S.W.3d 221, 241 (Tenn. 2011)*.

[105.3] *State v. Pruitt, 415 S.W.3d 180, 202 (Tenn. 2013)*.

[105.4] *State v. Pruitt, 415 S.W.3d 180, 202 (Tenn. 2013)*.

[105.5] *See, e.g.,* *State v. Gonzalez-Fonesca, 2016 Tenn. Crim. App. LEXIS 526 (Tenn. Crim. App. 2016)* (where state was required to prove that defendant knowingly possessed heroin for sale or delivery, the court held that expert testimony concerning

[e] Soundness of Foundation

Another facet of substantial assistance focuses on the quality of the expert testimony. If the expert's testimony is too speculative or based on unreliable data, the testimony may be deemed not to substantially assist the trier of fact.[106]

[f] Unique Relevance Rules

Finally, often the subject of expert testimony must satisfy unique relevance rules. As discussed elsewhere in this book,[107] scientific evidence in Tennessee is subject to the *McDaniel* test. Tennessee case law has found the "substantial assistance" test satisfied in many areas.[108]

[3] Scientific, Technical, or Other Specialized Knowledge

Rule 702 permits expert testimony if the subject matter of the testimony satisfies two tests. First, as described above,[109] the testimony must substantially assist the trier of fact to understand the evidence or determine a fact in issue. Second, as discussed in this section, the subject matter must be such that it calls for "scientific, technical, or other specialized knowledge," a verbatim adoption of part of Federal Rule 702.[110] According to the Advisory Committee's Note to the federal rule:

> The rule is broadly phrased. The fields of knowledge which may be drawn upon are not limited merely to the "scientific" and "technical," but extend to all "specialized" knowledge.[111]

A Tennessee case more expansively states:

> To give expert testimony, one must be particularly skilled, learned or experienced in science, art, trade, business, profession or vocation.[112]

Neutrality. While Rule 702 does mandate certain qualifications for an expert, neutrality is not one of them.[113] An expert is often paid by one side and may even be a full-time employee of a party, such as an insurance

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the heroin trade and how it operated "informed the jury's determination of whether defendant possessed the heroin for sale or delivery").

[106] *See, e.g.,* State v. Ward, 138 S.W.3d 245 (Tenn. Crim. App. 2003) (pathologists' testimony, based on speculative "rule of three" (a child's death is homicide if it is the third unexplained death in the case of a sole caregiver), is too unreliable to substantially assist the trier of fact); Jackson v. Joyner, 309 S.W.3d 910, 916 (Tenn. Ct. App. 2009) (expert testimony may not be based on "mere speculation or connection to data only through the *ipse dixit* of the expert"). *See, e.g.,* Jacobs v. Nashville Ear, Nose, and Throat, 338 S.W.3d 466, 479 (Tenn. Ct. App. 2010) (trial court is gatekeeper when assessing expert testimony; must assure itself that the expert's opinions are based on relevant scientific methods, processes, and data, and not upon an expert's mere speculation).

[107] *See below* §§ 7.02[13] *et seq*.

[108] *See, e.g.*, State v. Shuck, 953 S.W.2d 662 (Tenn. 1997) (clinical psychologist will substantially assist the jury by testifying whether a criminal defendant, using an entrapment defense, has a unique susceptibility to inducement).

[109] *See above* § 7.02[2].

[110] Fed. R. Evid. 702.

[111] Fed. R. Evid. 702, Advisory Committee's Note. *See, e.g.,* Waggoner Motors v. Waverly Church of Christ, 159 S.W.3d 42 (Tenn. Ct. App. 2004) (accountants and economists commonly provide expert opinions on lost profits).

[112] State v. Ayers, 200 S.W.3d 618, 621 (Tenn. Crim. App. 2005) (*quoting* Otis v. Cambridge Mut. Fire Ins. Co., 850 S.W.2d 439, 443 (Tenn. 1992)).

[113] Rothstein v. Orange Grove Center, 60 S.W.3d 807, 812 (Tenn. 2001) ("Rule 702 does not require that an expert be neutral").

company. Indeed, an expert may be a party to the lawsuit in which he or she testifies as an expert. Such obvious biases may be well-explored on cross-examination in an effort to minimize the credibility of the expert.[114]

Multiple Roles. An expert may play more than one role in the trial. As noted above, he or she may be a party. Many experts also testify as fact witnesses. For example, a police officer may testify as a lay witness in describing what he or she observed at an accident scene, and, if sufficiently qualified, as an expert in relating the cause of the accident.

Consent to Testify. Since an expert's trial value is also his or her livelihood, an expert may not be compelled to testify as an expert against his or her will. This extends to experts who are parties to a trial. In one case two defendant-physicians refused to give their expert opinion about the treatment given the plaintiff by other defendants.[115] The Tennessee Court of Appeals upheld the refusal, reasoning that the experts would be testifying as experts rather than parties and, accordingly, their expert opinions about other physicians' conduct could not be coerced. They could be required to give opinions about their own actions.

Expert Testimony Required. Ordinarily the advocates decide whether expert testimony will be presented. In some situations, however, expert testimony is mandatory. Each legal area must be assessed to determine whether experts must testify. Sometimes the requirement of expert testimony depends on the precise context. Thus, in a case involving whether prison officials were negligent in not protecting a prisoner's safety, the Tennessee Court of Appeals noted that expert testimony is needed on whether the officials breached their duty of care, except "in the most obvious cases."[115.1] Sometimes the requirement of expert testimony is mandated by statute.[115.2]

Expert Testimony Not Required. Sometimes a case involves a context that may suggest that expert testimony is needed but further analysis reveals that this is not the case. For example, in one case the plaintiff was injured in an ambulance when the ambulance attendant did not adequately secure the stretcher on which the plaintiff was placed.[115.3] The Tennessee Court of Appeals held since that the matter was one of ordinary negligence rather than medical malpractice, the unique rules for the latter did not apply. The distinction was whether the claim for injuries resulted from negligent medical treatment.[115.4] In this case, the breach of duty by the ambulance attendant was not based on medical art or science, training or expertise, which would make it a medical malpractice case. Rather, it was ordinary negligence that could be assessed on the basis of common experience without the need for medical expert testimony.[115.5]

On rare occasions, a statute will provide that either an expert or a lay witness may testify about a certain matter.[115.6]

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[114] *See, e.g.*, *Bursack v. Wilson, 982 S.W.2d 341 (1998)* (in legal malpractice action, defendant lawyer served as defense expert on issue of whether his conduct satisfied the applicable standard of care).

[115] *Lewis v. Brooks, 66 S.W.3d 883, 887 (Tenn. Ct. App. 2001)*.

[115.1] *Atkinson v. State, 337 S.W.3d 199, 205 (Tenn. Ct. App. 2010)* (expert testimony needed unless conduct of prison staff is "not clearly improper"). *See also* *Cockrum v. State, 843 S.W.2d 433, 436 (Tenn. Ct. App. 1992)* (same).

[115.2] *See, e.g.*, *Tenn. Code Ann. § 29-26-115* (medical malpractice case). *See below* 7.02[7][b].

[115.3] *Wilson v. Monroe County, 411 S.W.3d 431 (Tenn. Ct. App. 2013)*.

[115.4] *Wilson v. Monroe County, 411 S.W.3d 431, 440 (Tenn. Ct. App. 2013)* (*citing* *Estate of French v. Stratford House, 333 S.W.3d 546, 554 (Tenn. 2011))* (providing examples of cases distinguishing ordinary negligence and medical malpractice).

[115.5] *Wilson v. Monroe County, 411 S.W.3d 431, 440 (Tenn. Ct. App. 2013)*.

Expert Testimony Not Allowed in Certain Cases. Despite the broad language of Tennessee Rule 702, for policy reasons, some expert testimony is not allowed on certain issues. In *James Cable Partners v. Jamestown*,[116] the Tennessee Court of Appeals repeated the often-stated rule that legislators and other people involved with the enactment of legislation may not testify about the legislature's intent in passing the laws some time in the past. No reason was given for this ruling, but the *Jamestown* court cited an earlier Tennessee case[117] which indicated that members of the legislature, irrespective of their expertise and experience with a particular piece of legislation, have no more right to construe a law previously enacted than would anyone else. Of course, this holding does not bar proof of oral and written statements that are part of the legislative history of a law.

Appellate Review. Appellate courts are hesitant to reverse a trial judge's decision on whether expert testimony should be allowed. The standard of review is whether there was a clear abuse of discretion.[118] This means that "before reversal the record must show that a judge 'applied an incorrect legal standard, or reached a decision which is against logic or reasoning that caused an injustice to the party complaining.' "[119] There are various cases where a trial court has improperly excluded[119.1] or improperly admitted[119.2] evidence. More often,

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[115.6] *Tenn. Code Ann. § 29-3-110* (Supp. 2014) (expert or fact witness may testify about gang-related conduct in an action to abate a gang-related nuisance).

[116] *818 S.W.2d 338 (Tenn. Ct. App. 1991)*. *See also* *Ward v. City of Lebanon, 273 S.W.3d 628 (Tenn. Ct. App. 2008)* (engineering expert not allowed to testify about his interpretation of a statute, "especially" when the testimony contradicted the specific language of the statute).

[117] *Levy v. State Bd. of Exmrs., 553 S.W.2d 909, 913 (Tenn. 1977)*.

[118] *State v. Anderson, 880 S.W.2d 720 (Tenn. Crim. App. 1994)*; *State v. Tizard, 897 S.W.2d 732, 748 (Tenn. Crim. App. 1994)* ("The decision whether to admit or exclude expert testimony and scientific evidence rests within the discretion of the trial court and relief on appeal will only be afforded if there was an abuse of discretion which was prejudicial."); *State v. Hall, 958 S.W.2d 679, 689 (Tenn. 1997)* (admissibility of expert opinion testimony is a matter largely within sound discretion of trial court); *State v. Smith, 42 S.W.3d 101, 111 (Tenn. Crim. App. 2000)* (admissibility, qualifications, relevancy, and competency of expert testimony are left to trial court's discretion and will not be overturned absent abuse or arbitrary exercise of discretion); *State v. Coley, 32 S.W.3d 831, 833 (Tenn. 2000)* (standard of review of trial judge's determination of the admissibility of expert testimony is whether the trial court abused its discretion); *State v. Gonzalez-Fonesca, 2016 Tenn. Crim. App. LEXIS 526 (Tenn. Crim. App. 2016)* (questions regarding the qualifications, admissibility, relevancy, and competency of expert testimony are matters left within the broad discretion of the trial court); *Nesbit v. State, 2013 Tenn. Crim. App. LEXIS 292 (Tenn. Crim. App. 2013)* (the decision to admit expert testimony is left to the discretion of the post-conviction court based upon the circumstances of the case and its application to the rules of evidence and applicable case law).

[119] *State v. Coley, 32 S.W.3d 831, 833 (Tenn. 2000)* (*quoting* *State v. Shirley, 6 S.W.3d 243, 247 (Tenn. 1999)*); *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 273 (Tenn. 2005)* (trial court's decision to admit or exclude expert testimony may not be overturned absent an abuse of discretion; abuse of discretion occurs when the trial court applies an incorrect legal standard or reaches an illogical or unreasonable decision that causes an injustice to the complaining party); *Excel Polymers, LLC v. Broyles, 302 S.W.3d 268, 272 (Tenn. 2009)* (appellate court will not overturn trial court's ruling on expert testimony unless there was an abuse of discretion, which includes applying incorrect legal standards, reaching an illogical conclusion, basing a decision on a clearly erroneous assessment of the evidence, or employing reasoning that causes an injustice to the complaining party).

[119.1] *See, e.g.*, *Smith ex rel. Agee v. Palmer, 2019 Tenn. App. LEXIS 53 (Tenn. Ct. App. 2019)* (private investigator's and three law enforcement officers' declarations in wrongful death action improperly excluded; ruling vacated); *State v. Bargery, ___S.W.3d___, 2017 Tenn. Crim. App. LEXIS 902 (Tenn. Crim. App. 2017)* (crime scene investigation expert's testimony improperly excluded).

[119.2] *State v. Jenkins, ___S.W.3d___, 2018 Tenn. Crim. App. LEXIS 856(Tenn. Crim. App. 2018)* (expert's testimony that there was a Combined DNA Index System (CODIS) "hit" linking DNA from a cigarette butt from the scene to defendant's name was hearsay, and to the extent the CODIS hit was admitted without the procedural foundation required by the Tennessee Rules of Evidence, testimony concerning a match to defendant was error); *Breen v. Sharp, ___S.W.3d___, 2017 Tenn. App. LEXIS 742 (Tenn. Ct. App. 2017)* (trial court abused its discretion in considering land consultant's opinion regarding the value of a tract of

however, the appellate court determines there was no abuse of discretion by the trial court, as recent cases illustrate.[119.3]

Because of their expertise, administrative agencies are accorded especially broad deference in decisions concerning the probative value to be given expert testimony.[120] Sometimes administrative boards must be presented with expert testimony.[121]

[4] Qualifications of Expert Witnesses: In General

Rule 702 states that in order to testify as an expert and thus be permitted to give conclusions and opinions on a matter involving scientific, technical or other specialized knowledge, a witness must possess sufficient "knowledge, skill, experience, training, or education . . . ." In assessing the expert's qualifications, the determining factor is "whether the witness's qualifications authorize him or her to give an informed opinion on the subject at issue."[121.1]

Evidence law has long recognized that some witnesses deemed "experts" have significantly more opportunities to provide evidence than do non-expert witnesses. Accordingly, whether a witness is testifying as an expert is

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land, because he had never been on the property and his opinion was based solely upon topographical maps and the sale prices of considerably smaller tracts, which sometimes sold for more per acre than larger tracts; the court erred by admitting his testimony since it failed to meet the requirements of *Tenn. R. Evid. 703*).

[119.3] *See, e.g.,* *State v. Brown, ___S.W.3d___, 2019 Tenn. Crim. App. LEXIS 220 (Tenn. Crim. App. 2019)* (no error where court admitted expert testimony regarding cell tower evidence); *Russell v. State, ___S.W.3d___, 2018 Tenn. Crim. App. LEXIS 857 (Tenn. Crim. App. 2018)* (post-conviction court did not err in excluding testimony of two criminal defense attorneys about the standard of performance required of an attorney in a child sexual abuse case because he did not make an offer of proof consisting of testimony, an affidavit, or other evidence to show how the proposed expert testimony was necessary to substantially assist the trier of fact; and no issues unique to the case which required specialized knowledge beyond that possessed by the post-conviction court were apparent from the record); *State v. Smith, ___S.W.3d___, 2018 Tenn. Crim. App. LEXIS 488 (Tenn. Crim. App. 2018)* (trial court did not abuse discretion in accepting a special agent in the toxicology unit of the Tennessee Bureau of Investigation as an expert witness in the areas of toxicology and chemistry; agent's use of a chart that was regularly used in the field of toxicology did not violate the rules against hearsay, nor did it fail to meet the reliability standards); *Potts v. Potts, ___S.W.3d___, 2018 Tenn. App. LEXIS 69(Tenn. Ct. App. 2018)* (no abuse of discretion in allowing the expert testimony of a husband's treating therapist, because the testimony was allowed to educate the trial court about the mental health diagnoses mentioned during trial and therapist did not testify specifically about wife); *State v. Iceman, ___S.W.3d___, 2017 Tenn. Crim. App. LEXIS 931 (Tenn. Crim. App. 2017)* (trial court did not err by admitting expert testimony on shaken-baby syndrome because it thoroughly assessed the McDaniel factors, the court found that the physicians were qualified to give expert opinions, and they testified about the specific physical injuries the victim sustained and opined about their cause); *State v. Long, ___S.W.3d___, 2017 Tenn. Crim. App. LEXIS 609 (Tenn. Crim. App. 2017)* (trial court did not err by allowing physician to testify about blood spatter near the victim's body, because her testimony was within her field of expertise and she offered no calculations or specifics as to the direction of the blood spatter other than to say that it came from the victim in the area that her body was found).

[120] *Willamette Industries, Inc. v. AAC, 11 S.W.3d 142 (Tenn. Ct. App. 1999)*. *See also*, *Van Morgan v. Tenn. Civil Serv. Comm'n, 2017 Tenn. App. LEXIS 136 (Tenn. Ct. App. 2017)* (in appeal of employee's termination of employment from the Tennessee Highway Patrol, Tennessee Civil Service Commission adminstrative law judge could disregard expert testimony where once he determined the testimony of neither expert assisted the court in rendering its decision, and thus, he could afford more weight to the in-car video recording evidence; it is well established that the trier of fact may disregard expert testimony, since expert testimony is not ordinarily conclusive, but is purely advisory in character; thus, the trier of fact may place whatever weight it chooses upon such testimony and may retract it if it finds that it is inconsistent with the facts or otherwise unreasonable).

[121] *See, e.g.*, *Martin v. Sizemore, 78 S.W.3d 249 (Tenn. Ct. App. 2001)* (when professional's license is at stake, competent expert testimony is generally required when the issues are the applicable standards of the profession and whether particular conduct fell below those standards; expert testimony not needed if professional's lack of skill is so apparent that it is within the "common knowledge" of a lay person; case involved license of architect).

[121.1] *State v. Stevens, 78 S.W.3d 817, 834 (Tenn. 2002)*. *See also* *State v. Blue, 2009 Tenn. Crim. App. LEXIS 366 (Tenn. Crim. App. 2009)*.

critical. It must be stressed that a witness is not necessarily providing "expert" testimony just because he or she testifies about technical or scientific matters. Thus, in *Bronson v. Umphries*,[122] a technician testified about a test he performed on wires, but was not considered to be an expert, and his lack of training and knowledge did not bar his testimony.

Education and Experience. To qualify as an expert witness, the person may acquire the necessary expertise through formal education or life experiences. Thus, the rule embraces not only experts in the strictest sense of the word, *e.g.*, physicians, physicists, and architects, but also the large group sometimes called "skilled" witnesses, such as consultants,[122.1] bankers or landowners testifying to land values.[123]

The mere fact that a witness has more training or experience than the average person is not sufficient to qualify him or her as an expert.[123.1] Rather, the witness must have such superior skill, experience, training, education, or knowledge within the particular area that his or her degree of expertise is beyond the scope of common knowledge and experience of the average person.[124] On the other hand, the expert need not be famous or well-known, and need not be published. There is generally no established college degree or professional certification that provides the threshold for qualification as an expert. Applicable statutes must be consulted because some of them prescribe qualifications for certain expert witnesses, such as those in medical malpractice cases.[125]

There are countless illustrations. A person possessing both academic credentials and considerable work experience relating to animals and veterinary science was qualifed as a dogfighting expert.[125.1] A medical school

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[122] *138 S.W.3d 844 (Tenn. Ct. App. 2003)*.

[122.1] *See, e.g.*, *Littleton v. TIS Ins. Servs., ___ S.W.3d ___, 2019 Tenn. App. LEXIS 13 (Tenn. Ct. App. 2019)* (trial court did not err in finding insurance consultant was not qualified to testify as to the standard of care necessary when offering a client a cut-through endorsement, due to lack of specific experience advising on cut-through endorsements; but the expert had sufficient experience with general insurance matters and financial ratings for him to qualify as an expert regarding other breaches of the applicable standard of care alleged against an insurance agent).

[123] *State v. Anderson, 880 S.W.2d 720 (Tenn. Crim. App. 1994)*.

[123.1] *See, e.g., State v. Taylor, 2014 Tenn. Crim. App. LEXIS 920 (Tenn. Crim. App. 2014)* (although lay witnesses could testify about their personal observations of the victim's behavior while using steroids, they could not offer testimony about the general effects of steroid use, since such evidence calls for specialized skill or expertise; the mere fact that one of the witneses had "used steroids with the defendant", and another witness had "spent a lot of time around people who use steroids" was insufficient basis for offering expert testimony; similarly, the investigating officer, who had no specialized training or knowledge, but had merely used steroids himself, was barred from offering expert evidence as to its general effects).

[124] *Kinley v. Tennessee State Mut. Ins. Co., 620 S.W.2d 79, 81–82 (Tenn. 1981)*. *See, e.g., Lazy Seven Coal Sales v. Stone & Hinds, 813 S.W.2d 400, 406 (Tenn. 1991)* ("In order to give expert testimony, one must be particularly skilled or experienced in a field that is not within the scope of the common knowledge and experience of the average person."). *See also*, *State v. Dye, ___ S.W.3d ___, 2019 Tenn. Crim. App. LEXIS 652 (Tenn. Crim. App. Oct. 15, 2019)* (no plain error where trial court admitted an expert's testimony regarding the general effects of the drugs found in defendant's system and the general effects of heroin, because the expert testified she had studied the effects of the drugs both through her graduate coursework and as part of her general training); *Ray v. Neff, ___ S.W.3d ___, 2018 Tenn. App. LEXIS 408 (Tenn. Ct. App. 2018)* (in trespass case, determining whether the pipe in question alone caused the trespass to appellants' land required knowledge of water flow patterns, the effects of the land modification on the water flow, and the effects of the pipe alone on the water flow; as this was not within ordinary knowledge, common sense, and practical experience, expert testimony was necessary to establish causation based on the particular facts of this case).

[125] *See, e.g., Tenn. Code Ann. § 29-26-115(b)* (Supp. 2010) (expert in medical malpractice case must be licensed in Tennessee or a contiguous state and have practiced a relevant profession in such state for one year before the alleged wrongful act or injury, but court may waive this requirement if the appropriate witness would not otherwise be available); ***Stokes v. Leung, 651 S.W.2d 704 (Tenn. Ct. App. 1982)*** (psychiatrist qualified to testify about standard of care of internal medicine and cardiologist physician who was treating a mentally ill patient).

graduate, although not yet licensed to practice medicine, who had examined a patient while a medical student was permitted to testify as an expert.[126] Similarly, a licensed psychologist with a Ph.D. was deemed an expert even though much of his formal education and clinical experience occurred in institutions that lacked approval of the American Psychological Association.[127] A certified nurse practitioner was permitted to testify as an expert concerning her gynecological exam of a rape victim.[128] A licensed psychologist who was a tenured professor at a medical school was permitted to testify about a sex offender's treatability, even though the psychologist was not certified by the Tennessee Sex Offender Treatment Board.[129] By contrast, a pediatrician's testimony alone was insufficient to establish that an injury was caused by a dangerous instrumentality in an aggravated child abuse case, where she lacked experience in such injuries and the state failed to establish that she had any specialized knowledge to support an expert opinion on the issue.[129.1]

[125.1] *State v. Trent, 2017 Tenn. Crim. App. LEXIS 233 (Tenn. Crim. App. Mar. 2017)* (trial court properly allowed an expert to testify regarding the injuries based upon her expertise in dogfighting, as the expert had a degree in animal science, worked as a veterinary technician, and had experience investigating dogfighting and had witnessed the injuries incurred by the animals after being fought).

[126] ***State v. Fears, 659 S.W.2d 370 (Tenn. Crim. App. 1983)***. *See also State v. Robinson, 73 S.W.3d 136 (Tenn. Crim. App. 2001)* (licensed physician who was Vanderbilt medical professor and was clinical toxicologist and had practiced medicine for over 25 years was qualified to give opinion as to cause of death); *State v. Duncan, 698 S.W.2d 63 (Tenn. 1985)* (general surgeon qualified to give opinion about cause of death but not about how crime occurred); *State v. Bragan, 920 S.W.2d 227 (Tenn. Crim. App. 1995)* (county medical examiner with no specialized training in forensic pathology qualified to give opinion on cause of death); *State v. Thomas, 158 S.W.3d 361, 416 (Tenn. 2005)* (adopting opinion of Tennessee Court of Criminal Appeals) (forensic pathologist permitted to testify about catheterization; another forensic pathologist allowed to testify about cause of death, type of gunshot wound, course of treatment of victim, and ballistics issues involving the homicide).

[127] *State v. Schimpf, 782 S.W.2d 186, 192 (Tenn. Crim. App. 1989)*. *See also Vollmer v. City of Memphis, 792 S.W.2d 446, 449 (Tenn. 1990)* (Director of Legislative and Community Affairs for Memphis, who was liaison between mayor's office and city council, qualified as expert in city planning matters having had specialized knowledge in given area); *Otis v. Cambridge Mut. Fire Ins. Co., 850 S.W.2d 439 (Tenn. 1992)* (fireman with many years experience, who happened to live next door to house that burned and was at the fire, had sufficient knowledge, skill, and expertise to testify as an expert and to give an opinion about the cause of the fire); *State v. Pulliam, 950 S.W.2d 360 (Tenn. Crim. App. 1996)* (pathologist who was medical examiner is qualified to provide expert testimony on purpose of hollow-point bullets because he conducted many autopsies of people with bullet wounds, had done experiments, published articles on hollow-point bullets, and read articles on the subject); *Dellinger v. Dellinger, 958 S.W.2d 778 (Tenn. Ct. App. 1997)* (certified financial planner qualified as expert to testify in divorce about husband's future financial condition); *State v. Bragan, 920 S.W.2d 227, 245 (Tenn. Crim. App. 1995)* (physician who was medical examiner for 11 years and whose office performed 50–60 autopsies per year is qualified to testify as to cause of death, even though he had no training in forensic medicine); *Burgess v. Harley, 934 S.W.2d 58 (Tenn. Ct. App. 1996)* (professor of civil engineering who specialized in transportation and traffic engineering, taught graduate-level courses in highway safety engineering, published articles on traffic control systems, and was a member of the Institute of Traffic Engineers and the Transportation Research Board and who personally observed the scene of the accident was an expert and could give an opinion about the design of the location of the accident); *GSB Contractors, Inc. v. Hess, 179 S.W.3d 535, 546 (Tenn. Ct. App. 2005)* (a home inspector with 17 years of experience and a degree in mechanical engineering who had inspected about 10,000 homes and is a member of several relevant professional organizations is qualified to be an expert on the standard of care applicable to residential construction; a licensed general contractor who had remodeled 200 homes and worked on 500 homes was qualified as an expert on the standard of care of residential construction and the cost of home repairs).

[128] *State v. Davis, 872 S.W.2d 950 (Tenn. Crim. App. 1993)* (expert witness was a certified nurse practitioner, had performed several hundred post-rape gynecological exams, and had been licensed for six years). *See also Richberger v. West Clinic, P.C., 152 S.W.3d 505, 512 (Tenn. Ct. App. 2004)* (registered nurse not qualified to testify as expert witness in medical malpractice action on issue of causation).

[129] *State v. Mounger, 7 S.W.3d 70 (Tenn. Crim. App. 1999)*.

[129.1] *State v. Love, 2016 Tenn. Crim. App. LEXIS 667 (Tenn. Crim. App. 2016)*.

A lawyer was accepted as an expert in determining the value of a travel agency, although he was not familiar with the two primary methods of determining this value,[130] and in another case,[130.1] an attorney was permitted to testify as an expert concerning a trial counsel's resources and time constraints, and the potential impact these factors may have had on a trial counsel's investigation and preparation, which was central to the court's inquiry in an ineffective assistance of counsel claim. A rescue worker who had been a paramedic for over ten years and a member of the rescue squad for fifteen years was an expert on whether a person pinned in a car was the driver.[131] A government expert will often have taken one or more short courses in the area of expertise.[132]

On the other hand, a witness is sometimes denied expert status because of inadequate training or experience. For example, a house builder with a tenth grade education and no knowledge of engineering was not an expert on foundation walls being subject to lateral arch stresses.[133] Similarly, a witness who was an expert on many subjects but admitted that he was "not an expert on ball joints" was not qualified to testify that there was a manufacturing defect in a ball joint.[134] A physical therapist is not qualified to give an expert opinion as to permanent impairment; the therapist's testimony must be limited to objective findings and cannot embrace an opinion on a patient's disability.[135] The physical therapist also cannot provide an expert opinion on medical causation.[136]

A person's statement that he or she is not qualified to render an opinion as an expert can justify a decision that the person is not an expert.[137] A lay person may not provide an opinion about the quality of legal services.[138]

[5] Qualifications of Expert Witnesses: Psychologist

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[130] *Wright v. Quillen, 909 S.W.2d 804, 809 (Tenn. Ct. App. 1995)*. *See also Waggoner Motors, Inc. v. Waverly Church of Christ, 159 S.W.3d 42, 61 (Tenn. Ct. App. 2004)* (experts such as accountants and economists may provide expert opinion regarding a business's lost profits); *Freeman v. Blue Ridge Paper Prods., 229 S.W.3d 694 (Tenn. Ct. App. 2007)* (licensed real estate broker with 25 years of experience conducting appraisals was qualified to give expert testimony about impact that the pollution of the river had on rental values).

[130.1] *Nesbit v. State, 2013 Tenn. Crim. App. LEXIS 292 (Tenn. Crim. App. 2013)*.

[131] *State v. Lee, 969 S.W.2d 414, 417 (Tenn. Crim. App. 1997)*.

[132] *See, e.g., State v. Williams, 657 S.W.2d 405, 412 (Tenn. Crim. App. 1983)*, *cert. denied*, ***465 U.S. 1073 (1984)*** (fingerprint expert had completed junior college, a one-year correspondence course, a three-week F.B.I. advanced course in fingerprints, and the T.B.I.'s two-week fingerprint course; he had also attended various fingerprint seminars and had worked as a fingerprint examiner for more than six years).

[133] *Kinley v. Tennessee State Mut. Ins. Co., 620 S.W.2d 79 (Tenn. 1981)*. *See also King v. Danek Med., Inc., 37 S.W.3d 429 (Tenn. Ct. App. 2000)* (bioengineer not qualified to testify about how the human body responds to pedicle screws).

[134] *Parker v. Prince, 656 S.W.2d 391, 397 (Tenn. Ct. App. 1983)*.

[135] *Bolton v. CNA Ins. Co., 821 S.W.2d 932 (Tenn. 1991)*.

[136] *Elmore v. Travelers Ins. Co., 824 S.W.2d 541 (Tenn. 1992)*.

[137] *Smith County v. Eatherly, 820 S.W.2d 366, 368 (Tenn. Ct. App. 1991)* (trial court may decline to qualify witness as valuation expert when witness concedes lack of expertise in real estate valuation).

[138] *Horton v. Hughes, 971 S.W.2d 957 (Tenn. Ct. App. 1998)*; *Cf. City Savings Bank v. Kensington Land Co., 37 S.W. 1037, 1039 (Tenn. Ch. App. 1896)*. *See also*, *Littleton v. TIS Ins. Servs., 2019 Tenn. App. LEXIS 13 (Tenn. Ct. App. 2019)* (insurance consultant's lack of experience with regard to the specific standard of care governing cut-through endorsements rendered him unqualified as expert on the matter, particularly since he stated during his deposition that he lacked sufficient familiarity with cut-through endorsements to offer an opinion on whether it was standard practice for an agent to get a signed acknowledgement when offering such endorsements).

Psychologists, like other experts, may testify in Tennessee courts if properly qualified under Rule 702. In order for a psychologist who is licensed in another state, but not in Tennessee, to be qualified to testify as an expert witness in Tennessee, the psychologist must obtain authorization from the Board of Examiners in Psychology.[139]

[6] Qualification of Expert Witnesses: Law Enforcement Officer

Although police officers routinely respond to automobile accidents, an officer who did not observe a collision was not permitted to express an opinion about how the accident happened because he was not properly qualified as an accident reconstruction expert.[140] Likewise, a police officer who had training in accident reconstruction was not qualified to give an opinion as to the speed of a truck involved in an accident, absent a showing that the officer was in fact an expert in estimating speed from skid marks.[141] On the other hand, a police officer who had completed an F.B.I. correspondence course on fingerprint comparison, had three years training under an expert's supervision, and had testified ten times was deemed to be an expert and permitted to compare fingerprints.[142] Thus, the focus of a witness's qualification as an expert is superior expertise regarding the specific subject of his or her testimony.[142.1]

This principle is illustrated by *State v. Elliot*,[142.2] where a police officer was held to be an expert with sufficient training and experience to testify about the meaning of jargon used in a drug supplier's telephone calls. The officer had primarily dealt with investigating large-scale drug conspiracies, had listened to numerous wire-tapped telephone conversations, and interviewed many drug suspects. He testified his training and experience gave him specialized knowledge in drug jargon and slang used by drug dealers. Similarly, where the state establishes that an officer possesses the necessary training, experience, and familiarity with the illicit drug trade, the officer may testify about matters relating to the business of buying, selling, trading, and use of illegal drugs.[142.3]

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[139] *Tenn. Code Ann. § 63-11-211(b)* (2010).

[140] *Walden v. Wylie, 645 S.W.2d 247, 251 (Tenn. Ct. App. 1982)*.

[141] *Johnson v. Attkisson, 722 S.W.2d 390, 392 (Tenn. Ct. App. 1986)*. *See also State v. Halake, 102 S.W.3d 661 (Tenn. Crim. App. 2001)* (police officer not qualified expert to testify about similarity between blood spots on defendant's pants and other blood splatter evidence). *But see* ***State v. Farner, 66 S.W.3d 188, 208 (Tenn. 2001)*** (police officer permitted to testify as accident reconstruction expert and to state vehicle's speed at time of accident; though officer did not have a college degree, he did have extensive police training courses; improper trial objection was made).

[142] *Taylor v. State, 551 S.W.2d 331, 333 (Tenn. Crim. App. 1976)*, *cert. denied*, ***430 U.S. 965 (1977)***.

[142.1] *See, e.g., Smith ex rel. Agee v. Palmer, ___S.W.3d___, 2019 Tenn. App. LEXIS 53 (Tenn. Ct. App. Jan. 30, 2019)* (in a wrongful death case brought by the decedent's mother, the trial court abused its discretion by striking portions of a reserve deputy's declaration, because his experience as both a law enforcement officer and a detective rendered him qualified to express his opinions that (1) the decedent did not drown and that she had died before entering the water; (2) that the decedent's injuries were not consistent with a fall down a cliff; and (3) that, based on his experiment at the scene of the decedent's death, her death did not result from an accidental fall); *State v. Langston, 2017 Tenn. Crim. App. LEXIS 374 (Tenn. Crim. App. 2017)* (lieutenant could testify as an expert in the area of blood spatter analysis, because his testimony established that, aside from the 56-hour course on crime scene investigation and the 40-hour course on blood pattern analysis, he had also gained substantial knowledge and experience in the field when he worked on 500 to 800 homicides over the previous 10 years); *State v. Taylor, 2014 Tenn. Crim. App. LEXIS 920 (Tenn. Crim. App. 2014)* (where officer had no specialized training or experience in steroid use and its effects, he could not offer testimony on its effects generally, but he could testify as to his personal knowledge observing defendant's behavior and as to his own limited steroid use).

[142.2] *State v. Elliot, 366 S.W.3d 139 (Tenn. Crim. App. 2010)*.

[142.3] *State v. Gonzalez-Fonesca, 2016 Tenn. Crim. App. LEXIS 526 (Tenn. Crim. App. 2016)*.

[7] Qualifications of Expert Witnesses: Medical Malpractice and Related Cases

[a] In General

Except as described below, in most science-based cases, the expert witness need not be from the immediate physical area where the testimony is offered. In one case, for example, a metallurgical and materials engineer, licensed in several states, though not in Tennessee, was permitted to testify about a faulty waterslide even though the expert was not familiar with the standard of care for contractors and engineers in Memphis.[143] The lack of familiarity with Memphis standards went to the weight rather than the admissibility of the engineer's testimony. The court noted that engineering principles are the same throughout the world.

[b] Standard of Care

Special problems surround expert testimony by physicians and other medical professionals[144] in medical malpractice cases. There is a statutory requirement that the plaintiff prove:

> [T]he recognized standard of acceptable professional practice in the profession and the specialty thereof, if any, that the defendant practices in the community in which he practices or in a similar community at the time the alleged injury or wrongful action occurred.[145]

Physicians. Under Tennessee law, the recognized standard of care means the standard recognized and accepted generally by the profession and not just the particular standard of a single practitioner or group.[146] Thus, the testimony of a particular physician as to what he or she would do in a particular situation does not establish the statutory standard. Similarly, what a majority of physicians in a community would consider to be reasonable medical care in that community is not what this standard of care is about.[147] Nor is it about the national, statewide, or even regional standard of practice.[148] In *Shipley v. Williams*,[148.1] however, the Tennessee Supreme Court recognized that national standards may be pertinent in some Tennessee malpractice cases, broadening the standards described in some previous Tennessee decisions. The *Shipley* Court specifically recognized that "in many instances the national standard is representative of the

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[143] *Underwood v. Waterslides of Mid-America, 823 S.W.2d 171 (Tenn. Ct. App. 1991)*. *See also* *Martin v. Barge, Waggoner, Sumner and Cannon, 894 S.W.2d 750 (Tenn. Ct. App. 1994)* (engineer qualified to testify as expert in negligent engineering case even though he did not practice in Tennessee and was not familiar with local practices in East Tennessee, but he did familiarize himself with Tennessee's rules and regulations for licensing engineers and with the facts in the case; he also personally participated in soil explorations at the accident site; testimony admissible to assist jury in determining applicable standard of care).

[144] *See, e.g.,* *Pullum v. Robinette, 174 S.W.3d 124 (Tenn. Ct. App. 2004)* (in dental malpractice case, expert witness must satisfy rules for qualifying expert in medical malpractice case under *T.C.A. § 29-26-115*); *Cox v. M.A. Primary and Urgent Care Clinic, 313 S.W.3d 240 (Tenn. 2010)* (standard of care of physician's assistant).

[145] *Tenn. Code Ann. § 29-26-115(a)(1)* (Supp. 2010). *See also* *Bradley v. Bishop, 2017 Tenn. App. LEXIS 219 (Tenn. Ct. App. 2017)* (trial court did not err in limiting appellants' ability to cross-examine appellees' expert regarding the basis of his standard of care opinion, which appellants argued was the "best possible care" standard; the excluded portion created confusion as to the proper standard under the statute and did not assist the jury in determining whether the doctor met the objective standard of care required; moreover, even if appellees' references to the doctor's best efforts constituted error, reversible error was not shown, as the excluded evidence would have only bolstered appellees' case).

[146] *Godbee v. Dimick, 213 S.W.3d 865, 896 (Tenn. Ct. App. 2006)*.

[147] *Godbee v. Dimick, 213 S.W.3d 865, 896 (Tenn. Ct. App. 2006)*. *Griffith v. Goryl, 403 S.W.3d 198, 210 (Tenn. Ct. App. 2012)*.

[148] *Carpenter v. Klepper, 205 S.W.3d 474, 478 (Tenn. Ct. App. 2006)*.

[148.1] *Shipley v. Williams, 350 S.W.3d 527, 554 (Tenn. 2011)*.

local standard."[148.2] According to *Shipley*, once the expert establishes familiarity with the local standard of care, he or she may testify that there is a "broad regional standard or a national standard of medical care" to which members of this profession or specialty must adhere and why this broad standard applies in the case.[148.3] However, *Shipley* also cautions that this expert may not simply rely on the national standard without indicating why this standard is applicable in the situation.[148.4] The ultimate issue does not change. Rather, it is determined by whether a physician exercises the reasonable degree of learning, skill, and experience that is ordinarily possessed by others of his or her profession.[149]

Physician's Assistants. A somewhat different standard is used in Tennessee for physician's assistants.[150] Because of their limited responsibilities and less rigorous training, physician's assistants must meet the recognized standards of acceptable practice of physician's assistants, not of medical doctors.[151]

Expert Testimony Necessary. This standard of care in medical malpractice cases must be established by expert testimony.[152] However, if the case is one involving ordinary negligence rather than medical malpractice, the detailed rules for the latter category of cases do not apply. For example, in one case the plaintiff was injured during an ambulance trip when the ambulance attendant did not secure the stretcher on which plaintiff was placed. The patient somehow injured her leg while in the ambulance. The Tennessee Court of Appeals held that the case was for ordinary negligence rather than medical malpractice.[152.1] Medical malpractice requires an injury from negligent medical treatment. Here, the Court of Appeals held, the act complained of required no specialized skill and could be assessed by ordinary everyday experiences.[152.2] The Tennessee Supreme Court has stated that Tennessee statutes and case law establish three requirements for an expert in a medical malpractice case. The witness must:

1. Be licensed to practice in Tennessee or a contiguous bordering state;
2. The license must be in a profession or specialty making the testimony relevant to the case at bar; and

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[148.2] *Id. at 553*.

[148.3] *Id. at 554*.

[148.4] *Id. at 553–554*.

[149] *Godbee v. Dimick, 213 S.W.3d 865, 896 (Tenn. Ct. App. 2006)*; the case was overrurled by *Shipley v. Williams, 350 S.W.3d 527, 2011 Tenn. LEXIS 749 (Tenn. 2011)*, holding that *Eckler's* personal, firsthand, direct knowledge" standard was "too restrictive" and that there "is substantial Tennessee precedent allowing experts to become qualified by educating themselves by various means on the characteristics of a Tennessee medical community."

[150] *Cox v. M.A. Primary and Urgent Care Clinic, 313 S.W.3d 240, 257 (Tenn. 2010)*.

[151] *Id. at 258*.

[152] *See, e.g.*, *Kennedy v. Holder, 1 S.W.3d 670, 672 (Tenn. Ct. App. 1999)*; *Taylor v. Jackson-Madison County Gen. Hosp. Dist., 231 S.W.3d 361 (Tenn. Ct. App. 2006)* (failure of physician to adhere to acceptable standard of care must be proven by expert testimony); *Cox v. M.A. Primary and Urgent Care Clinic, 313 S.W.3d 240, 259 (Tenn. 2010)* (expert testimony needed on standard of care for physician's assistants). *See, e.g.*, *Shipley v. Williams, 350 S.W.3d 527, 537, 550 (Tenn. 2011)* (plaintiff must provide expert testimony to establish the elements of medical negligence case); *Johnson v. Richardson, 337 S.W.3d 816 (Tenn. Ct. App. 2010)* (same; plaintiff failed to provide qualified expert); *Johnson v. Richardson, 337 S.W.3d 816, 819 & n.6 (Tenn. Ct. App. 2010)* (same but noting that when acts of negligence are so obvious that they come within the common knowledge of laypersons, expert testimony in medical malpractice case is not necessary).

[152.1] *Wilson v. Monroe County, 411 S.W.3d 431 (Tenn. Ct. App. 2013)*.

[152.2] *Wilson v. Monroe County, 411 S.W.3d 431 (Tenn. Ct. App. 2013)*.

3. Have practiced this profession or specialty in one of these states during the year preceding the date the alleged injury or wrongful act occurred.[152.3]

The plaintiff has the burden of proof as to the standard of care in the community in which the defendant practices or in a similar community.[153] If the proof is of the standard of care in a similar community, the plaintiff must prove that that community is similar to the one in which the defendant practices.[154]

The usual witness is a physician. However, a non-physician with sufficient expertise may testify in some medical malpractice cases. A witness with a Ph.D. degree who was an expert in hospital administration was permitted to testify about the standard of care for seeing patients in an emergency room.[155] A nurse lacks sufficient qualifications to satisfy this applicable standard.[156]

Ethical rulings by the American Medical Association are not admissible to establish this standard, even though the defendant physician was obligated to follow them.[157] The label on a drug and the PDR reference are, along with expert testimony, admissible on the issue of standard of care.[158]

Same or Similar Tennessee Community. As the above quotation indicates, the standard requires proof of the standard of care in the same or similar Tennessee community where the defendant practices.[159] This does not require the expert witness to be familiar with all the medical statistics of a particular Tennessee community, but a complete lack of knowledge about a community's medical resources would be contrary to knowledge of the applicable standard of care.[160]

The expert must do more than assert that he or she is familiar with the applicable standard of care. Tennessee courts expect such experts to present facts demonstrating how they have knowledge of the applicable standard of professional care in a similar community.[161] And the expert must, in fact, have some knowledge of the community in question. A reasonable basis for knowledge of the medical community at

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[152.3] *Shipley v. Williams, 350 S.W.3d 527, 550 (Tenn. 2011)* (*citing* *Tenn. Code Ann. § 29-26-115*); Mitchell v. Jackson Clinic, *420 S.W.3d 1 (Tenn. Ct. App. 2013)*.

[153] *Carpenter v. Klepper, 205 S.W.3d 474, 483 (Tenn. Ct. App. 2006)*.

[154] *Carpenter v. Klepper, 205 S.W.3d 474, 483 (Tenn. Ct. App. 2006)* (communities near Richmond, Virginia, with which expert was familiar, are not sufficiently similar to those in Clarksville, Tennessee, for purposes of expert testimony on the standard of medical care in Clarksville).

[155] ***Barkes v. River Park Hosp., Inc., 328 S.W.3d 829 (Tenn. 2010)***.

[156] *Richberger v. West Clinic, 152 S.W.3d 505, 512 (Tenn. Ct. App. 2004)*.

[157] *Hartsell v. Fort Sanders Reg'l Med. Center, 905 S.W.2d 944, 950 (Tenn. Ct. App. 1995)*.

[158] *Richardson v. Miller, 44 S.W.3d 1, 17 (Tenn. Ct. App. 2000)*.

[159] *Mabon v. Jackson-Madison County Gen. Hosp., 968 S.W.2d 826, 831 (Tenn. Ct. App. 1997)*. *See generally*, *Shipley v. Williams, 350 S.W.3d 527, 537–38 (Tenn. 2011)* (brief history of Tennessee locality rule and extensive review of Tennessee case law on application of locality rule; notes that the Tennessee statute does not define "similar" community or provide guidance as to how to assess whether one community is similar to another, leaving this determination to Tennessee courts).

[160] *Id. See* *Johnson v. Richardson, 337 S.W.3d 816 (Tenn. Ct. App. 2010)* (plaintiff failed to establish expert witness was sufficiently familiar with community similar to Memphis; expert was familiar with Springfield, Missouri, but could not establish sufficient similarity with Memphis).

[161] *Carpenter v. Klepper, 205 S.W.3d 474, 478 (Tenn. Ct. App. 2006)*; *Williams v. Baptist Memorial Hospital, 193 S.W.3d 545, 553 (Tenn. 2006)* (expert witness in medical malpractice case must indicate the basis for his or her familiarity with the standard of professional care in the defendant's community; merely stating that he or she is familiar with it is insufficient).

issue would consist of information such as the size, location, and presence of teaching hospitals in the community.[162]

While the expert must be familiar with the applicable standard of care, this knowledge need not be firsthand or direct.

> The "expert may educate himself or herself on the characteristics of a medical community in order to provide competent testimony in a variety of ways, including but not limited to reading reference materials on pertinent statistical information such as community and/or hospital size and the number and type of medical facilities in the area, conversing with other medical providers in the pertinent community or a neighboring or similar one, visiting the community or hospital where the defendant practices, or other means."[162.1]

A good illustration of this principle is *Mabon v. Jackson-Madison County General Hospital*,[163] where a medical malpractice action was brought against a surgeon for the failure to perform surgery on a patient who died hours after the physician examined her. The trial court excluded the plaintiff's expert's affidavit and granted the defendant's motion for summary judgment. The affidavit was excluded because the medical expert affiant was found not to be sufficiently familiar with the standard of care in Murfreesboro, Tennessee, to prove whether the defendant breached that standard of care. The plaintiff's expert was licensed to practice medicine in Virginia and other locales but knew nothing about the town of Murfreesboro or its medical community. The trial court rejected the affiant's statement that the standard of care in Murfreesboro was the same as that throughout the country. Of particular importance was the affiant's statement about what care should have been available in Murfreesboro, as distinguished from analyzing what was actually available there.

[c] Locality Rule: Tennessee or Contiguous State

The statute further limits expert testimony in such cases to licensed health care professionals practicing in Tennessee or a contiguous bordering state.[164] The locality rule has withstood a constitutional challenge based on the equal protection and due process clauses.[165]

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[162] *Carpenter v. Klepper, 205 S.W.3d 474, 478 (Tenn. Ct. App. 2006)*; *Taylor v. Jackson-Madison County Gen. Hosp. Dist., 231 S.W.3d 361 (Tenn. Ct. App. 2006)* (expert witnesses need do more than merely assert their familiarity with the standard of professional care in a particular community; the expert must indicate the basis for the familiarity); *Shipley v. Williams, 350 S.W.3d 527, 2011 Tenn. LEXIS 749 (Tenn. 2011)*, overruling *Allen v. Methodist Healthcare Memphis Hosps., 237 S.W.3d 293 (Tenn. Ct. App. 2007)*, holding that *Allen's* personal, firsthand, direct knowledge" standard was "too restrictive" and that there "is substantial Tennessee precedent allowing experts to become qualified by educating themselves by various means on the characteristics of a Tennessee medical community." *Shipley v. Williams, 350 S.W.3d 527, 537 (Tenn. 2011)* (medical expert must demonstrate some familiarity with medical community in which defendant practices or in a similar community but need not have direct or firsthand knowledge of it; generally sufficient if medical expert testifies that he or she has reviewed and is familiar with pertinent statistical information such as community size, hospital size, number and type of community medical facilities, medical services available in the area, has had discussions with other community medical providers in pertinent community or a neighboring one or has visited the community or hospital where the defendant practices); *Stanfield v. Neblett, 339 S.W.3d 22, 37 (Tenn. Ct. App. 2010)* (reasonable basis for establishing knowledge of medical community at issue is information such as the size, location and presence of teaching hospitals in the community).

[162.1] *Shipley v. Williams, 350 S.W.3d 527, 552–553 (Tenn. 2011)*.

[163] *Id. See also Fitts v. Arms, 133 S.W.3d 187 (Tenn. Ct. App. 2003)* (expert's affidavit in medical malpractice case failed to establish familiarity with recognized standard of care in locality).

[164] *Tenn. Code Ann. § 29-26-115(b)* (Supp. 2010) provides:

> [N]o person in a health care profession requiring licensure under the laws of this state shall be competent to testify in any court of law to establish the facts required to be established by subsection (a) unless the person was licensed to practice in the state or a contiguous bordering state a profession or specialty which would make the person's expert testimony relevant

The expert must have actually practiced in one of these states sometime during the year preceding the date of the alleged injury or wrong act.[166] The purpose of this requirement is to ensure that expert witnesses have knowledge of the appropriate standard of care in the defendant's community. This test is satisfied as long as the practice was in a subject area that would make the expert's testimony relevant to the case.[167]

The locality rule applies even to experts who testify only about causation rather than the standard of care, although it is difficult to understand how the policy behind the locality rule is satisfied by this result.[168] Are the scientific principles underlying expert testimony about causation different from one community to another or even from one country to another?

A good illustration of the locality rule is *Pullum v. Robinette*,[169] a dental malpractice case, where the plaintiff's expert had practiced in a small Missouri town similar to Spring Hill, Tennessee, where the alleged malpractice occurred. To establish familiarity with the local Spring Hill standards for dental care, the Missouri dentist spoke to three local dentists, found out about a local peer review group and its standards, and explored the Tennessee Oral Health Sciences Institute website to ascertain its standards.

[d] Locality Rule Inapplicable

Even though a matter concerns hospital or doctor negligence, the applicable statute does not automatically require the use of an expert in compliance with the locality rule. In *Estate of Doe v. Vanderbilt University*[170] a patient sued Vanderbilt University Medical Center for failure to notify former patients that the blood she had received had not been tested for the HIV virus. The Tennessee Court of Appeals held that the medical malpractice act was inapplicable since defendant, Vanderbilt Medical Center, was not engaged in the practice of medicine when it decided not to notify former patients that the blood they received had not been tested for HIV. The court noted that this administrative decision did not involve medical diagnosis, treatment or other scientific matters.

[e] Waiver: Qualified Witness Unavailable

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to the issues in the case and had practiced this profession or specialty in one of these states during the year preceding the date that the alleged injury or wrongful act occurred … .

See generally Shipley v. Williams, 350 S.W.3d 527 (Tenn. 2011) (history of Tennessee locality rule).

[165] Sutphin v. Platt, 720 S.W.2d 455 (Tenn. 1986). The trial court has the discretion to waive the locality requirement. Tenn. Code Ann. § 29-26-115(b) (Supp. 2010).

[166] Steele v. Fort Sanders Anesthesia Group, 897 S.W.2d 270 (Tenn. Ct. App. 1994). The practice requirement has been waived for common sense reasons. In Childress v. Bennett, 816 S.W.2d 314 (Tenn. 1991), a Tennessee licensed physician was in Florida receiving advanced training during the year preceding the injury. The Tennessee Supreme Court held that the locality rule should have been waived though the court gave no specific reason for the waiver.

[167] *See, e.g.,* Bravo v. Sumner Regional Health Systems, 148 S.W.3d 357, 363 (Tenn. Ct. App. 2003) (gynecologist qualified to testify about child birth practice).

[168] Payne v. Caldwell, 796 S.W.2d 142 (Tenn. 1990) (professor of medicine from Cornell Medical School in New York barred from testifying about cause of injuries; locality rule applies to expert testimony about standard of care, failure to satisfy the standard, and causation).

[169] Pullum v. Robinette, 174 S.W.3d 124, 133 (Tenn. Ct. App. 2004); *see also* Taylor v. Jackson-Madison County Gen. Hosp. Dist., 231 S.W.3d 361 (Tenn. Ct. App. 2006) (physician from North Georgia familiarized himself with medical standards in Jackson, Tennessee, by doing research in Yellow Pages, publications of Chamber of Commerce, and convincing the court that the community where the expert practiced in North Georgia was sufficiently similar to that in Jackson, Tennessee).

[170] 958 S.W.2d 117 (Tenn. Ct. App. 1997).

The locality rule can be waived by the trial court if "appropriate witnesses otherwise would not be available."[171] The trial court's decision is reviewed for an abuse of discretion.[171.1] In *Childress v. Bennett*,[172] the Tennessee Supreme Court held that the waiver rule should be applied to an osteopath who was licensed in Tennessee but living out of state enrolled in a residency program at the time of his deposition. The court found that it was apparent that no other medical witness was available to the plaintiffs because no such witness was offered. A critical factor was the court's view that the justice system should not follow procedure rules that are harsh, unfair, and prevent issues from being resolved on their merits. The trial judge's refusal to grant a waiver was an abuse of discretion.

Before a waiver is permissible, the person seeking the waiver may have to demonstrate considerable unsuccessful efforts to find a qualified expert who satisfies the locality rule. In *Rose v. H.C.A. Health Services of Tennessee*[173] the plaintiff sought a waiver of the locality rule in a medical malpractice action. In support of this request, the plaintiff tendered affidavits from plaintiff's lawyers stating that they had talked with several people in and out of Tennessee but were unable to find an expert satisfying the locality rule. They also filed an affidavit from the non-locality physician indicating that he, too, had been unable to locate an appropriate expert. The plaintiffs attributed the problem to the fact that the defendant H.C.A. was very powerful in the medical industry and there were many conflict of interest problems with securing an expert who had no connection to this defendant. The Tennessee Court of Appeals upheld the trial court's denial of the locality waiver. The plaintiffs had not provided sufficient proof that appropriate witnesses, complying with the locality rule, were not to be found.

[f] Different Specialty

A number of Tennessee cases have addressed the admissibility of expert opinion testimony by a health care professional regarding the standard of care of a professional in a different area of specialty. The test is whether the expert's practice in a profession or specialty made the person's expert testimony relevant to the issues in the case during the year preceding the occurrence.[174]

For example, an otherwise qualified expert in a medical malpractice case against a surgeon was not disqualified from testifying because his specialty was infectious disease or because he was an educator rather than a surgeon.[175] The fact that the witness did not see patients in practice did not disqualify him.[176]

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[171] *Tenn. Code Ann. § 29-26-115(b)* (Supp. 2010).

[171.1] *Ward v. Glover, 206 S.W.3d 17, 38 (Tenn. Ct. App. 2006)*.

[172] *816 S.W.2d 314 (Tenn. 1991)*. *See also Pyle v. Morrison, 716 S.W.2d 930 (Tenn. Ct. App. 1986)* (waiver given when plaintiff's counsel stated in affidavit that a diligent search found only one witness in a contiguous state); *Steele v. Fort Sanders Anesthesia Group, 897 S.W.2d 270 (Tenn. Ct. App. 1994)* (waiver given to permit nurse anesthetist from Florida to testify).

[173] *947 S.W.2d 144 (Tenn. Ct. App. 1996)*.

[174] *See, e.g., Bravo v. Sumner Reg'l Health Sys., 148 S.W.3d 357, 365 (Tenn. Ct. App. 2003)* (gynecologist who did not deliver babies is competent to testify about standards for child delivery; expert was licensed in same specialty as defendant doctor, had delivered babies for 20 years, and attended educational programs on obstetrics and gynecology); *See, e.g., Stanfield v. Neblett, 339 S.W.3d 22, 37 (Tenn. Ct. App. 2010)* (is not requirement that expert be licensed in the same profession or specialty as the defendant in the medical malpractice case; both neurologist and general surgeon are qualified to testify about care given by neurosurgeon).

[175] *Searle v. Bryant, 713 S.W.2d 62, 64 (Tenn. 1986)*.

[176] *Cox v. M.A. Primary and Urgent Care Clinic, 313 S.W.3d 240, 260 n. 24 (Tenn. 2010)*

Similarly, a physician may be qualified to provide expert testimony about the standard of care required of a physician's assistant as long as the physician is sufficiently familiar with this type of medical provider.[177]

On the other hand, neither an orthopedic surgeon nor a neurologist was qualified as an expert witness to give opinion testimony regarding the standard of care to be exercised by an osteopath. The determinative factor was the lack of familiarity with the practice of osteopathy.[178]

[g] Medical Costs

Physicians practicing in a certain geographical area are competent to testify about the necessity and reasonableness of medical expenses incurred by their patients. In one such case, some of the medical services were performed by other physicians and by physical therapists in the same geographical area.[179] On the other hand, an orthopedic surgeon who testified he was not qualified to testify about the need for future spine surgeries was not qualified to testify about such need or the cost of such surgeries.[179.1]

[h] *Res Ipsa Loquitur*

The expert in a medical malpractice case may now be used to establish a prima facie case of negligence under the doctrine of *res ipsa loquitur*.[180]

[i] Payment of Expert

When a medical expert is consulted for possible assistance on legal-related matters, Tennessee law bars the expert from being paid on a contingent basis.[181] This fee arrangement violates Tennessee public policy.

[j] Other Issues

Medical malpractice cases also raise other issues involving expert testimony.[182]

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[177] *Id.*

[178] *Cardwell v. Bechtol, 724 S.W.2d 739, 754–55 (Tenn. 1987)*. *See also Goodman v. Phythyon, 803 S.W.2d 697, 702 (Tenn. Ct. App. 1990)* (anesthesiologist not familiar with standard of care for ophthalmologist); *Ledford v. Moskowitz, 742 S.W.2d 645 (Tenn. Ct. App. 1987)* (neurologist with training in psychiatry qualified to testify about standard of care required of psychiatrist); *Whittemore v. Classen, 808 S.W.2d 447 (Tenn. Ct. App. 1991)* (evidence did not show radiologist had knowledge of standard of care for surgeon); *Coyle v. Prieto, 822 S.W.2d 596 (Tenn. Ct. App. 1991)* (Missouri pathologist who also practiced as internist and emergency room physician qualified to testify about standard of care of Tennessee pathologist); *Walker v. Bell, 828 S.W.2d 409 (Tenn. Ct. App. 1991)* (in appropriate situations, specialist in nuclear medicine may testify about standard of care of thoracic surgeon, and vice versa); *Richberger v. West Clinic, P.C., 152 S.W.3d 505, 512 (Tenn. Ct. App. 2004)* (nurse not qualified to testify as expert witness in medical malpractice action on issue of causation). *Mitchell v. Jackson Clinic, P.A., 420 S.W.3d 1 (Tenn. Ct. App. 2013)* (emergency room physician, though had completed residence in pediatrics years ago, was not qualified as an expert on jaundice and several other diseases of babies; had inadequate current or recent experience to testify about the standard of care in such cases).

[179] *Long v. Mattingly, 797 S.W.2d 889, 893 (Tenn. Ct. App. 1990)*; *Wells v. State, 435 S.W.3d 734 (Tenn. Ct. App. 2013)* (physician can testify about the necessity of medical services and reasonableness of the charges, but must have knowledge of: the party's condition, treatment received, customary treatment options in the community, where treatment was given, and of the customary charges for this treatment; may use a medical summary in preparing testimony).

[179.1] *Singh v. Larry Fowler Trucking, Inc., 390 S.W.3d 280 (Tenn. Ct. App. 2012)*.

[180] ***Seavers v. Methodist Med. Center of Oak Ridge, 9 S.W.3d 86 (Tenn. 1999)***. *See above § 3.08* (*res ipsa loquitur*).

[181] *Swafford v. Harris, 967 S.W.2d 319 (Tenn. 1998)*.

[182] *See, e.g.*, *Bara v. Clarksville Memorial Health Systems, 104 S.W.3d 1 (Tenn. Ct. App. 2002)* (in medical malpractice case, medical expert on causation must testify as to "reasonable medical certainty" of cause of injuries; speculation insufficient); *Miller*

[8] Qualification of Expert Witnesses: Legal Malpractice Cases

Expert testimony is also used in legal malpractice cases as it is in medical malpractice ones. According to the Tennessee Supreme Court, proof of the standard of care applicable in a legal malpractice case is to be provided by expert testimony.[183] The court indicated that in such cases the expert should be capable of testifying about "the degree of knowledge, skill, prudence, and diligence which is commonly possessed and exercised by lawyers practicing with regard to the same subject matter in that jurisdiction."[184] In this context, the term "jurisdiction" refers to the State of Tennessee rather than any subdivision of the State. Accordingly, experts testifying in legal malpractice cases in Tennessee must be familiar with the professional standard of care for the entire state.[185]

[9] Qualification of Expert Witnesses: Architect

Architects, like other professionals, may testify as expert witnesses. In Tennessee, however, an expert who is not a licensed architect or does not even hold a degree in architecture may testify about architecture's standards of professional practice and whether those standards were followed in a specific case.[186] The issue is whether the expert will testify authoritatively about the standard of care and how the conduct at issue satisfies or breaches this standard. This principle recognizes the fact that witnesses from various professions are competent to address issues concerning the competence of architects. In *Martin v. Sizemore,*[187] the Tennessee Court of Appeals cited a number of cases where such experts as chemical engineers, engineering technicians, civil engineers, a geologist and engineer, and structural engineers were found to possess sufficient expertise to testify about the professional standards of architects.

[10] Procedures in Qualifying Expert

Judicial Discretion. Under both Rule 104(a) and common law,[188] the trial court determines whether a witness qualifies as an expert. The judge is given broad discretion in making this determination.[189] The decision of

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v. Choo Choo Partners, 73 S.W.3d 897 (Tenn. Ct. App. 2001) (general rule is that causation of medical condition must be established by medical expert, but such testimony is not sufficient to establish causation if speculative in nature).

; *Barnett v. Tenn. Orthopaedic Alliance, 391 S.W.3d 74 (Tenn. Ct. App. 2012)* (medical malpractice expert testimony is needed to establish prima facie case of duty, breach of duty, and causation unless ordinary layman has knowledge of the malpractice act).

[183] *Lazy Seven Coal Sales v. Stone & Hinds, 813 S.W.2d 400 (Tenn. 1991)*. *See also Cleckner v. Dale, 719 S.W.2d 535 (Tenn. Ct. App. 1986)*, *noted in* Les Jones, Casenote, *Cleckner v. Dale*: *Admissibility of Expert Testimony on Standard of Care in Legal Malpractice Cases*, 18 MEM. ST. U. L. REV 555 (1988); *Bursack v. Wilson, 982 S.W.2d 341, 343 (Tenn. Ct. App. 1998)* (expert testimony is required to establish negligence and proximate cause in legal malpractice action unless the alleged malpractice is within the common knowledge of laypersons); *Horton v. Hughes, 971 S.W.2d 957, 959 (Tenn. Ct. App. 1998)* (except for obvious common sense mistakes, establishing applicable standard of care and determining whether a lawyer breached that standard require expert evidence); *Rose v. Welch, 115 S.W.3d 478, 484 (Tenn. Ct. App. 2003)* (in legal malpractice case, expert testimony is required to establish negligence and probable cause unless the alleged malpractice is within the common knowledge of laymen); ***Van Grouw v. Malone, 358 S.W.3d 232 (Tenn. Ct. App. 2010)*** (in legal malpractice case, party must have expert affidavit to rebut expert affidavit offered by other side as part of summary judgment motion).

[184] *Lazy Seven Coal Sales v. Stone & Hinds, 813 S.W.2d 400, 407 (Tenn. 1991)*.

[185] *Chapman v. Bearfield, 207 S.W.3d 736 (Tenn. 2006)* (rejecting former rule that the standard of care for attorneys in Tennessee is that for the area where the lawyer practiced; new standard is a single, statewide standard, with which expert in legal malpractice case must be familiar).

[186] *Martin v. Sizemore, 78 S.W.3d 249 (Tenn. Ct. App. 2001)*.

[187] *Id.*

whether a person is an expert will not be overturned on appeal by Tennessee courts absent an abuse of discretion.[190] The Tennessee Supreme Court has defined an abuse of discretion as when the trial court "applies incorrect legal standards, reaches an illogical conclusion, bases its decision on a clearly erroneous assessment of the evidence, or employs reasoning that causes an injustice to the complaining party."[191] In addition, Tennessee courts will not overturn a decision to qualify a witness as an expert witness absent a timely objection to an expert's qualifications.[192]

Qualifying an Expert Witness. In the absence of a stipulation or judicial notice, a witness must be found to be qualified as an expert if the witness is to testify as an expert. The court may hold a jury-out or pretrial hearing to ascertain whether the witness is qualified. More likely, however, the witness's qualifications will be established during direct examination when counsel interrogates the witness about background information.

If adversary counsel seeks to contest the qualifications of the witness, counsel should request a jury-out hearing on the issue. The witness will then be examined and cross-examined to ascertain whether the witness qualifies as an expert. During the cross-examination, counsel probes the witness's expertise by asking about the witness's background, about the scientific basis for any tests and the instruments used in the tests, and about any other issues relevant to the witness's purported relevant knowledge, skill, experience, training or education. The burden rests on the party proffering the expert witness to establish that the evidence "rests upon good grounds."[192.1]

An expert must be found to be sufficiently qualified before he or she is permitted to testify as an expert.[193] Often the parties will stipulate that a particular witness is qualified to testify as an expert. But one party may not

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[188] *Kinley v. Tennessee State Mut. Ins. Co., 620 S.W.2d 79, 82 (Tenn. 1981)*.

[189] *Id. See, e.g.*, *Blalock v. Claiborne, 775 S.W.2d 363, 366 (Tenn. Ct. App. 1989)* (civil engineer and accident reconstructionist permitted to testify about reaction time in stopping vehicle); *State v. Harris, 839 S.W.2d 54 (Tenn. 1992)*; *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 273 (Tenn. 2005)* (qualifications, admissibility, relevancy, and competency of expert testimony left to trial court's discretion); *Johnson v. John Hancock Funds, 217 S.W.3d 414, 425 (Tenn. Ct. App. 2006)* (trial court is gatekeeper in assessing admissibility of expert testimony).

[190] *See, e.g.*, *State v. Taylor, 645 S.W.2d 759 (Tenn. Crim. App. 1982)* (abuse of discretion standard used to review trial court's decision of whether witness is qualified as expert); *State v. Wiseman, 643 S.W.2d 354, 364 (Tenn. Crim. App. 1982)* (arbitrary decision standard); *State v. Anderson, 880 S.W.2d 720 (Tenn. Crim. App. 1994)* (abuse of discretion standard used to review trial court's decision whether a person is qualified as an expert); *Underwood v. Waterslides of Mid-America, 823 S.W.2d 171 (Tenn. Ct. App. 1991)* (qualifications of expert rest within court's discretion; appellate court will not reverse decision whether witness is qualified as an expert unless it is clear that trial court was in error about the qualifications and the error was prejudicial); *Tire Shredders, Inc. v. ERM-North Central, 15 S.W.3d 849 (Tenn. Ct. App. 1999)* (trial court's decision whether witness is an expert will not be disturbed absent an abuse of discretion); *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 273 (Tenn. 2005)* (trial court's decision to admit or exclude expert testimony may not be overturned absent an abuse of discretion; abuse of discretion occurs when trial court applies an incorrect legal standard or reaches an illogical or unreasonable decision that causes an injustice to the complaining party); *Johnson v. John Hancock Funds, 217 S.W.3d 414, 425 (Tenn. Ct. App. 2006)* (appellate courts review trial court's decisions concerning competence and relevance of expert testimony using abuse of discretion standard and will reverse trial court only if trial court has applied an incorrect legal standard or has reached an illogical or unreasonable decision, causing injustice to the complaining party); *Excel Polymers, LLC v. Broyles, 302 S.W.3d 268, 272 (Tenn. 2009)* (no reversal of trial court's ruling admitting or excluding expert testimony absent abuse of discretion). *Mitchell v. Jackson Clinic, P.A., 420 S.W.3d 1, 6 (Tenn. Ct. App. 2013)* (abuse of discretion standard used to review trial court's decision to accept or disqualify expert witness in medical malpractice claim).

[191] *Excel Polymers, LLC v. Broyles, 302 S.W.3d 268, 272 (Tenn. 2009)* (*quoting* *State v. Scott, 275 S.W.3d 395, 404 (Tenn. 2009)*).

[192] *See, e.g.*, *State v. Melson, 638 S.W.2d 342, 363 (Tenn. 1982)*, *cert. denied*, ***459 U.S. 1137 (1983)***. *See also* *Tenn. R. Evid. 103(a)(1)*.

[192.1] *State v. Long, 2017 Tenn. Crim. App. LEXIS 368 (Tenn. Crim. App. 2017)*.

preclude the other party from introducing evidence of the expert's qualifications by offering to stipulate that the witness is an expert.[194] Each side is permitted to offer its proof and to qualify its own witnesses,[195] subject to ordinary rules regulating wasteful evidence.[196] When the parties stipulate that a given witness is an expert, a party may not, after the witness testifies, complain that the witness was not an expert.[197]

[11] Examination of Expert Witness

The direct and cross-examination of an expert witness differs in some respects from that of a lay witness. The attorney conducting the examination must thoroughly understand the scientific underpinning and the application of the scientific evidence used by the expert. The form and method of interrogation are different for expert witnesses, and as discussed below,[198] an expert may be asked a hypothetical question. The expert may also rely on information personally observed by others[199] or the testifying expert[200] and may give an opinion more freely than a lay witness.[201]

An expert, like any witness, may be cross-examined, but there are indications in Tennessee case law that cross-examination of experts may be especially thorough. The Tennessee Supreme Court stated that the expert "may be vigorously cross-examined to undermine the evidentiary weight of the opinion.[202] Trial judges should give "broad latitude" when experts are interrogated on cross-examination.[203] This may include questions about the facts or data the expert considered as well as other data that were not considered and the reasons they were not utilized. An expert, but not a lay witness, may be cross-examined by use of a learned treatise.[204]

Expert testimony does not have to be perfect or definitive to be admissible. According to the Tennessee Supreme Court, expert testimony is "often speculative to some degree … . The lack of absolute certainty in the testimony of expert witnesses … did not preclude their testifying."[205] On the other hand, expert testimony can

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[193] *See, e.g.*, Bryant v. State, 539 S.W.2d 816, 819 (Tenn. Crim. App. 1976).

[194] *Cf.* Bryant v. State, 539 S.W.2d 816, 819 (Tenn. Crim. App. 1976) (upholding lengthy recitation of expert witness's qualifications after other side offered to stipulate the qualifications).

[195] *See* Tenn. R. Evid. 611(a) (court to exercise control over presentation of evidence to avoid abuse by counsel).

[196] *Cf.* Tenn. R. Evid. 403.

[197] *See, e.g.*, State v. Wiseman, 643 S.W.2d 354, 364 (Tenn. Crim. App. 1982).

[198] *See below* § 7.05[2].

[199] *See below* § 7.03[4].

[200] State v. Bolin, 922 S.W.2d 870, 874 (Tenn. 1996) (expert may base testimony on own factual observations and may testify about own factual observations).

[201] *See above* § 7.02[2]. It is not mandatory that an expert testify in the form of an opinion. *See* Pichon v. Opryland, 841 S.W.2d 326 (Tenn. App. 1992).

[202] ***Duran v. Hyundai Motor Am., Inc., 271 S.W.3d 178, 197 (Tenn. Ct. App. 2008)*** (*citing* Brown v. Crown Equip. Corp., 181 S.W.3d 268, 275 (Tenn. 2005)). Stanfield v. Neblett, 339 S.W.3d 22, 39 (Tenn. Ct. App. 2010) (following *Duran*); Laseter v. Regan, 481 S.W.3d 613 (Tenn. Ct. App. 2014) (permitting impeachment of physician by evidence of annual income from serving as an expert witness).

[203] ***Id. at 198***.

[204] Tenn. R. Evid. 618. *See above* § 6.18.

[205] State v. Cazes, 875 S.W.2d 253, 263 (Tenn. 1994). *See also* McCarley v. West Quality Food Service, 960 S.W.2d 585 (Tenn. 1998) (expert's inability to exclude all other possible sources of food contamination affects weight and not admissibility of

be so speculative that it is inadmissible.[206] It may also be excluded if the expert employs unacceptable methodology, uses acceptable methodology in a flawed way, or uses unreliable foundational data.[207] Experts, like other witnesses, may be impeached; their credibility may be important to the trier of fact.[208]

Careful lawyering may result in the exclusion of expert testimony, even by well qualified experts. A terrific illustration is *Waggoner Motors, Inc. v. Waverly Church of Christ*[209] involving damages to a car dealer's autos allegedly caused by paint overspray from the defendant's construction project. The plaintiffs offered a witness who was an economist to testify about lost profits. After carefully examining the expert's testimony, the court excluded it on the grounds that the expert's methodology was so flawed that it undermined the reliability of the expert's conclusions and essentially produced conclusions that were "tantamount to speculation." For example, the expert testified that lower sales were caused by increased purchases of certain trucks, but the business records showed that truck sales had actually decreased during the critical time frame. The expert also projected lost profits based on average profits for each sale during the three previous years, but neglected to base his calculations on the actual net profits during those years.

[12] Impact of Expert Testimony

Received with Caution. Although the testimony of an expert witness may appeal to the trier of fact as being more valid than or superior to other evidence, it is to be received with caution by Tennessee jurors.[210] This is partially due to the fact that "the expert has been employed and is being paid by one side or the other to testify in most instances."[211] In addition:

> [E]xpert testimony is unique because experts are allowed to give an opinion in a particular situation whereas other witnesses are prohibited from giving opinion testimony in areas where expertise is not required. The courts have recognized the need for expert opinion testimony, but have recognized such opinion as just that. The law recognizes this testimony is speculative and should be received with caution.[212]

Advisory, Not Conclusive. Accordingly, in Tennessee an expert's opinions are not conclusive, but rather are advisory in character, to be given only such weight as the trier of fact deems appropriate in light of the facts in evidence.[213]

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expert's testimony); *Excel Polymers, LLC v. Broyles, 302 S.W.3d 268, 273 (Tenn. 2009)* (physician's inability to be certain about particles found in lung biopsy goes to weight of his testimony, not its admissibility).

[206] *See, e.g.*, *Bradley v. Triangle Amoco, 859 S.W.2d 333 (Tenn. Ct. App. 1993)* (expert testified that all Ford C-6 transmissions manufactured before 1980 were defective, but did not examine the plaintiff's vehicle that was a Ford C-6 built before 1980. Nevertheless, he testified that plaintiff's vehicle was actually defective; Court of Appeals held the expert's testimony, based on a generalization rather than an examination of the particular car in question, should have been excluded because it was conjecture and speculation).

[207] *Waggoner Motors, Inc. v. Waverly Church of Christ, 159 S.W.3d 42, 61 (Tenn. Ct. App. 2004)*.

[208] *See, e.g.*, *Sneed v. Stovall, 22 S.W.3d 277, 281 (Tenn. Ct. App. 1999)* (physician who was expert witness in medical malpractice action may be impeached for prior acts of sexual improprieties with a patient, under Rule 608); *GSB Contractors v. Hess, 179 S.W.3d 535, 547 (Tenn. Ct. App. 2005)* (expert's financial interest in outcome of trial does not mean this person is not qualified as an expert but the person's financial interest may be considered on bias when assessing the weight to be given the testimony).

[209] *Waggoner Motors, Inc. v. Waverly Church of Christ, 159 S.W.3d 42, 61–63 (Tenn. Ct. App. 2004)*.

[210] *See, e.g.*, ***Edwards v. State, 540 S.W.2d 641, 647 (Tenn. 1976)***.

[211] *Parker v. Prince, 656 S.W.2d 391, 398 (Tenn. Ct. App. 1983)*.

[212] *State v. Howse, 634 S.W.2d 652, 657 (Tenn. Crim. App. 1982)*. *See also* *State v. Brown, 749 S.W.2d 474, 477 (Tenn. Crim. App. 1987)* (all expert testimony is speculative and requires careful evaluation).

Conflicting Experts. Expert witnesses may disagree with one another and may contradict factual testimony.[214] When there is a conflict between the expert testimony and other testimony about facts, the jury is not bound to give the expert testimony more weight than the other testimony.[215] On the other hand, sometimes expert testimony may be the most effective way of convincing the jury of some facts.[216]

Expert Testimony Need Not Be Conclusive. It is not mandatory that an expert's testimony on a contested issue be absolute or conclusive, so long as it substantially assists the trier of fact. Thus, a handwriting expert was permitted to testify that a particular note could not have been written by three of four possible individuals, but it could have been written by the defendant. The expert was unable to testify "positively" that the defendant wrote it.[217]

Jury Instructions Concerning Weight of Expert Testimony. Because of the unique and sometimes compelling nature of expert testimony, Tennessee courts have long permitted trial judges to instruct the jury on the weight to give expert testimony.[218] These instructions should not be inappropriately negative, discriminating "too strongly" against expert testimony,[219] but they can tell the jury to receive expert testimony with caution.[220] On the other hand, a modern decision barred adding the language that such testimony is "beset with pitfalls and uncertainties."[221] The missing witness rule applies to expert witnesses.[222]

Bench Trials. In a case where there is no jury and the judge is the trier of fact, the usual rule is that the trial court's assessment of the credibility of expert witnesses is given great deference on appeal. Accordingly, when experts give conflicting testimony in a bench trial, the judge determines which testimony to accept.[223] But the

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[213] *Cocke Cty. Bd. of Hwy. Comm'rs v. Newport Utils. Bd.*, 690 S.W.2d 231, 235 (Tenn. 1985). *See also* *Elmore v. Travelers Ins. Co.*, 824 S.W.2d 541 (Tenn. 1992) (in worker's compensation case, weight to be given expert's testimony is within court's discretion when experts disagree; factors in assessing credibility include qualifications of the experts, circumstances of their examinations, information available to the experts, and evaluation of the importance of that information by other experts); *England v. Burns Stone Co.*, 874 S.W.2d 32 (Tenn. Ct. App. 1993) (jurors may use own experience and knowledge in deciding whether to arrive at conclusion contrary to expert testimony, even uncontradicted expert testimony); *City of Johnson City v. Outdoor West*, 947 S.W.2d 855 (Tenn. Ct. App. 1996) (credibility of expert testifying on value of condemned property is to be considered in light of all relevant evidence); *Dickey v. McCord*, 63 S.W.3d 714, 720–21 (Tenn. Ct. App. 2001) (expert opinions are not conclusive; a jury is not bound to accept an expert witness's testimony as true); *Gibson v. Ferguson*, 562 S.W.2d 188 (Tenn. 1976) (pre-rules case; extensive discussion of weight given expert testimony); *cf.* *Pentecost v. Anchor Wire Corp.*, 662 S.W.2d 327, 329 (Tenn. 1983) (trier of fact to determine what weight to give expert's testimony based on hypothetical question).

[214] *Rothstein v. Orange Grove Center*, 60 S.W.3d 807, 812 (Tenn. 2001).

[215] *See, e.g.*, ***Edwards v. State*, 540 S.W.2d 641, 647 (Tenn. 1976)**, *cert. denied*, ***429 U.S. 1061 (1977)***; *Sparkman v. State*, 469 S.W.2d 692, 696 (Tenn. Crim. App. 1970).

[216] *See, e.g.*, *Miller v. Willbanks*, 8 S.W.3d 607, 615 (Tenn. 1999) (existence of extreme emotional distress).

[217] *State v. Harris*, 839 S.W.2d 54 (Tenn. 1992). *See also* *McCarley v. West Quality Food Service*, 948 S.W.2d 477 (Tenn. 1997) (in food poisoning case, expert's inability to exclude all other possible sources of contamination affects weight, not admissibility, of expert's testimony).

[218] *See below* *§ 7.04[5]*.

[219] *Union Traction Co. v. Anderson*, 146 Tenn. 476, 242 S.W. 876, 882 (1922).

[220] *State v. Howse*, 634 S.W.2d 652, 657 (Tenn. Crim. App. 1982).

[221] *State v. Phipps*, 883 S.W.2d 138 (Tenn. Crim. App. 1994).

[222] *Dickey v. McCord*, 63 S.W.3d 714, 722 (Tenn. Ct. App. 2001). *See above* *§ 4.01[1]*.

trial court's discretion is not without boundaries. When an expert's evidence is in written form and the expert does not testify in person, the appellate court may draw its own conclusions about the weight and credibility of the expert's written findings because it is in the same position as the trial court to assess the expert's evidence.[224] If the expert provides a report that is not contradicted by other expert testimony or other facts, the trial court may reject that expert evidence only if inconsistent with the facts or otherwise unreasonable.[225]

[13] Scientific Tests: In General

Sometimes scientific test results will be introduced as evidence in a Tennessee trial court. The admissibility of results of scientific tests is a difficult issue for trial courts because it involves an assessment of the scientific soundness of the proof. If a scientific test is based on an erroneous theoretical basis or a misapplication of scientific methods, the results may be wrong or at least questionable. Moreover, the lay jury may lack the expertise needed to assess the validity of the underlying theory or the accuracy of the testing methods, but may be inclined to give the results much weight because of the "scientific" jargon and aura.

Scientific tests are generally admissible in Tennessee if several principles are satisfied.[226] First, the evidence must be relevant to a fact in issue, Rule 401. Second, the witness must be qualified as an expert and the testimony must substantially assist the trier of fact.[227] Finally, the underlying facts or data upon which the expert relied must be trustworthy. These three issues can only be resolved after assessing the scientific validity or reliability of the evidence.[228] The next section describes the process of assessing the scientific validity of this proof under Tennessee law.[229]

[14] The *McDaniel* Test for Scientific Evidence and Expert Witnesses

[a] In General

The landmark American case regarding the admissibility of expert scientific testimony was *Frye v. United States*.[230] This seminal decision, dealing with the admissibility of polygraph evidence, required that the subject of the expert's testimony must be sufficiently well recognized to have received general acceptance within the expert's field. This standard, known throughout the country as the *Frye* test, was regarded by virtually all jurisdictions, including Tennessee, as the prerequisite to admission of scientific evidence. To some extent, it alleviated the trial judge's need to understand the science behind the scientific evidence since the standard was whether the scientific test was generally recognized by relevant experts.

In recent years, however, the *Frye* test was subjected to a storm of criticism because of its inherent conservatism and possible conflicts with the Federal Rules of Evidence's expert testimony rules that do not

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[223] *Burden v. Burden, 250 S.W.3d 899, 915 (Tenn. Ct. App. 2007)*.

[224] *Burden v. Burden, 250 S.W.3d 899, 905* (Tenn. Ct. App. 2007).

[225] *Burden v. Burden, 250 S.W.3d 899, 915 (Tenn. Ct. App. 2007)*.

[226] *State v. Begley, 956 S.W.2d 471, 475 (Tenn. 1997)*.

[227] *See above § 7.02[2]*.

[228] *McDaniel v. CSX Transp., Inc., 955 S.W.2d 257, 265 (Tenn. 1997)*.

[229] *See below § 7.02[14]*.

[230] *293 F. 1013 (D.C. Cir. 1923)*. *See generally* Michelle Lynn Veronica Consiglio, Casenote, *77 Tenn. L. Rev. 207 (2009)*(summary of federal and Tennessee standards for admitting expert testimony).

specifically embrace *Frye*. In 1993, the United States Supreme Court finally rejected *Frye* as the federal test and replaced it with the so-called *Daubert* test.[231]

Daubert v. Merrell Dow Pharmaceuticals, Inc.,[232] involved the admissibility of expert scientific evidence that pregnant mothers' use of the anti-nausea drug, Bendectin, caused birth defects in their children. The trial court had held that plaintiffs' expert testimony was inadmissible under *Frye's* "general acceptance" standard. The Supreme Court in *Daubert* found *Frye* to be inconsistent with the Federal Rules of Evidence. Instead, under Federal Rule 702, *Daubert* established that the rules of evidence admit reliable expert testimony that relates "scientific knowledge," which "establishes a standard of evidentiary reliability."[233] The word " 'scientific' implies a grounding in the methods and procedures of science."[234] The term "knowledge" includes facts, ideas, or accepted truths based on "good grounds."[235] "Scientific knowledge," according to *Daubert*, must be "derived by the scientific methods" and the proposed expert testimony "must be supported by appropriate validation—*i.e.*, 'good grounds,' based on what is known."[236]

Daubert also held that the scientific evidence must be relevant or "fit" in that it will aid the jury in resolving a factual dispute in the particular case.[237] The trial judge is given significant discretion whether to admit the expert testimony. *Daubert* lists a number of factors to be used in this decision.

In *Kumho Tire Co. v. Carmichael*,[238] the United States Supreme Court extended *Daubert* to cover the testimony of engineers and other experts who are not scientists.[239]

In *McDaniel v. CSX Transportation*,[240] the Tennessee Supreme Court followed the federal lead and also rejected *Frye* in favor of an approach that resembles the federal *Daubert* one. *McDaniel* involved a lawsuit

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[231] *Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993)*. *See generally* DAVID KAYE, DAVID BERNSTEIN, AND JENNIFER MNOOKIN, THE NEW WIGMORE: A TREATISE ON EVIDENCE, EXPERT EVIDENCE § 7.3 (2d ed. 2011).

[232] *509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993)*. Federal Evidence Rule 702 has been amended to embrace the general principles of *Daubert*. Federal Rule 702 now provides that expert testimony may be admitted if based on sufficient facts or data, the product of reliable principles and methods, and the witness has applied the principles and methods reliably to the facts of the case.

[233] *509 U.S. at 590*.

[234] *Id*.

[235] *Id.*

[236] *Id.*

[237] *Id. at 591*.

[238] *526 U.S. 137, 119 S.Ct. 1167, 143 L.Ed.2d 238 (1999)*. *See generally* PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, 1 SCIENTIFIC EVIDENCE 34–64 (4th ed. 2007); CHRISTOPHER B. MUELLER & LAIRD C. KIRKPATRICK, 3 FEDERAL EVIDENCE 819 (3d ed. 2007).

[239] *See generally* Karl Thorsvold, *Guarding the Gate to Expert Testimony: Kumho Tire v. Carmichael and State v. Council*, 51 S.C. L. REV. 965 (2000). *See also State v. Stevens, 78 S.W.3d 817, 833 (Tenn. 2002)* (rejecting defendant's argument that McDaniel applies only to scientific testimony, reasoning that "distinguishing scientific evidence from other areas of expert testimony is too difficult a determination" and, "[c]onsequently, to restrict McDaniel to scientific evidence would be to impose upon the trial court the undue burden of classifying the legions of expert witnesses as scientific or nonscientific"; accordingly, the court held that when the expert's reliability is challenged, the court may consider the following nondefinitive factors: (1) the McDaniel factors, when they are reasonable measures of the reliability of expert testimony; (2) the expert's qualifications for testifying on the subject at issue; and (3) the straightforward connection between the expert's knowledge and the basis for the opinion such that no "analytical gap" exists between the data and the opinion offered).

alleging that the plaintiffs, employees of the defendant railroad operator, suffered brain damage due to chronic exposure to four organic solvents used in defendant's mechanical shops. Because of the nature of the alleged harm, plaintiffs were unable to prove their illness with brain scans or other objective diagnostic tools. Instead, plaintiffs sought to use occupational physicians as expert witnesses to establish that long-term exposure to the solvents caused the brain damage. The occupational physicians based their testimony on epidemiological studies of the health of the nervous system of various groups that had been exposed to such solvents. The defendant argued that the expert testimony should be excluded because it lacked sufficient scientific support, would not substantially assist the trier of fact, and was untrustworthy.

The Tennessee Supreme Court used this case to redefine the standard for considering expert testimony in Tennessee courts. After tracing the history of the standard for admitting scientific evidence in Tennessee and the federal courts, the Tennessee Supreme Court examined the Tennessee Rules of Evidence for guidance. The Court noted that Rules 702 and 703 do not specifically embrace *Frye,* although at that time the Advisory Committee Comment to Tennessee Evidence Rule 702 indicated that *Frye* was the Tennessee test.[241]

The Tennessee Supreme Court then held that the adoption of Rules 702 and 703 superseded the *Frye* general acceptance test. The Court stated:

> [I]n Tennessee, under the recent rules, a trial court must determine whether the evidence will substantially assist the trier of fact to determine a fact in issue and whether the facts and data underlying the evidence indicate a lack of trustworthiness. The rules together necessarily require a determination as to the scientific validity or reliability of the evidence. Simply put, unless the scientific evidence is valid, it will not substantially assist the trier of fact, nor will its underlying facts and data appear to be trustworthy, but there is no requirement in the rule that it be generally accepted.[242]

A subsequent Tennessee Supreme Court decision explained that trial courts considering expert testimony must consider the "methodological and foundational reliability of the expert's testimony."[243] This means that the discipline must be assessed to ascertain the reliability of the studies and data it uses and that underlie the expert's testimony. For some disciplines, the methods and foundations are reliable or unreliable as a matter of law, perhaps by statute or prior judicial decision. Moreover, in some "ordinary situations," methodological and foundational reliability may be assumed.[244] In other cases, the court will have to explore the discipline and its methodology and foundations carefully, using the *McDaniel* factors described below.[245]

Additionally, according to the Tennessee Supreme Court, the trial court should analyze the reliability of the underlying facts or data upon which this particular expert's opinion is predicated.[246]

When the trial court screens expert testimony, it is serving as a "gatekeeper."[247] The objective of this inquiry is to ensure that "an expert, whether basing testimony upon professional studies or personal experience,

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[240] *955 S.W.2d 257 (Tenn. 1997)*, *noted in* Brian J. Russell, Comment, *McDaniel v. CSX Transportation, Inc.: A Clearer Standard for Determining Admissibility of Scientific Evidence in Tennessee State Courts*, 28 U. MEM. L. REV. 1259 (1998).

[241] *Tenn. R. Evid. 702* Advisory Commission Comment (subsequently amended).

[242] *955 S.W.2d at 265*. *See, e.g.*, *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 274 (Tenn. 2005)* (trial court must determine that the expert testimony is reliable in that the evidence will substantially assist the trier of fact to determine a fact in issue and that the underlying facts and data appear to be trustworthy).

[243] *State v. Scott, 275 S.W.3d 395 (Tenn. 2009)*.

[244] *Id. at 403*.

[245] *Id.*

[246] *Id.*

employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field."[248]

Although the *McDaniel* Court specifically rejected[249] following the list of factors suggested by the United States Supreme Court in *Daubert*, the Tennessee Supreme Court did list some factors a Tennessee court may consider in determining the reliability of scientific evidence:

> (1) whether scientific evidence has been tested and the methodology with which it has been tested; (2) whether the evidence has been subjected to peer review or publication; (3) whether a potential rate of error is known; (4) whether, as formerly required by *Frye*, the evidence is generally accepted in the scientific community; and (5) whether the expert's research in the field has been conducted independent of litigation.[250]

The Tennessee Supreme Court subsequently refined *McDaniel* in *Brown v. Crown Equipment Corporation*[251] and held that the *McDaniel* factors are not exhaustive and not necessarily even relevant in assessing the reliability of a particular expert's methodology. The trial court need not consider all of them in making a reliability determination.[251.1]

The Tennessee Court of Appeals has held that the trial court should follow the "essential guidelines" set forth in *Payne v. CSX Transp., Inc.,* by making a threshold assessment of the reliability of the expert testimony and whether it would provide substantial assistance to a jury.[251.2] This threshold finding of

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[247] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 275 (Tenn. 2005)*; *State v. Lowe, 2016 Tenn. Crim. App. LEXIS 497 (Tenn. Crim. App. 2016)*; *Jackson v. Joyner, 309 S.W.3d 910, 915 (Tenn. Ct. App. 2009)*.

[248] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 275 (Tenn. 2005)* (*citing Kumho Tire Co. v. Carmichael, 526 U.S. 137, 119 S. Ct. 1167, 143 L. Ed. 2d 238 (1999)*). *See also Payne v. CSX Transp., Inc., 467 S.W.3d 413 (Tenn. 2015)* (same); *Breen v. Sharp, 2017 Tenn. App. LEXIS 742 (Tenn. Ct. App. 2017)* (same); *Johnson v. John Hancock Funds, 217 S.W.3d 414, 427 (Tenn. Ct. App. 2006)* (in *Brown* the Tennessee Supreme Court added the factor of the expert's qualifications for testifying on the subject at issue, a factor especially important when the expert's personal experience is an essential part or his or her methodology or analysis); *Freeman v. Blue Ridge Paper Prods., 229 S.W.3d 694 (Tenn. Ct. App. 2007)*.

[249] *See Coe v. State, 17 S.W.3d 193, 226 n. 17 (Tenn. 2000)* (in *McDaniel* "we declined to adopt *Daubert* and held that admissibility would ultimately be determined under" Tennessee Rules 702 and 703).

[250] *955 S.W.2d at 265*.

[251] *181 S.W.3d 268 (Tenn. 2005)*. *See also Dubois v. Haykal, 165 S.W.3d 634, 637 (Tenn. Ct. App. 2004)* (*McDaniel* factors not exclusive and Tennessee courts are not required to consider them); *Payne v. CSX Transp., Inc., 467 S.W.3d 413 (Tenn. 2015)* (rigid application of *McDaniel* factors not required).

[251.1] *Brown v. Crown Equip. Corp., 181 S.W.3d 268 (Tenn. 2005)*. *See also State v. Stevens, 78 S.W.3d 817 (Tenn. 2002)* (when the expert's reliability is challenged, the court may consider the following nondefinitive factors: (1) the McDaniel factors, when they are reasonable measures of the reliability of expert testimony; (2) the expert's qualifications for testifying on the subject at issue; and (3) the straightforward connection between the expert's knowledge and the basis for the opinion such that no "analytical gap" exists between the data and the opinion offered); *Russell v. Ill. Cent. R.R., 2015 Tenn. App. LEXIS 520 (Tenn. Ct. App. 2015)* (these factors are not mandated in every case in which expert evidence is offered and should not be applied unless the factor or factors provide a reasonable measure of the expert's methodology; thus, the reasonableness of the McDaniel factors in assessing reliability depends upon the nature of the issue, the witness's particular expertise, and the subject of the expert's testimony).

[251.2] *See e.g.*, *Linkous v. Tiki Club, Inc., 2019 Tenn. App. LEXIS 568 (Tenn. Ct. App. Nov. 22, 2019)* (trial court erred by excluding testimony that could meet the requirements of Rules 702 and 703, because the court failed to "properly fulfill its gatekeeping function" when it failed to evaluate the expert testimony under the guidelines set forth in *Payne*).

reliability does not always need to be explicit; the trial record may sufficiently establish that the trial court implicitly found the evidence to be reliable.[251.3]

[b] Reliability Factors: Testing

One of the *McDaniel* factors in assessing the reliability of scientific evidence is whether the evidence and the methodology have been subjected to testing. The testing may have been done by others rather than the expert providing the testimony.[252] For instance, where several physicians used differential diagnosis to reach the same scientific conclusion—*ie.*, that plaintiff's cancer death was caused by workplace carcinogens—the findings were reliable, because each physician had considered "all relevant potential causes" of defendant's cancer and "eliminated alternative causes".[252.1] Indeed, the data may have been gathered or produced by the side opposing the expert whose testimony was based on those same tests. It may involve data based on a patient's self-reporting of incidents.[253] If an item has been manufactured and placed on the market, this may diminish the need to test that item.[254] On the other hand, if an expert proposes a theory that modifies otherwise well-established knowledge, the importance of testing in assessing reliability is "at its highest."[255]

[c] Reliability Factors: Peer Review

The second *McDaniel* factor is whether the evidence has been subjected to peer review or publication. In *Brown,* the Tennessee Supreme Court stated explicitly that the lack of peer review does not necessarily render an expert's opinion unreliable.[256] The court recognized that some subjects of expert testimony may never have been of sufficient interest to engender a test and that some methodologies may simply not be typically reported in publications. As an illustration, *Brown* stated that the failure to submit to publication

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[251.3] *State v. Glass, 2020 Tenn. Crim. App. LEXIS 402, *22 (Tenn. Crim. App. June 9, 2020)* (where defendant objected to an expert's methodology because it differed from the method used by the State's other expert firearms witness, a Tennessee Bureau of Investigation special agent; the trial court overruled the objection and admitted the testimony without conducting a *McDaniel* assessment, stating that the objection impacted the weight of the testimony, not its admissibility; the Court of Criminal Appeals found no error, because although the trial court did not specifically rule on the validity of the methodology, the trial court's admissibility ruling "necessarily included an implicit conclusion" that the expert's opinion was based on a valid methodology). *See also* *State v. Brewer, 2020 Tenn. Crim. App. LEXIS 221, *40 (Tenn. Crim. App. Apr. 6, 2020)* (trial court did not commit error by admitting expert's drug recognition evaluation (DRE) testimony without explicitly naming the *McDaniel* factors in its ruling, since before admitting the testimony the trial court held a hearing and considered the development of the test and its reliability, and its findings were summarized in a detailed written order; the *McDaniel* factors "are not requirements for admissibility but may be considered by the trial judge when weighing the reliability of the expert testimony and forensic evidence"), *quoting* *State v. Davidson, 509 S.W.3d 156, *208 (Tenn. 2016)*.

[252] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 278 (Tenn. 2005)*. *See also* *Russell v. Ill. Cent. R.R., 2015 Tenn. App. LEXIS 520 (Tenn. Ct. App. 2015)* (the court noted that differential diagnosis is not a method which lends itself to establishing a "direct link" between an activity and an injury, but rather, is a method by which a physician "considers all relevant potential causes of the symptoms and then eliminates alternative causes").

[252.1] *Russell v. Ill. Cent. R.R., 2015 Tenn. App. LEXIS 520 (Tenn. Ct. App. 2015)*.

[253] *State v. Scott, 275 S.W.3d 395 (Tenn. 2009)*.

[254] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 278 (Tenn. 2005)*.

[255] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 279 (Tenn. 2005)*.

[256] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 279 (Tenn. 2005)*.

opinions based on well-established engineering techniques or extensive practical experience, rather than novel technology, will rarely cast doubt on the reliability of those opinions.[257]

[d] Reliability Factors: Potential Error Rate

The third *McDaniel* factor is whether a potential error rate is known. Since an error rate often may not be known because of the particular methodologies employed, *Brown* recognized that experience-based methodology may lessen the relevance of the rate-of-error factor.[258]

[e] Reliability Factors: General Acceptance

The fourth *McDaniel* factor is whether the evidence is generally accepted in the scientific community. In *Brown* the Tennessee Supreme Court dismissed the use of various safety standards in assessing general acceptance.[259] Many of these were discounted because they were not applicable to the situation at issue in *Brown* or simply did not support the proposition for which they were offered.

[f] Reliability Factors: Research Independent of Litigation

The fifth *McDaniel* factor is whether the expert's research in the field was conducted independent of litigation. *Brown* opined that this factor is of much less significance when the testimony is derived from an expert's pre-litigation personal experiences.[260]

[g] Reliability Factors: Expert's Qualifications for Testifying on the Issue

Brown states that another reliability factor is the expert's qualifications for testifying on the subject at issue in the case.[261] This factor, according to *Brown*, is particularly applicable when the expert's personal experience is essential to the methodology or the analysis underlying the expert's opinion. But *Brown* also cautions that using this factor as the *sole* basis of assessing reliability:

> would result in a reconsideration of the Rule 702 requirement that the expert witness be qualified by knowledge, skill, experience, training, or education to express an opinion within the limits of the expert's expertise.[262]

The underlying concern with using only this criterion is that, once a witness qualifies as an expert on a particular subject, that alone would satisfy the reliability query. *Brown* further instructs the trial court to distinguish between the marginally qualified full-time expert testifying about a methodology that he or she

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[257] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 280 (Tenn. 2005)*.

[258] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 278 (Tenn. 2005)* (*citing Pipitone v. Biomatrix, Inc., 288 F.3d 239, 246 (5th Cir. 2002)* (holding that the rate-of-error factor is not particularly relevant when the expert bases his or her testimony upon first-hand observations and professional experience)).

[259] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 280 (Tenn. 2005)*.

[260] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 280 (Tenn. 2005)*.

[261] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 274 (Tenn. 2005)*; *See also Johnson v. John Hancock Funds, 217 S.W.3d 414, 427 (Tenn. Ct. App. 2006)* (in *Brown* the Tennessee Supreme Court added the factor of the expert's qualifications for testifying on the subject at issue, a factor especially important when the expert's personal experience is an essential part of his or her methodology or analysis).

[262] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 274 (Tenn. 2005)*.

has not employed in real life and the highly credentialed expert who has devoted his or her life's work to the actual exercise of the methodology upon which the testimony is based.[263]

[h] Reliability Factors: Connection Between Expert's Knowledge and the Basis for the Opinion

Brown discusses another factor: the connection between the expert's knowledge and the basis for the expert's opinion.[264] This factor is designed to ensure that there is no analytical gap between the data the expert relies upon and the opinion offered.[264.1] Part of this analysis includes the trial court's asking how and why the expert was able to extrapolate from the data and reach the conclusions that the expert presented to the court.[265] According to *Brown*, it is an especially important factor when the expert's opinions are based on non-verifiable events such as experience or observation.[265.1] As an illustration, *Brown* cites a case[266] in which an expert opined that certain workplace exposures contributed to the plaintiff's cancer but relied on studies that were either too dissimilar to the facts of the case or failed to link the cancer with the particular exposures.

Another case held that an expert may testify about causation (here, lung cancer) without providing specific dose levels, as long as the methods used to diagnose the conditions are based on reliable data and will substantially assist the trier of fact.[266.1]

Where the expert's testimony is based not on scientific data, but on the expert's own experience and specialized knowledge, the expert's conclusions may be considered reliable if they are "sufficiently straightforward and supported by a 'rational explanation which reasonable [persons] could accept as more correct than not correct.' "[266.2] To illustrate this point, the Tennessee Supreme Court, in *State v. Stevens*,[266.3] cited the following example:

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[263] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 274 (Tenn. 2005)*. *See also* *Sparks v. Mena, 294 S.W.3d 156, 162 (Tenn. Ct. App. 2008)* (biomedical engineer qualified to testify about workings of surgical device).

[264] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 275 (Tenn. 2005)*; *Jackson v. Joyner, 309 S.W.3d 910, 916 (Tenn. Ct. App. 2009)*. *See also* *Johnson v. John Hancock Funds, 217 S.W.3d 414, 427 (Tenn. Ct. App. 2006)* (in *Brown* the Tennessee Supreme Court added the factor of the connection between the expert's knowledge and the basis for the expert's opinion. This factor enables courts to make sure that no analytical gap exists between the expert's knowledge and the basis for his or her opinion).

[264.1] *Russell v. Ill. Cent. R.R., 2015 Tenn. App. LEXIS 520 (Tenn. Ct. App. 2015)* (when determining whether expert testimony meets the requisites of Rules 702 and 703, the trial court must consider whether the basis for the witness's opinion, i.e., testing, research, studies, or experience-based observations, adequately supports that expert's conclusions to ensure that there is not a significant analytical gap between the expert's opinion and the data upon which the opinion is based).

[265] *State v. Scott, 275 S.W.3d 395, 402 (Tenn. 2009)*. *See also* *Sparks v. Mena, 294 S.W.3d 156, 162–63 (Tenn. Ct. App. 2008)* (biomedical engineer qualified to testify about workings of surgical device).

[265.1] *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 275 (Tenn. 2005)*. *See also* *State v. Stevens, 78 S.W.3d 817 (Tenn. 2002)* (the connection between the expert's conclusion and the underlying data supporting that conclusion is of special importance when determining the reliability of experience-based testimony, because observations and experiences are not easily verifiable by the court).

[266] *GE v. Joiner, 522 U.S. 136, 118 S. Ct. 512, 139 L. Ed. 2d 508 (1997)*.

[266.1] *Payne v. CSX Transp., Inc., 467 S.W.3d 413 (Tenn. 2015)*.

[266.2] *State v. Stevens, 78 S.W.3d 817, 834 (Tenn. 2002)* (*quoting* *Wood v. Stihl, 705 F.2d 1101, 1107–08 (9th Cir. 1983)*.

[266.3] *State v. Stevens, 78 S.W.3d 817 (Tenn. 2002)*.

> "If one wanted to prove that bumblebees always take off into the wind, a beekeeper with no scientific training at all would be an acceptable expert witness *if* a proper foundation were laid for his conclusions. The foundation would not relate to his formal training, but to his firsthand observations. In other words, the beekeeper does not know any more about flight principles than the jurors, but he has seen a lot more bumblebees than they have."
>
> The basis for the beekeeper's opinion is his experience observing bees. In determining whether this expert's testimony is reliable, the trial court can look at the connection between the beekeeper's observations and his conclusions extrapolated from these observations. The conclusions should be sufficiently straightforward to assist the jury's understanding of the take-off habits of bees. "The straightforward character of the testimony is essential to its reliability because it permits the jury to understand, and thus weigh, the beekeeper's conclusion without the necessity of an explanation of the scientific principles that account for bees always taking off into the wind."[266.4]

[i] Reliability Factors: Others

Since *Brown* makes it clear that the *McDaniel* factors are not exhaustive, future cases will add to the list of factors described above and counsel should not hesitate to suggest new factors when appropriate for the particular expert testimony.[267]

[j] Application of *McDaniel*

The Tennessee Supreme Court also provided guidance for trial courts faced with conflicting scientific views. In such cases, the trial court must analyze the science as well as the qualifications, demeanor, and conclusions of the experts, but it need not choose between or even weigh the legitimate conflicting views.[268] That is the responsibility of the trier of fact and will be sorted out "with the crucible of vigorous cross-examination and countervailing proof."[269]

[266.4] *State v. Stevens, 78 S.W.3d 817, 834 (Tenn. 2002)* (*quoting* *Berry v. City of Detroit, 25 F.3d 1342, 1350 (6th Cir. 1994)* (emphasis in original)). *See also*, *State v. Smoot, 2018 Tenn. Crim. App. LEXIS 739 (Crim. App. 2018)* (the *McDaniel* factors are non-exhaustive and not always appropriate for application by the trial court, such as where the expert's conclusions are based on extensive and specialized experience; thus, agent was properly qualified under *Tenn. R. Evid. 702* as an expert on ballistics, based on his experience gained from being an agent and years of conducting ballistics tests, and his testimony was reliable under *Tenn. R. Evid. 703*, since the agent based his conclusions on experienced-based observations, not scientific evaluations).

[267] *State v. Scott, 275 S.W.3d 395 (Tenn. 2009)*. *See also*, *Nelson v. Justice, 2019 Tenn. App. LEXIS 35 (Tenn. Ct. App. 2019)*, in which the trial court relied on a doctor's expert testimony in ruling father's visitation rights should be restricted. The father argued that the doctor's testimony should have been excluded because it was based on untrustworthy data. The untrustworthiness was not based on a *McDaniel* factor, but instead, on the fact that the expert belonged to "a professional organization whose membership included cats and a man in prison." The appellate court ruled that "although there is no dispute that this professional organization does not have a rigorous acceptance process," since there was no evidence that the doctor relied on information from that particular professional organization in making his conclusions, the doctor's mere affiliation with the organization did not render his overall conclusions unreliable. Credibility problems may, of course, render a witness unqualified to testify as an "expert" on a particular matter. *See above*, *§§ 7.02[4]*, *7.02[14][g]*.

[268] *Id. See also* *Dubois v. Haykal, 165 S.W.3d 634, 637 (Tenn. Ct. App. 2004)* (trial court need not weigh or choose between two legitimate but conflicting scientific opinions, but it must assure itself that the opinions are based on relevant scientific methods, processes, and data and not upon an expert's mere speculation).

[269] *Id. See also* *Brown v. Crown Equip. Corp., 181 S.W.3d 268, 274 (Tenn. 2005)* (expert testimony will be subject to vigorous cross-examination and countervailing proof; the weight of the theories and resolution of legitimate but competing expert opinions are matters entrusted to the trier of fact); *State v. Scott, 275 S.W.3d 395 (Tenn. 2009)* (trial court should not choose between conflicting expert theories by choosing the lesser one; the trier of fact must make this decision; a foundation for expert testimony based on "good grounds" should be tested by the adversary process, not judicial decision).

Once the trial court admits expert testimony, the court's gatekeeping function is over. The trier of fact assesses the weight of the theories and the resolution of competing expert opinions.[269.1]

Perhaps because of the obvious difficulties that judges with little or no scientific training will have applying this test, the Tennessee Supreme Court reiterated the traditional view that trial courts are given much discretion on issues concerning the admissibility, qualifications, relevancy, and competency of expert testimony.[270] This discretion will be overturned only if it was abused or exercised arbitrarily.[271]

The *McDaniel* test was applied in *State v. Shuck,*[272] involving the issue of whether a psychologist should be permitted to provide expert testimony on whether a criminal defendant, alleging entrapment, was uniquely susceptible to inducement by government agents. The Tennessee Supreme Court held that the issue should be resolved using the *McDaniel* standards for expert testimony. Accordingly, the *Shuck* Court asked whether the testimony would "substantially assist" the trier of fact to understand the evidence or determine a relevant fact, and whether the expert opinion testimony was based on reliable facts or data. The testimony should be excluded if the underlying facts or data indicate lack of trustworthiness. Applying these standards, the Court in *Shuck* held that the psychologist's testimony should have been admitted at trial. Such expert testimony, according to *Shuck*, may have been essential to the jurors in their efforts to evaluate the effect of the defendant's cognitive and psychological characteristics on the key entrapment issues of the existence of inducement or predisposition. The fact that the psychologist would have opined about the ultimate issue in the case was irrelevant, since Rule 704 provides that testimony is not to be excluded simply because it embraces the ultimate issue in the case. It should be noted that the *Shuck* decision, unlike one based on the previous *Frye* test, did not specifically address whether the psychologist's methods were generally accepted within the appropriate scientific community.

In *State v. Stevens,*[273] the Tennessee Supreme Court followed the United States Supreme Court's *Kumho* decision and held that the *McDaniel* approach should be applied to all expert testimony; it is not limited to scientific evidence. Trial courts may apply the *McDaniel* factors to any expert testimony where the factors are appropriate to measure the reliability of the expert evidence. The *Stevens* Court reiterated that the trial court has great discretion in assessing expert testimony. The trial judge must first determine whether the proposed expert is qualified to express an opinion on the issue and whether the basis for the expert's opinion adequately supports the expert's conclusions. Applying this approach, *Stevens* upheld the trial court's decision to exclude an expert who would have testified that his examination of a crime scene allowed him to give an opinion about the type of people who would perpetrate the crime. The Court found that the expert's testimony concerning behavioral analysis was inadmissible because it did not bear sufficient indicia of reliability to substantially assist the trier of fact under Rule 702.

[15] Validity of Specific Testing Procedures

[a] In General

Scientific tests are admissible if several criteria are satisfied. Ordinarily, the person introducing the tests must be an expert,[274] though the person who actually conducted the tests may have different qualifications.

[269.1] *Payne v. CSX Transp., Inc., 467 S.W.3d 413 (Tenn. 2015)*.

[270] *Id. at 263*. *See also Coe v. State, 17 S.W.3d 193, 226–27 (Tenn. 2000)*; *State v. Begley, 956 S.W.2d 471, 475 (Tenn. 1997)*.

[271] *955 S.W2d at 263–64*.

[272] *953 S.W.2d 662 (Tenn. 1997)*.

[273] *78 S.W.3d 817 (Tenn. 2002)*; *See also State v. Ward, 138 S.W.3d 245 (Tenn. Crim. App. 2003)* (*McDaniel* bars pathologists from testifying on basis of unreliable "rule of three" which says a third unexplained death of a child in a single person's care suggests the death was a homicide).

The tests in general must meet the *McDaniel* test of reliability.[275] The tests must also have been conducted in a sound way. There is some indication that the authentication requirements are relaxed as the tests become generally accepted and their reliability has been demonstrated.[276]

[b] Proper Instruments Used

The test instruments used in the case at bar must be the correct ones to conduct the tests yielding the results being offered into evidence.[277] This means that the instruments must be capable of measuring or calculating the data that are reported by the expert witness.

[c] Instruments Functioning and Used Properly

The test instruments must have worked properly when the tests at issue were conducted.[278] They must have been adequately calibrated and other proper procedures followed. For example, a device to test breath in order to determine the blood alcohol content must be calibrated by use of a standard containing a known percentage of alcohol.[279] The Tennessee Supreme Court has established specific criteria for the admission of evidence of a breath-alcohol testing instrument.[280]

[d] Properly Trained Personnel Administered the Tests

The tests in this case must have been conducted by qualified people.[281] This does not mean that they always must have university degrees or even any formal training. It does, however, mean that they are qualified to administer the particular test they administered. Years of experience is one indicia that the person is qualified to perform this test. However, in order for certain types of test results to be admissible in judicial or administrative proceedings, specific training must have been received by the individual administering the test. For example, in order for the results of a driver's speed, as determined using radar, laser or a similar device, to be admissible, the administering law enforcement officer must have been properly trained regarding the use of the device pursuant to guidelines established by the National Highway Safety Administration or the Tennessee Peace Officer Standards and Training (POST) Commission.[282] Similarly, results of testing for blood alcohol or intoxication levels, made using a breathalyzer or similar device, are admissible only if the law enforcement officer who administered the test has been trained "by a recognized organization in the field as qualified to operate the device used."[283]

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[274] *See above § 7.02[14]*.

[275] *McDaniel v. CSX Transp., Inc., 955 S.W.2d 257 (Tenn. 1997)*. *See above § 7.02[14]*.

[276] *See State v. Sensing, 843 S.W.2d 412, 416 (Tenn. 1992)* (authentication requirements for breath testing instrument made less rigorous because of acceptance and reliability of such tests).

[277] *See, e.g.*, *Fortune v. State, 197 Tenn. 691, 698, 277 S.W.2d 381, 384 (1955)* (there should be competent proof that the device "is a proper one").

[278] *See, e.g.*, *Fortune v. State, 197 Tenn. 691, 698, 277 S.W.2d 381, 384 (1955)* (there should be competent proof that the scientific device was in good and accurate order when used).

[279] *See, e.g.*, D. RAYBIN, 10 TENNESSEE CRIMINAL PRACTICE AND PROCEDURE §§ 27.41, 27.58 (Rev. ed. Dec. 2008).

[280] *See below § 7.02[18]*.

[281] *See, e.g.*, *Pruitt v. State, 216 Tenn. 686, 393 S.W.2d 747 (1965)* (breathalyzer test).

[282] *Tenn. Code Ann. § 24-7-124* (Supp. 2010).

[283] *Id.*

[e] Properly Trained Personnel Read and Interpreted the Tests

Both the taking and interpretation of test results must have been done by qualified individuals. The qualifications for each may differ, and are determined by the particular discipline and tests involved. However, for commonplace, reliable testing equipment, it is not always mandatory that the operator of the equipment have a complete knowledge of the scientific theory upon which the machine operates. In *State v. Sensing,*[284] the Tennessee Supreme Court reversed a prior holding and determined that a certified operator of an evidentiary breath testing machine, in this case an Intoximeter 3000, need not know the scientific technology by which the machine functions.

While there is no established minimum educational qualification, it is clear that the person should understand the theoretical and operative functions of the testing device.[285] The witness cannot simply rely on printed materials supplied with the machine, for these constitute hearsay.[286] In the case of testing devices that measure the speed of a vehicle or the blood alcohol or level of intoxication of an individual, training requirements of the law enforcement officer who administered the test are established by statute.[287] If the officer was not adequately trained, the test results are inadmissible in any administrative or judicial proceeding.[288]

[f] Chain of Custody

A scientific test will often require the expert to use tangible evidence taken from the accused or from a crime scene. For example, a pistol may be tested at a crime lab to determine whether there are fingerprints on it. In such cases, evidence law requires proof of a chain of custody to establish that the item tested by the expert is the same item taken from the accused or the crime scene. Chain of custody is discussed more fully elsewhere in this book.[289]

[16] Scientific Evidence: Handwriting

[a] In General

Often in civil and even more commonly in criminal cases, the trier of fact must determine whose handwriting is on a document or other item. For example, in a check forgery case it may be necessary to identify the person who signed the forged check. Tennessee law permits both lay and expert opinion on this issue.

[b] Lay Testimony

Rule 901(b)(2) specifically authorizes a lay witness to testify "as to the genuineness of handwriting."[290] This rule follows traditional Tennessee law.[291] The lay witness must be familiar with the handwriting at issue.

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[284] *843 S.W.2d 412 (Tenn. 1992)*. *See below § 7.02[18]*.

[285] *See, e.g.*, *Pruitt v. State, 216 Tenn. 686, 393 S.W.2d 747 (1965)*. *Cf. King v. State, 598 S.W.2d 834 (Tenn. Crim. App. 1980)* (expert witness understood analysis procedure and way chromatograph detects blood alcohol level).

[286] *Fortune v. State, 197 Tenn. 691, 277 S.W.2d 381 (1955)* (drunkometer).

[287] *Tenn. Code Ann. § 24-7-124* (Supp. 2010).

[288] *Id.*

[289] *See below § 9.01[13]*.

[290] *See below § 9.01[4]*.

According to this rule, the familiarity with the handwriting should not have been "acquired for purposes of the litigation." Rule 901(b)(2). For example, a husband familiar with his wife's handwriting may testify that a certain handwriting specimen is that of his wife.

[c] Expert Testimony

According to several rules in the Tennessee Rules of Evidence, an expert may also testify about the identification of a person's handwriting. Rule 901(b)(1) specifically states that an authenticating witness may testify that "a matter is what it is claimed to be."[292] Rule 901(b)(3) indicates that an expert may compare one document with another specimen that has been authenticated,[293] and Rule 901(b)(4) permits a witness to describe "distinctive characteristics" of an item.

The usual pattern is for a handwriting expert to compare a known specimen of a person's handwriting with the document at issue in the case. The expert and jury may use a microscope or magnifying glass in making the comparison.[294] The specimen may be obtained through a court order which could require the person to write a dictated series of words or to sign a piece of paper several times. The specimen may also be obtained from an existing and properly authenticated writing, such as a signed check or a letter. The expert looks for similarities and differences in the handwriting on the two items.

[17] Scientific Evidence: Medical Evidence

[a] In General

Often in both criminal and civil cases medical evidence is critical to the trier of fact.[295] This proof may deal with such issues as the cause of death, or the cause and extent of injuries. Virtually all of this proof is given by expert witnesses. Under Rule 704, the expert's testimony is ordinarily not barred because it embraces the ultimate issue in the case. A medical expert may be impeached, as any other witness.[296] A statute may prescribe the qualifications for an expert on medical issues.[297]

[b] Cause of Death

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[291] *See, e.g.*, State v. Chestnut, 643 S.W.2d 343, 347 (Tenn. Crim. App. 1982) (two lay witnesses, familiar with the defendant's handwriting, permitted to give their opinion that the embezzlement defendant authored certain written items); Scott v. Atkins, 44 Tenn. App. 353, 361–62, 314 S.W.2d 52, 56 (1957) (lay witness permitted to give opinion of author of holographic will).

[292] *See below* § 9.01[3].

[293] *See below* § 9.01[5]. In State v. Williams, 690 S.W.2d 517, 524 (Tenn. 1985), a vice president of a bank's loan department was permitted to compare a signature on a loan card with signatures on two checks, and to testify that the checks were not written by the person who signed the signature card. While it is not clear whether the witness was testifying as an expert or lay witness, it is submitted that the former is probably correct. The Tennessee Supreme Court noted that the witness, over a 22 year period, had examined four to five signatures per year to determine their authenticity. This experience should qualify the witness as an expert under the liberal provisions of Rule 702. *See also* Omohundro v. State, 172 Tenn. 48, 109 S.W.2d 1159 (1937) (expert witness permitted to compare writing in dispute with authenticated specimen; but comparison impermissible until specimen properly authenticated). Rule 901(b)(3) superseded Tenn. Code Ann. § 24-7-108 (1980), which dealt with handwriting comparisons and was repealed by Chapter 273, Tennessee Public Acts of 1991.

[294] *See* Kannon v. Galloway, 61 Tenn. 230 (1872).

[295] *See above* §§ 7.02[4], 7.02[7].

[296] Sneed v. Stovall, 22 S.W.3d 277 (Tenn. Ct. App. 1999) (prior sexual improprieties with patients).

[297] *See, e.g.*, Tenn. Code Ann. § 29-26-115(b) (Supp. 2010) (qualifications for expert in medical malpractice action).

Although on rare occasions a lay witness has testified in a Tennessee court on the cause of death,[298] the usual pattern is for an expert to offer this proof. For example, a pathologist who conducted an autopsy was permitted to testify that gunshot wounds were not self-inflicted,[299] another medical examiner was permitted to testify about the effect upon the body when a bullet enters the brain and separates upon impact,[300] and a physician was permitted to state that a victim died from strangulation and head trauma.[301] The testifying physician may base his or her testimony on the medical history of the victim.[302] The same rule was applied in a totally different context when an expert was permitted to testify about the statistical likelihood of death by sudden infant death syndrome (SIDS), in response to defendant's argument that the child died by SIDS.[303]

[c] Cause or Extent of Injuries

Expert medical testimony may also be presented on the cause or extent of physical injuries.[304] This includes testimony that certain injuries were consistent with forced sexual relations,[305] and that a baby's physical deformity was caused by an incestuous sexual act.[306] The expert may also establish a *prima facie* case under *res ipsa loquitur*.[307]

A medical expert may not testify, however, outside the scope of his or her expertise. In such cases the witness is not testifying as an expert and loses the unique provisions allowing opinion testimony by experts. In *State v. Duncan*,[308] for example, a general surgeon and emergency room physician testified that the murder victim had been dragged backwards, her arms flailing, with her attacker's arm choking her. The Tennessee Supreme Court correctly held that this testimony was inadmissible as outside the expertise of the physician witness. The witness could have testified about the medical cause of death, but lacked expertise to describe the details of how the victim died. Similarly, in an aggravated child abuse case, a general pediatrician could not testify as an expert on the issue of whether the injury sustained by the child

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[298] *See, e.g.*, *Owens v. State, 202 Tenn. 679, 682, 308 S.W.2d 423, 424 (1957)* ("this Court has adopted the rule to the effect that one who is not an expert may, after describing a wound, express his opinion as to the cause of death"); *Franklin v. State, 180 Tenn. 41, 171 S.W.2d 281 (1943)* (nonexpert testimony on cause of death admissible). *See also State v. Batiz, ___ S.W.3d ___, 2019 Tenn. Crim. App. LEXIS 721 (Tenn. Crim. App. Nov. 1, 2019)* (expert in forensic pathology who performed the victim's autopsy was qualified to testify as that the bruises on the victim's body were not medically consistent with normal injuries for a one-year-old child, the force required to cause such injuries, and whether the victim's injuries could have been caused by defendant's performing CPR; the evidence was relevant to the defense theory that the victim's injuries resulted from a two-foot fall from an ottoman).

[299] *See, e.g.*, *State v. Atkins, 681 S.W.2d 571, 576–77 (Tenn. Crim. App. 1984)*, *cert. denied*, ***470 U.S. 1028 (1985)***.

[300] *Taylor v. State, 551 S.W.2d 331 (Tenn. Crim. App. 1976)*, *cert. denied*, ***430 U.S. 965 (1977)***.

[301] ***Graves v. State, 489 S.W.2d 74, 85 (Tenn. 1972)***.

[302] *Cole v. State, 512 S.W.2d 598 (Tenn. Crim. App. 1974)*.

[303] *State v. Ward, 138 S.W.3d 245, 276 (Tenn. Crim. App. 2003)* (the same expert was not allowed to apply the SIDS data to other possible causes of death).

[304] *See above §§ 7.02[4]*, *7.02[7]*. *See, e.g.*, *Roach v. Dixie Gas Co., 371 S.W.3d 127, 148 (Tenn. Ct. App. 2011)* (physician may testify as an expert as to cause of hearing problems; such testimony must be to a reasonable degree of medical certainty).

[305] *State v. Scott, 735 S.W.2d 825 (Tenn. Crim. App. 1987)*.

[306] ***Murray v. State, 214 Tenn. 51, 377 S.W.2d 918 (1964)***.

[307] ***Seavers v. Methodist Med. Center of Oak Ridge, 9 S.W.3d 86, 96 (Tenn. 1999)***. *See above § 3.08* (*res ipsa loquitur*).

[308] *698 S.W.2d 63 (Tenn. 1985)*. *See above § 7.02[4]*.

was caused by a dangerous instrumentality, when she had no specialized knowledge and have never seen the type of injury sustained by the child.[308.1]

Non-Physician Experts. Sometimes this evidence is presented by experts who are not physicians. For example, an anthropologist who examined a homicide victim's skeletal remains was permitted to testify that in his professional opinion at least one of the victim's stab wounds was defensive.[309]

Lay Witnesses. Occasionally lay witnesses are permitted to testify about the cause of injuries. For example, some acts of medical negligence may be so obvious that they are within the common knowledge of lay witnesses who may testify about them.[310]

[d] Lack of Informed Consent; Medical Battery

If a patient's cause of action is for lack of informed consent, which could occur if the patient knew a particular procedure would be performed and authorized it but was unaware of the procedure's inherent risks, Tennessee law holds that expert testimony is ordinarily required to establish the patient's claim.[311] But if the cause of action is for medical battery, such as when the patient did not know the procedure would be performed or did not consent to it, the plaintiff does not need to offer expert testimony since the patient's knowledge and awareness are the focus of the lawsuit.[312]

[18] Scientific Evidence: Breath Tests

Breath tests are used frequently to assess the blood alcohol content.[313] If properly administered, the breath-alcohol test is circumstantial evidence upon which the trier of fact may, but is not obligated to, convict the defendant of DUI.[313.1]

[308.1] *State v. Love, 2016 Tenn. Crim. App. LEXIS 667 (Tenn. Crim. App. 2016)* (although the jury was free to credit or discredit the pediatrician' expert testimony regarding pediatric medicine generally, her testimony about how the injury occurred was insufficient, on its own, to establish beyond a reasonable doubt that a dangerous instrumentality was used to cause the child's injury).

[309] *State v. Oody, 823 S.W.2d 554 (Tenn. Crim. App. 1991)*.

[310] *See*, *e.g.*, *Kennedy v. Holder, 1 S.W.3d 670 (Tenn. Ct. App. 1999)* (lay witness may testify that sewing up a surgical sponge in a patient's body is negligence).

[311] *Hensley v. Scokin, 148 S.W.3d 352, 356 (Tenn. Ct. App. 2003)* (*citing* *Tenn. Code Ann. § 29-26-118* for the proposition that the test of adequate informed consent is whether the patient was supplied with appropriate information in accordance with the recognized standard of acceptable professional practice in the profession and specialty).

[312] *Hensley v. Scokin, 148 S.W.3d 352, 356 (Tenn. Ct. App. 2003)*.

[313] *See generally* STEVEN OBERMAN, DUI, THE CRIME AND CONSEQUENCES IN TENNESSEE (2010–2011 ed.) (excellent discussion of DUI cases; supplemented annually); D. RAYBIN, 10 TENNESSEE CRIMINAL PRACTICE AND PROCEDURE § 27.58 (Rev. ed. Dec. 2008) (includes Judge Walter Kurtz's extensive discussion of such evidence).The scientific bases for using blood alcohol content was described by the Tennessee Supreme Court:

> Blood alcohol concentration (BAC) is expressed in percent weight by volume (%w/v) based upon grams of alcohol per 100 cubic centimeters of blood or per 210 liters of breath. A BAC of 0.10% w/v means 0.10 grams of alcohol per 100 cubic centimeters of blood (0.01g/100cc) or 0.10 grams of alcohol per 210 liters of breath. Alcohol concentrations in either breath or in air mixtures can also be expressed in milligrams of alcohol per liter of air (mg/l); to convert mg/l to units of percent weight by volume, multiply by 0.21. (Traffic Laws Anno., Sec. 11-002.1(a) (Supp 1983)). The conversion factor of 0.21 is a commonly used value recognized by the Committee on Alcohol and Other Drugs of the National Safety Council; that is 210 liters of deep lung air at 34°C contains approximately the same quantity (mass) of ethanol [alcohol] as 100cc of pulmonary blood. *See* R.N. Harger, R.B. Forney and R.S. Baker. *Estimates of the Level of Blood Alcohol from Analysis of Breath*. QUARTERLY JOURNAL OF STUDIES ON ALCOHOL. 1–18 (1956).

Although some experts argue that the breath tests are quite unreliable, Tennessee courts have found some such tests sufficiently reliable to be admissible as evidence if properly administered. This includes the Borkenstein Breathalyzer test in which the subject blows deep lung air into a cylinder-piston chamber. This air is then heated and bubbled through acid. The resulting oxidation is measured, and a calibrated scale is used to determine the alcohol in the subject's blood.[314] The Auto-Intoximeter has also been approved by a Tennessee appellate court.[315]

While the Borkenstein Breathalyzer test is admissible in Tennessee, an earlier Tennessee case refused to take judicial notice that a drunkometer was admissible. The evidence was excluded because of a lack of foundational testimony by a qualified expert.[316]

The Tennessee Supreme Court has shown a considerable receptivity to breath-alcohol tests. In the leading case, *State v. Sensing*,[317] the court upheld the admissibility of the Intoximeter 3000, a computerized instrument widely used in Tennessee, and provided a specific framework for the admission of breath-alcohol tests. Because of an extensive certification, inspection and maintenance process by the Tennessee Bureau of Investigation as well as the instrument's widespread use and demonstrated reliability, the Tennessee Supreme Court held that the tests were generally accepted in the scientific community. Moreover, their use and reliability merited a relaxation in the foundation necessary to admit the test results. The certified testing officer need not be an expert[318] and need not know the scientific technology involved in the functioning of the machine. The officer must be able to testify to six prerequisites to admissibility:

> (1) that the tests were performed in accordance with the standards and operating procedure promulgated by the forensic services division of the Tennessee Bureau of Investigation, (2) that he was properly certified in accordance with those standards, (3) that the evidentiary breath testing instrument used was certified by the forensic services division, was tested regularly for accuracy and was working properly when the breath test was performed,[319] (4) that the motorist was observed for the requisite twenty minutes prior to the test, and during this period, he did not have foreign matter in his mouth, did not consume any alcoholic beverage, smoke, or regurgitate,[320] (5) evidence that he followed the prescribed operational

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State v. Sensing, 843 S.W.2d 412, 415 n.2 (1992).

[313.1] *State v. Ralph, 2010 Tenn. Crim. App. LEXIS 1090 (Tenn. Crim. App. 2010)* (defendant may offer proof that the test does not accurately reflect the blood alcohol level at the time he or she was driving the vehicle).

[314] *See, e.g.*, *Pruitt v. State, 216 Tenn. 686, 393 S.W.2d 747 (1965)* (extensive discussion of scientific basis of Borkenstein Breathalyzer).

[315] *State v. Baker, 729 S.W.2d 286, 288 (Tenn. Crim. App. 1987)* (Auto-Intoximeter is accepted in the scientific community and is accurate for purposes for which it is used); *State v. Johnson, 717 S.W.2d 298, 304 (Tenn. Crim. App. 1986)* (same).

[316] *Fortune v. State, 197 Tenn. 691, 277 S.W.2d 381 (1955)*.

[317] *843 S.W.2d 412 (Tenn. 1992)*. *See also* *State v. Korsakov, 34 S.W.3d 534 (Tenn. Crim. App. 2000)* (*Sensing* applies to Intoximeter EC-IR); *State v. Conway, 77 S.W.3d 213 (Tenn. Crim. App. 2001)* (same).

[318] *State v. Edison, 9 S.W.3d 75, 77 (Tenn. 1999)* (person administering the breathalyzer need not be an expert, but must have been trained by the T.B.I. to administer the tests and must demonstrate the test was performed according to that training). *See also* *State v. Conway, 77 S.W.3d 213 (Tenn. Crim. App. 2001)* (*Sensing* eliminated need for state to use expert witness to introduce results of breathalyzer test).

[319] In *State v. Edison, 9 S.W.3d 75, 78 (Tenn. 1999)*, the defendant argued there was inadequate proof that the Intoximeter 3000 was regularly tested for accuracy and worked properly. The Tennessee Supreme Court upheld the trial court's admission of the evidence based on the witness's testimony that the T.B.I. calibrated the instrument every three months. The witness could not specify the date of the last calibration. *See also* *State v. Clark, 67 S.W.3d 73, 77 (Tenn. Crim. App. 2001)* (breath machine tested within 90 days, as established by *Sensing*).

procedure,[321] and (6) identify the print-out record offered in evidence as the result of the test given to the person tested.[322]

Compliance with *State v. Sensing*[323] is a "condition precedent" to the admissibility of the breath test.[324] In *State v. McCaslin*,[325] for example, the officers observed the defendant for only sixteen minutes, which was four minutes short of Sensing's twenty-minute rule. The gap was enough to fail the *Sensing* test and cause the breath test to be excluded.[326]

In *State v. Bobo*,[327] the Tennessee Supreme Court stuck to *Sensing* in holding that the results of a breath alcohol test were not admissible because a breath sample of only 1.3 liters was taken. This sample was less than the 1.5 liters suggested by the manufacturer as a minimum sample. The court in *Bobo* squarely refused to depart from *Sensing's* requirement that the test must be in accordance with the instrument's prescribed procedures. Interestingly, the *Bobo* court seemed to suggest that the eased foundation of *Sensing* applied to modern breath alcohol machines in general, not just to the Intoximeter 3000 discussed in *Sensing*.

To satisfy *Sensing*, the six prerequisites must be proven by a preponderance of the evidence.[328] The burden of proof is on the state.[329] Tennessee appellate courts are instructed to presume the trial court's findings are

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[320] The purpose of this requirement is to ensure that no foreign matter is present which could retain alcohol and influence the test results. State v. Cook, 9 S.W.3d 98, 101 (Tenn. 1999) (dentures). The *Sensing* court's listing of some illustrations of foreign matter was not designed as an exclusive list. *Id. See also* State v. Korsakov, 34 S.W.3d 534 (Tenn. Crim. App. 2000) (while the officer watching the defendant need not exercise "an unblinking gaze" for 20 minutes, he or she must be watching the defendant rather than conducting other tasks, such as filling out paperwork); State v. Arnold, 80 S.W.3d 27 (Tenn. Crim. App. 2002) (insufficient proof that defendant was actually observed during the entire 20 minute period before the breathalyzer test; during 10 minutes of that time defendant was in back seat of patrol car and police officers were in front seat where they could not necessarily have detected whether he belched or regurgitated); State v. Mullen, 151 S.W.3d 518, 523 (Tenn. Crim. App. 2004) (officer must observe suspect for 20 minutes and state must establish no foreign matter in mouth before the test). State v. Ralph, 2010 Tenn. Crim. App. LEXIS 1090 (Tenn. Crim. App. 2010) (critical time is 20 minutes before taking the test, not between driving and taking the test; trooper testified defendant had not had anything to eat or drink or have anything in his mouth and did not belch or vomit during the 20 minutes prior to the breath-alcohol test; *Sensing* test satisfied); State v. Greene, 343 S.W.3d 101 (Tenn. Crim. App. 2010) (officer testified he observed defendant for 21 minutes and that defendant did not eat, drink, chew, smoke, or regurgitate during this period; *Sensing* satisfied even though officer did not visually inspect the defendant's mouth or ask whether the defendant had something in his mouth during the 21 minute observation period).

[321] In State v. Edison, 9 S.W.3d 75, 78–79 (Tenn. 1999), the court upheld admission over an objection that there was inadequate proof the proper procedures were followed. The witness testified he followed the proper procedures, which he correctly outlined, then admitted he could not remember following them in this case. The Tennessee Supreme Court held that the witness's testimony as a whole supported the trial court's decision.

[322] *Id. at 416*.

[323] 843 S.W.2d 412 (Tenn. 1992).

[324] State v. McCaslin, 894 S.W.2d 310 (Tenn. Crim. App. 1994). *See, e.g.*, State v. Brooks, 277 S.W.3d 407, 413 (Tenn. Crim. App. 2008) (compliance with *Sensing* is condition precedent to admissibility of breath test result).

[325] 894 S.W.2d 310 (Tenn. Crim. App. 1994).

[326] *Cf.* Pruitt v. State, 216 Tenn. 686, 393 S.W.2d 747 (1965) (breath test excluded because person did not wait fifteen minutes before administering test). *See also* State v. Hunter, 941 S.W.2d 56 (Tenn. 1997) (*Sensing* does not require the person observing the defendant for twenty minutes to be the same person who administered the breath test; arresting officer observed defendant for thirty minutes before another officer administered the breath test).

[327] 909 S.W.2d 788 (Tenn. 1995).

correct and to overturn them only if the evidence preponderates otherwise.[330] Once *Sensing's* six prerequisites have been met, the trial court should admit the evidence since the preliminary facts underlying admission of the test results are satisfied.[331] The trial court need not inquire whether Rule 702's "substantial assistance" test was satisfied.[332] The public records hearsay exception, Rule 803(8), embraces the TBI's certification of the testing device and any subsequent maintenance records.[333]

If one or more of *Sensing's* prerequisites is missing, the evidence may still be admitted. In *State v. Deloit,*[334] the Tennessee Court of Criminal Appeals held that if *Sensing* is not satisfied, the evidence may still be admissible if the state lays a proper foundation, but there is no presumption of correctness. This foundation requires proof, under Rules 702 and 703, that the scientific or technical knowledge will substantially assist the trier of fact. A qualified expert must establish that the underlying facts or data are trustworthy and the information is reliable. In *Deloit* the court found that *Sensing* was not satisfied because the testifying officer had not been trained by the T.B.I. and the machines had not been certified or calibrated by the T.B.I. In addition, the officer did not continuously observe the defendant for the requisite twenty-minute period, although the defendant was in the backseat of the patrol car while the officer was in the front seat filling out the incident report.

Tennessee drunk driving statutes,[335] described elsewhere,[336] prescribe rules for taking and admitting certain breath tests in cases involving driving while intoxicated. According to the United States Supreme Court, the Constitution does not require that the police preserve samples of breath used in the breath tests.[337]

A party challenging the admissibility of breathalyzer results need not do so in a pretrial motion to suppress,[338] though this procedure is sound strategy in many cases.

[19] Scientific Evidence: Blood Tests

[a] In General

Evidence of a person's blood is relevant in many legal contexts. Usually proof involves an expert who compares two or more blood samples. Rule 901(b)(3) states that an expert may compare one item with an authenticated specimen.[339] For example, an expert could compare a defendant's blood sample with a blood

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[328] *State v. Edison, 9 S.W.3d 75, 77 (Tenn. 1999)*. *See also State v. Clark, 67 S.W.3d 73, 77 (Tenn. Crim. App. 2001)* (*Sensing* factors must be proven by a preponderance of the evidence). *See also State v. Greene, 343 S.W.3d 101, 105 (Tenn. Crim. App. 2010)* (*Sensing* only requires state to prove compliance by a preponderance of evidence, not 100% certainty).

[329] *State v. Brooks, 277 S.W.3d 407, 413 (Tenn. Crim. App. 2008)*.

[330] *Id. at 78*. *See, e.g.*, *State v. Brooks, 277 S.W.3d 407, 413 (Tenn. Crim. App. 2008)*.

[331] *Id. at 77*.

[332] *Id.*

[333] *State v. Korsakov, 34 S.W.3d 534, 542 (Tenn. Crim. App. 2000)*.

[334] *964 S.W.2d 909 (Tenn. Crim. App. 1997)*.

[335] *Tenn. Code Ann. §§ 55-10-405* to 410 (2008).

[336] *See above § 3.03*. *See generally* STEVEN OBERMAN, DUI, THE CRIME AND CONSEQUENCES IN TENNESSEE: WITH FORMS (2010-2011-ed.).

[337] *California v. Trombetta, 467 U.S. 479, 104 S.Ct. 2528, 81 L.Ed.2d 413 (1984)*.

[338] *Fletcher v. State, 9 S.W.3d 103 (Tenn. 1999)*.

sample obtained at a crime scene. Blood spatter evidence is also used to determine how an event occurred.[340]

Perhaps the most frequent use of evidence about blood is to identify a person. The proof about blood can establish that a particular person was at a certain location or was involved with an item (shirt, knife, and the like) where or on which blood was found. Blood proof can also be used to recreate events because the pattern of blood stains is subject to scientific principles that can be interpreted by an expert.[341] As discussed below, blood tests are also used in paternity cases to establish relationships and in civil and criminal cases as proof of intoxication.

Most of the time expert testimony is used when blood evidence is introduced. Tennessee case law, however, has permitted lay testimony in some situations where a lay witness could not testify fully without testifying about blood. Under Tennessee law a lay witness is permitted to testify that a substance appears to be blood.[342] A Tennessee statute provides that

> [I]n any civil or criminal trial, hearing or proceeding, statistical population frequency evidence, based on … blood test results, is admissible in evidence to demonstrate the fraction of the population that would have the same combination of genetic markers as was found in a specific biological specimen. For purposes of this subsection, "genetic marker" means the various blood types or DNA types that an individual may possess.[343]

This provision is part of a statute designed to allow DNA evidence to be admissible at trial without the necessity of expert testimony on the trustworthiness or reliability of DNA analysis.[344] It should be noted that the above quoted portion of the statute should not be read as permitting *all* statistical population frequency evidence to be submitted. Under the Tennessee Rules of Evidence, there must be an adequate foundation for such proof in order to satisfy Rules 401 and 403.[345]

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[339] *See below § 9.01[5]*.

[340] *See generally* PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, 2 SCIENTIFIC EVIDENCE 697–707 (4th ed. 2007). *See also State v. Halake, 102 S.W.3d 661 (Tenn. Crim. App. 2001)* (error to use police officer as witness on blood splatter evidence; was not a qualified expert on subject).

[341] In *State v. Melson, 638 S.W.2d 342, 349–50 (Tenn. 1982)*, an expert was permitted to testify that 550 small blood stains on shirt and pants were consistent with raising the right arm, with movement of the right side when hit by blood, and with blood dripping off a weapon as the right arm was raised above the shoulder.

[342] *See, e.g., State v. Mabon, 648 S.W.2d 271 (Tenn. Crim. App. 1982)*; *Schweizer v. State, 217 Tenn. 569, 399 S.W.2d 743 (1966)*.

[343] *Tenn. Code Ann. § 24-7-118(c)* (2000).

[344] *Id.* at § 24-7-118(b). *See also State v. Reed, 2020 Tenn. Crim. App. LEXIS 22 (Ten. Crim. App. Jan. 16, 2020)* (trial court did not abuse its discretion in determining that DNA evidence was admissible and that defendant's recourse was to challenge the evidence at trial, because under the plain terms of the statute, the DNA evidence was admissible without a prior hearing on its reliability; a forensic DNA analyst testified the testing was a type of DNA testing, and she compared DNA from the Y chromosomes recovered from a swab to DNA from the Y chromosomes recovered from the specimen obtained from defendant); *State v. Reid, ___ S.W.3d ___, 2003 Tenn. Crim. App. LEXIS 1086 (Tenn. Crim. App. Dec. 29, 2003)* (the polymerase chain reaction (PCR) method of DNA analysis is an inherently trustworthy and reliable method of identification and is admissible into evidence without antecedent expert testimony as to its trustworthiness and reliability; parties are allowed to offer proof that DNA analysis is not trustworthy and reliable, but such a challenge will go to the weight, not the admissibility, of the DNA evidence), *app. den.*, *___ S.W.3d ___, 2005 Tenn. LEXIS 161 (Tenn. Feb. 28, 2005)*, aff'd, *164 S.W.3d 286, 2005 Tenn. LEXIS 481 (Tenn. 2005)*.

[345] *See below § 7.02[28]*.

[b] Paternity

Blood tests are often used as proof in paternity and occasionally in other similar cases. Typically, blood samples are taken from the mother, child, and suspected father(s). A hematologist may conduct a series of tests and testify that a particular person could not be the father or that there is a certain percent chance that the person is the father. *State v. Smith,*[346] for example, was a rape case where the victim became pregnant and the issue of parentage was critical to the issue of whether the accused had sexual relations with the victim. The Tennessee trial court permitted a clinical pathologist to testify that blood samples from the defendant, mother, and child were subjected to seven different tests and showed that there was a 99.4% chance that the defendant was the father of the rape victim's child. The court carefully instructed the jury that the expert had not testified that the defendant was the father of the victim's child; rather, the expert simply testified that there is a 99.4% likelihood that the defendant fathered the child. The jury was also told to consider all the evidence in the case in determining the identity of the child's natural father.

A Tennessee statute[347] facilitates the admissibility of such tests in civil and criminal cases involving the issue of parentage, and applies to genetic tests to determine parentage, whether conducted as blood tests, cell analysis via cheek swab, or otherwise. This statute ordinarily requires the court, upon the court's own motion or upon request of either party in a contested paternity case, to order all necessary parties to submit to tests and comparisons to establish or disprove paternity.[348] Failure to comply with the court's order can lead to dismissal, with prejudice, of the action.[349] According to this statute, if the results exclude the defendant as the father of the child, the evidence is conclusive evidence of non-paternity and the proceeding must be dismissed.[350] If the results show that the statistical probability of paternity is 99% or greater, the person may rebut his paternity by establishing by clear and convincing evidence[350.1] that he was physically incapable of being the father, the putative father had no access to the child's mother during the probable period of conception, that his identical twin could be the father, or that genetic tests show another man was likely the father.[351] There is a rebuttable presumption of paternity if the results show a probability of paternity of 95% or greater.[352] The statute also provides that a written report of blood, genetic,

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[346] *735 S.W.2d 831 (Tenn. Crim. App. 1987)*.

[347] *Tenn. Code Ann. § 24-7-112* (2000). The constitutionality of this statute was upheld in *Rooker v. Rimer, 776 S.W.2d 124 (Tenn. Ct. App. 1989)*.

[348] *Tenn. Code Ann. § 24-7-112(a)* (2000). The statute was modified by Chapter 268, Tennessee Public Acts of 1991, to allow the court to order tests at any point in a civil case dealing with parentage. Prior law had limited the time at which a request for tests could be made.

[349] *See, e.g., Tennessee Dep't of Human Servs. v. Jones, 647 S.W.2d 942 (Tenn. Ct. App. 1982)*.

[350] *Tenn. Code Ann. § 24-7-112(b)(1)* (2000). Dismissal in such cases may not be automatic at the trial level. In *Hudson v. Capps, 651 S.W.2d 243 (Tenn. Ct. App. 1983)*, the trial court found the defendant to be the father of a child even though a homogenetic expert testified that blood grouping tests, which were 99.9% accurate, conclusively proved that the defendant could not have fathered the child. Since this expert's opinion was not contradicted, the Tennessee Court of Appeals reversed the trial court and held that the defendant was not the father of the child. The Juvenile Court should dismiss paternity actions where the tests exclude the defendant as parent of the child. *Rooker v. Rimer, 776 S.W.2d 124, 126 (Tenn. Ct. App. 1989)*.

[350.1] *See, e.g., In re Michael J., 2018 Tenn. App. LEXIS 52 (Tenn. Ct. App. Jan. 31, 2018)* (explaining that because the paternity report showed a statistical probability of paternity of 99% percent or greater, the putative father had an "extremely high" burden of proof to rebut the statutory presumption of paternity under *Tenn. Code Ann. § 24-7-112(b)(2)(C)*).

[351] *Tenn. Code Ann. § 24-7-112(b)(2)(C)* (2000).

[352] *Tenn. Code Ann. § 24-7-112(b)(2)* (2000).

or DNA test results is admissible without any foundation unless a party objects in writing to the report's admissibility thirty days before the hearing.[353]

Another Tennessee statute[354] authorizes a judge to order parentage tests in legitimation, support, or paternity cases if the court has reason to question the voluntariness or accuracy of an acknowledgment of paternity. The case is dismissed if the tests exclude the acknowledged father's paternity of the child, but if the tests show a probability of paternity of at least 99%, the suspect acknowledgment of paternity becomes conclusive.

[c] Intoxication

Blood tests are also used frequently in Tennessee to determine whether a person was intoxicated at a certain time.[355] The alcohol in the blood is used to determine the alcohol in the brain. A blood sample is taken from the suspect and subjected to a scientific test. An expert witness will present the results in court. Tests used in Tennessee have included the gas chromatograph.[356]

Implied Consent Law. A series of Tennessee statutes, often referred to as the implied consent law, provides for the admissibility of evidence of blood and breath tests of persons suspected of driving while intoxicated.[357] A person who drives a vehicle in Tennessee is deemed to have consented to a test to determine the drug and alcohol content of the person's blood or breath when a law enforcement officer has reasonable grounds to believe the person was driving while under the influence of drugs or alcohol.[358] The person suspected of driving while intoxicated may be asked to take a blood test by a law enforcement officer.[359] The officer should inform the person that failure to comply with the request will result in the suspension of the person's driver's license by a court, but the failure to so advise the person is not grounds to exclude the results of the consensual blood test.[360]

A person who refuses to consent to the test or, if unconscious when the test was administered, to the admission of the results of the test, may have his or her driver's license suspended.[361] In addition, in *South Dakota v. Neville* the United States Supreme Court held that the refusal to take the test is admissible against the person as evidence of guilt.[362] It can be argued that *Neville* is inapplicable to Tennessee

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[353] *Id.* at § 24-7-112(b)(2)(A) (2000).

[354] *Id.* at § 24-7-118 (2000).

[355] Field sobriety tests are discussed *below* in *§ 7.02[27]*.

[356] *King v. State, 598 S.W.2d 834 (Tenn. Crim. App. 1980)*.

[357] *See generally Tenn. Code Ann. §§ 55-10-401* to 412 (2008).

[358] *TENN. CODE ANN. § 55-10-406(a) (Supp. 2013).*

[359] The driver's consent is valid even if the law enforcement officer failed to inform the driver of the purposes of the blood test and that the driver is not obligated to permit the blood to be taken. *King v. State, 598 S.W.2d 834 (Tenn. Crim. App. 1980)*.

[360] *State v. Huskins, 989 S.W.2d 735 (Tenn. Crim. App. 1998)*.

[361] *TENN. CODE ANN. § 55-10-406(a) and (c) (Supp. 2013).* There is no right to counsel at the time of the arrest, when the defendant is asked whether he or she consents to the test. *State v. Mingledorff, 713 S.W.2d 88 (Tenn. Crim. App. 1986)*.

[362] *See, e.g., South Dakota v. Neville, 459 U.S. 553, 103 S.Ct. 916, 74 L.Ed.2d 748 (1983)* (admitting evidence of refusal to take sobriety test does not violate *Fifth Amendment*); *State v. Smith, 681 S.W.2d 569 (Tenn. Crim. App. 1984)* (refusal to take sobriety test is admissible as probative of guilt).

because the Tennessee statute, unlike that construed in *Neville,* does not specifically authorize admission of a refusal to take a sobriety test.[363]

Actual Consent. If the person consented to the test, under the implied consent statutes, the results of this test requested by a law enforcement officer, unless administered while the person was unconscious, are admissible in a criminal proceeding for driving under the influence.[364] The defendant's consent is valid, even though the offender was intoxicated, as long as he or she was capable of refusing the test.[365]

A law enforcement officer's failure to request the test is also admissible,[366] but there is no constitutional right to have a test administered.[367] The results of such tests must be reported in writing and should include the time the sample was obtained from the person.[368] Upon request, the person tested is entitled to a copy of the report.[369]

Blood Sample. In order to ensure the accuracy of the test results in these DUI cases involving a blood test administered upon a law enforcement officer's request, the statute mandates that the blood sample must be taken by a nurse or other specifically trained person.[370] There must be a proper chain of custody between the time the blood was drawn and the time it was analyzed.[371] The blood sample may be analyzed by the Tennessee Bureau of Investigation's laboratory.[372] If this lab performs the test, a certificate is issued giving the test results. When properly attested, this certificate is admissible to prove the test results in any Tennessee criminal proceeding.[373] However, to protect the defendant's right to cross-examine the people involved with the blood test, the statute states that the person taking or causing the specimen to be taken and the person performing the test on the blood sample must be available if subpoenaed by either party or, if unable to appear as witnesses, must submit to a deposition.[374] The person tested may also have an

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[363] *See* *Tenn. Code Ann. § 55-10-406* (Supp. 2010).

[364] *Tenn. Code Ann. §§ 55-10-406* (Supp. 2010); 55-10-407 (2008).

[365] *State v. McKinney, 605 S.W.2d 842 (Tenn. Crim. App. 1980)*.

[366] *TENN. CODE ANN. § 55-10-406 (Supp. 2013).*

[367] *State v. Smith, 681 S.W.2d 569 (Tenn. Crim. App. 1984)*. A constitutional violation could arise if the police intentionally prevented the offender from having a blood test taken in order to prevent the offender from obtaining exculpatory evidence.

[368] *TENN. CODE ANN. § 55-10-406 (Supp. 2013).*

[369] *TENN. CODE ANN. § 55-10-406 (Supp. 2013).*

[370] *TENN. CODE ANN. §§ 55-10-406*, *55-10-408(a) (Supp. 2013). See, e.g., State v. McKinney, 605 S.W.2d 842 (Tenn. Crim. App. 1980)* (blood drawn by registered nurse at direction of law enforcement officer).

[371] *See, e.g., State v. McKinney, 605 S.W.2d 842 (Tenn. Crim. App. 1980)* (proper chain of custody present).

[372] *TENN. CODE ANN. § 55-10-408 (Supp. 2013).*

[373] *TENN. CODE ANN. § 55-10-408(d) (Supp. 2013).*

[374] *TENN. CODE ANN. § 55-10-408(d) (Supp. 2013).* The constitutionality of the deposition alternative is questionable. In *State v. Hughes, 713 S.W.2d 58 (Tenn. 1986)*, the Tennessee Supreme Court held that the *confrontation clause* is satisfied only if the lab technician who performed the blood test is present if subpoenaed by either party. If the lab technician testifies, he or she is the state's witness and is to testify at state expense. The technician may also be cross-examined by the defendant. The defendant waives the confrontation issue, however, by not issuing a subpoena to the lab technician. It is unclear whether the statutory permission for a deposition would satisfy the *confrontation clause*.

additional blood sample taken and the blood test performed by a licensed medical lab of the person's choice,[375] but the law does not mandate that the person be informed of this option.[376]

Statutes Sometimes Inapplicable. It must be noted that these statutes must be read carefully. They have no effect on the admissibility of alcohol or drug blood tests in prosecutions for aggravated assault or homicide by use of a motor vehicle.[377] The provisions regulating the administration and admissibility of these tests also have no bearing on blood tests drawn by medical request and analyzed by hospital personnel when not requested by a law enforcement officer.[378] For example, if a person is involved in an automobile accident and is taken to a hospital where blood is drawn and analyzed as part of the medically ordered diagnostic procedures, the tests are admissible irrespective of the offender's consent. They have also been admitted when a deceased person's blood was taken an hour after death and transported to a toxicology lab for testing. No consent was given by the deceased before death or by anyone else. The Tennessee Supreme Court held that Tennessee's implied consent statutes are "supplementary to other methods in use" and do not prevent the test results from being used as evidence in a civil case involving life insurance.[379]

[20] Scientific Evidence: Semen

Testimony on semen is infrequently introduced in Tennessee courts but requires expert testimony when it is used. Evidence of semen is used in several contexts.[380] Most frequently it is admitted on the issue of identification of the offender in a sexual assault case. Semen is obtained from the victim's vagina or clothing. Ordinarily semen from the victim is compared with semen from the accused. A serologist testifies that the defendant could or could not have contributed the semen.[381] The presence of semen has also been used in a rape case as proof that intercourse occurred during the time of the alleged rape.[382]

[21] Scientific Evidence: Fingerprints, Footprints, Tire Prints, and Soil

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Moreover, in *Crawford v. Washington, 541 U.S. 36, 124 S.Ct. 1354, 158 L.Ed.2d 177 (2004)*, the Supreme Court held that admitting testimonial statements without providing an opportunity for the defendant to cross examine them may violate the *confrontation clause*. It is also unclear whether the opportunity to subpoeana a technician will be sufficient under *Crawford*. *See* Melendez-Diaz v. Massachusetts, ___U.S.___, *129 S.Ct. 2527, 174 L.Ed.2d 314 (2009)*(defendant's ability to subpoena analysts does not obviate the state's obligation to produce analysts for cross-examination).

[375] *TENN. CODE ANN. § 55-10-408 (Supp. 2013).*

[376] *State v. McKinney, 605 S.W.2d 842 (Tenn. Crim. App. 1980)*.

[377] *TENN. CODE ANN. § 55-10-406(c)(3) (Supp. 2013).*

[378] *State v. Ridge, 667 S.W.2d 502 (Tenn. Crim. App. 1982)*.

[379] *Bankers Life & Cas. Co. v. Jenkins, 547 S.W.2d 237 (Tenn. 1977)*.

[380] *See generally* D. RAYBIN, 10 TENNESSEE CRIMINAL PRACTICE AND PROCEDURE § 27.59 (Rev. ed. Dec. 2008).

[381] *See, e.g., State v. Brown, 749 S.W.2d 474, 477 (Tenn. Crim. App. 1987)* (serologist testified that defendant was a B secretor, and that 14% of the population are B secretors; presumably the semen found on the rape victim also contained B secretors); *State v. Duncan, 698 S.W.2d 63 (Tenn. 1985)*, *cert. denied*, ***475 U.S. 1031 (1986)*** (serologist testified that defendant was a Type O secretor, and that 35% of the population are this type; admissible as proof that the defendant could have had sexual intercourse with the rape-murder victim).

[382] *Shockley v. State, 585 S.W.2d 645 (Tenn. Crim. App. 1978)* (dictum); *Black v. State, 479 S.W.2d 656, 659 (Tenn. Crim. App. 1972)*.

[a] In General

Expert testimony is frequently used to identify unique items such as fingerprints, footprints, tire prints, and soil. Although most of the relevant Tennessee decisions involve criminal cases, the issues occasionally arise in civil cases as well. Rule 901(b) indicates that a foundation for this type of evidence may be provided in several ways. An expert may compare an item of evidence with another item of evidence that has been authenticated, Rule 901(b)(3).[383] Thus, a fingerprint, footprint, tire print, or soil expert may examine one of these items and compare it with another from a known source.

Another foundation can be provided if an expert examines a soil sample, for example, and testifies that it is what it is claimed to be, Rule 901(b)(1), or that it has certain distinctive characteristics, Rule 901(b)(4).[384]

[b] Fingerprints

Fingerprint proof is used to connect a person with a location or item.[385] For example, a fingerprint expert testified that a fingerprint from a motel room matched that of the criminal defendant, thus permitting an inference that the defendant was in the motel room where the homicide occurred.[386] In Tennessee, fingerprint evidence may be sufficient to support a conviction.[387] Indeed, a Tennessee court characterized fingerprint evidence as "unquestionably reliable" but the same court wisely indicated a hesitation to consider it as "absolutely infallible."[388]

Although the most frequent use of fingerprint evidence is to prove identity, it can also be used to establish the time that an event occurred. A fingerprint expert may be able to determine whether a fingerprint was recent, even to the point of indicating how many hours had passed since the fingerprint was made.[389] An older Tennessee case held that the use of an old fingerprint card to establish the defendant's fingerprints does not violate the *confrontation clause*,[390] but more recent authority makes this conclusion subject to serious question.[391]

[c] Footprints

Often a foot will leave a print in a surface such as mud or will leave a footprint-shaped deposit of mud on a floor. These prints can be compared with footprints from a suspect, much as fingerprints are so compared. Often an expert will testify on the issue, using photographs or impressions of both sets of footprints as demonstrative evidence. In *State v. Reid*,[392] for example, a footprint expert placed a ruler next to a footprint

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[383] *See below § 9.01[5]*.

[384] *See below § 9.01[6]*.

[385] *See generally* PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, 1 SCIENTIFIC EVIDENCE 857–939 (4th ed. 2007); Lisa Steele, *The Defense Challenge to Fingerprints*, 40 No. 3CRIM. L. BULL. Art. 1 (Spring 2004).

[386] *Taylor v. State, 551 S.W.2d 331 (Tenn. Crim. App. 1976)*, *cert. denied*, ***430 U.S. 965 (1977)***. *See also State v. Evans, 669 S.W.2d 708 (Tenn. Crim. App. 1984)* (burglary defendant's fingerprints found on box at burglary scene); *State v. Lequire, 634 S.W.2d 608 (Tenn. Crim. App. 1981)* (fingerprint on homemade bomb's clock matched that of defendant).

[387] *State v. Lequire, 634 S.W.2d 608, 614 (Tenn. Crim. App. 1981)*; *State v. Cupp, 215 Tenn. 165, 384 S.W.2d 34 (1964)*; *Jamison v. State, 209 Tenn. 426, 354 S.W.2d 252 (1962)*. *But see* ***Crouch v. State, 498 S.W.2d 97 (Tenn. 1973)*** (evidence of fingerprint on robbery note is insufficient alone to find person guilty of robbery).

[388] *State v. Toomes, 191 S.W.3d 122, 131 (Tenn. Crim. App. 2005)*.

[389] *See, e.g., State v. Evans, 669 S.W.2d 708 (Tenn. Crim. App. 1984)* (fingerprint had been placed within 24 hours).

[390] *State v. Wilson, 687 S.W.2d 720 (Tenn. Crim. App. 1984)*.

[391] *See Crawford v. Washington, 541 U.S. 36, 124 S.Ct. 1354, 158 L.Ed.2d 177 (2004)*. *See below § 8.02[4]*.

and photographed both. She then compared the size of the footprints in the photo with shoes taken from the defendant's apartment. She also testified about the likely size of the shoe that left the footprint. The court upheld the procedure as consistent with standards for admitting scientific evidence.

[d] Tire Prints

Tire prints may be used to establish that a certain vehicle was at a certain location. Testimony may delve into two levels of comparison. Since all tires of a certain design from a certain manufacturer may have the same tread design, the expert could testify that the tread print was from a tire of the same manufacturer and model as that on the suspect's vehicle. At a more specific level, the expert could also testify that the suspect's tire had unique characteristics, caused by wear and/or accident, that matched those of the tread print found at a crime scene. Obviously the latter proof is more probative on the issue of whether the two tire prints were from the same vehicle.

[e] Soil

Soil differs in content from one place to another. Soil samples from clothing or a vehicle may be compared with samples from a certain location to prove that the person or vehicle was at that location.[393] Expert testimony is needed to make the comparison.[394]

[22] Scientific Evidence: Drugs

Expert testimony on drugs occurs primarily in criminal cases involving illegal drugs. It also is used in homicide cases involving poison. In these cases a chemist or similar expert performs various chemical tests on a substance to determine the chemical components of the substance.[395] Rule 901(b)(1) permits a witness to testify that a matter is what it is claimed to be. Rule 901(b)(4) allows a witness to identify a substance on the basis of distinctive characteristics.

Lay testimony also has been admitted to establish the type of drug. One illustrative case allowed a lay witness to prove a substance was marijuana.[395.1]

Expert testimony involving drug analysis may include both the identity of the substance and its quantity.[396] It may also address whether the quantity of drugs was for personal use.[397] Extensive training in chemistry is not necessarily required before a person possesses sufficient expertise to identify a drug. A police officer with several years of experience in detecting marijuana was permitted to testify about a chemical test he conducted

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[392] *91 S.W.3d 247 (Tenn. 2002)*.

[393] *See, e.g.*, *Sanders v. State, 216 Tenn. 425, 392 S.W.2d 916 (1965)* (soil samples from defendant's clothing and shoes found to be "similar" to samples taken from rear of building where burglars entered).

[394] *See generally* PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, 2 SCIENTIFIC EVIDENCE 692–697 (4th ed. 2007).

[395] *See generally* PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, 2 SCIENTIFIC EVIDENCE 473–626 (4th ed. 2007).

[395.1] *See, e.g.*, *State v. White, 269 S.W.3d 903 (Tenn. 2008)* (law enforcement officer identified marijuana but had not done a field test); *State v. Anderson, 644 S.W.2d 423 (Tenn. Crim. App. 1982)* (officer identified marijuana based on field test and appearance of drug).

[396] *E.g.*, *State v. Alcorn, 741 S.W.2d 135, 137 (Tenn. Crim. App. 1987)* (white substance in bag found to weigh 82.2 grams, with a 32.1% cocaine content that weighed 26.39 grams).

[397] *See, e.g.*, *State v. Blair, 145 S.W.3d 633, 642 (Tenn. Crim. App. 2004)* (DEA agent may testify as an expert that a particular quantity of drugs was too large for personal use).

to ascertain a substance was marijuana.[398] In order to satisfy the *confrontation clause* in a criminal case, the person who conducted the drug tests may have to testify at the trial.[399]

Often the expert will perform a number of tests on the substance in question. These include a routine visual inspection and a series of tests on all or a sample[400] of the alleged drugs.[401] In a criminal case the court may order that the accused be provided a sample of the alleged drug in order to have it analyzed by an independent laboratory.[402] However, the court may impose reasonable restrictions on the use of these illegal drugs so that no federal or state law is violated. For example, the court can require that the laboratory be qualified to receive drugs under federal drug laws.[403] Defense counsel seeking a sample of the alleged drug for purpose of securing independent testing should file a motion at any time after arrest but sufficiently in advance of the trial to avoid the need for a continuance.[404] If the contraband will be destroyed or substantially altered in the testing process so that a second test is impossible, the court should take steps to ensure that defense counsel has a chance to have a defense expert present when the test is made.[405]

Sometimes the expert will testify about the effect of a certain quantity of drugs in a person's body. Because different people react differently to certain drugs, on occasion an expert is not permitted to testify that a certain person acted in a certain way because of the presence of drugs in that person's body. In *State v. West*,[406] the appellate court held that a deceased person's blood cocaine level was inadmissible because an expert did not testify how the cocaine level affected the deceased. The expert testified that there were a variety of possible reactions to cocaine and the expert could not state how the deceased actually reacted to the drugs.

[23] Scientific Evidence: Fiber and Paint

Often when two people or things come in physical contact with one another, fibers or paint from one adhere to the other. By using powerful microscopes, an expert can compare the fibers found on, for example, a homicide victim with fibers found on the jacket of an accused killer.[407] Often there are a number of possible points on

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[398] *State v. Hill, 638 S.W.2d 827 (Tenn. Crim. App. 1982)*. *See also* *State v. Anderson, 644 S.W.2d 423 (Tenn. Crim. App. 1982)* (law enforcement officer who is experienced in narcotics investigation may testify whether substance is marijuana); *State v. Doelman, 620 S.W.2d 96, 99 (Tenn. Crim. App. 1981)* (officers experienced in narcotics investigation and detection may identify substance as marijuana).

[399] ***State v. Henderson, 554 S.W.2d 117 (Tenn. 1977)***, *aff'd after remand*, *576 S.W.2d 10 (Tenn. Crim. App. 1978)*. In-person testimony is not necessary for drug test results in parole revocation proceedings. *Tenn. Code Ann. § 40-28-122* (Supp. 2010). *See below § 8.02[4]* (confrontation).

[400] *See, e.g.,* *State v. Selph, 625 S.W.2d 285 (Tenn. Crim. App. 1981)* (forensic chemist tested 5 of 5000 quaalude tablets).

[401] *See, e.g.,* *State v.Copeland, 677 S.W.2d 471, 474 (Tenn. Crim. App. 1984)* (forensic chemist used four tests to determine composition of substance: color chemical tests, instrumental analysis by ultraviolet spectrophotometry, belowred spectrophotometry, and gas chromatography; randomly selected tablets from each of three plastic bags were tested).

[402] *See* *State v. Gaddis, 530 S.W.2d 64 (Tenn. 1975)* (based on language of prior statute, but court suggests result required by fundamental fairness of due process).

[403] *Bryant v. State, 549 S.W.2d 956, 959 (Tenn. Crim. App. 1977)* (Tennessee trial judge refused to permit drug defendant to send LSD tablets to Florida lab which did not have a federal permit to possess controlled substances).

[404] *State v. Gaddis, 530 S.W.2d 64, 69 (Tenn. 1975)*.

[405] *Id.*

[406] *825 S.W.2d 695 (Tenn. Crim. App. 1992)*.

[407] *See generally* PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, 2 SCIENTIFIC EVIDENCE 658–675 (4th ed. 2007); D. RAYBIN, 10 TENNESSEE CRIMINAL PRACTICE AND PROCEDURE § 27.64 (Rev. ed. Dec. 2008).

which to compare the two fibers. Obviously, the more points of comparison, the more likely it is that the two fibers came from the same source. Rule 901(b)(3) authorizes an expert to compare one item with an authenticated specimen to determine whether the two are the same or different.[408]

Paint, like fiber, can also be transferred from one thing to another thing or to a person. A comparison of the two can reveal that the person or thing had contact with the item shedding the paint.[409]

[24] Scientific Evidence: Hair

Expert testimony has also been used in Tennessee courts to identify pieces of hair.[410] Of course, the first step is to determine whether the sample is hair or some other item, such as a fiber from a vegetable or synthetic source. Next, the expert must assess whether the hair is from a human being or animal, male or female, and one of several racial groups. The most frequent use involves a comparison of a sample of the subject's hair with hair found at a crime scene or on a victim.[411] Rule 901(b)(3) authorizes an expert to make comparisons.[412]

In one Tennessee case, for example, an F.B.I. expert witness testified that when the twenty or more characteristics of a hair match that of a known sample, there is approximately only a 1 in 5000 chance that the unknown hair came from a different individual.[413] Hair evidence may also be used to establish that a person, either defendant or victim, was at a particular place or of a particular age.

[25] Scientific Evidence: Weapons and Shells

Evidence about weapons and shells is often used in homicide and assault cases.[414] Expert testimony is common. After applying comparison tests, the expert may testify that a certain bullet or cartridge shell was fired from a certain weapon. Rule 901(b)(3) permits an expert to make such comparisons.[415] Experts may also testify that powder burns indicated that a weapon was fired close to a target,[416] or that a person recently fired a

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[408] *See below § 9.01[5]*.

[409] *See, e.g.*, *State v. Coury, 697 S.W.2d 373, 376 (Tenn. Crim. App. 1985)* (paint and rust scrapings from defendant's clothing admissible as proof that defendant had contact with metal chair, having similar paint and rust, at scene of crime).

[410] *See generally* PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, 2 SCIENTIFIC EVIDENCE 633–658 (4th ed. 2007); Paul Giannelli, *Microscopic Hair Comparisons: A Cautionary Tale*, 46 No. 3 CRIM. L. BULL. Art. 7 (Summer 2010); D. RAYBIN, 10 TENNESSEE CRIMINAL PRACTICE AND PROCEDURE § 27.63 (Rev. ed. Dec. 2008).

[411] *See, e.g.*, *State v. Williams, 657 S.W.2d 405, 409 (Tenn. 1983)*, *cert. denied*, ***465 U.S. 1073 (1984)*** (hair from defendant's jacket indistinguishable from hair from murder victim's head); *Brady v. State, 584 S.W.2d 245, 250 (Tenn. Crim. App. 1979)* (hair found on murder victim showed same microscopic characteristics as hairs from defendant's head).

[412] *See below § 9.01[5]*.

[413] *State v. Melson, 638 S.W.2d 342, 349 (Tenn. 1982)*, *cert. denied*, ***459 U.S. 1137 (1983)***.

[414] *See generally* PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, 1 SCIENTIFIC EVIDENCE 705–760 (4th ed. 2007); D. RAYBIN, 10 TENNESSEE CRIMINAL PRACTICE AND PROCEDURE §§ 27-60–27.61 (Rev. ed. Dec. 2008); Paul Giannelli, *Comparative Bullet Lead Analysis: A Retrospective*, 47 No. 2 CRIM. L. BULL. Art. 6 (Spring 2011).

[415] *See below § 9.01[5]*.

[416] *See, e.g.*, *Bryant v. State, 539 S.W.2d 816, 819 (Tenn. Crim. App. 1976)* (neurosurgeon testified that weapon was fired more than six inches and less than three feet from victim's body); *Hicks v. State, 533 S.W.2d 330, 333 (Tenn. Crim. App. 1975)* (F.B.I. firearms expert test fired weapon and compared powder burn pattern with that found on homicide victim's blouse to determine how far weapon was from victim when victim was shot); *Boyd v. State, 82 Tenn. 161, 170 (1884)* (surgeon may testify that pistol must have been fired close to a deceased person's body because of the powder and burn marks on the body).

weapon.[417] Tennessee cases have even permitted a lay witness to testify that a pistol will leave powder marks if fired at a target at close range.[418]

[26] Scientific Evidence: Polygraph; Voice Stress

Polygraph Results and Related Proof Inadmissible. The admissibility of the polygraph has been an important issue in American courts. Because of concern that the tests are fallible but will be given almost conclusive weight by the trier of fact, many jurisdictions do not admit polygraph evidence.[419] Tennessee has long held that results of the polygraph are inadmissible,[420] even if the person who wants to introduce the evidence consented to take the polygraph test and paid for its administration.[421] The rationale for excluding polygraph evidence is that it is irrelevant.[422] This unwavering principle includes a ban on proof that a person refused to take a polygraph,[423] volunteered to take a polygraph test,[424] or proof of the circumstances surrounding the taking or not taking a polygraph test.[425] The rule even applies to prevent the criminal defendant from introducing polygraph evidence that would be helpful to his or her case.[426] It also bars a court order that the state conduct a polygraph of a criminal defendant.[427] The state also need not pay for an indigent criminal defendant's polygraph

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[417] Atomic absorption tests can be used to determine whether a person fired a weapon. *See, e.g.,* ***State v. McCall, 698 S.W.2d 643, 649 (Tenn. Crim. App. 1985)*** (evidence of atomic absorption test admitted; if error, was harmless because defendant admitted trying to fire gun).

[418] *See* ***Colbaugh v. State, 188 Tenn. 103, 216 S.W.2d 741 (1948)***.

[419] *See generally* United States v. Scheffer, 523 U.S. 303, 118 S.Ct. 1261, 140 L.Ed.2d 413 (1998), *noted in* 66 Tenn. L. Rev. 331–50 (1998); PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, 1 SCIENTIFIC EVIDENCE 415–91 (4th ed. 2007).

[420] *See, e.g.,* State v. Hailey, 658 S.W.2d 547 (Tenn. Crim. App. 1983); Nolan v. State, 568 S.W.2d 837 (Tenn. Crim. App. 1978); State v. Hart, 911 S.W.2d 371, 377–78 (Tenn. Crim. App. 1995) (trial court, in resolving motion for new trial, should not have considered results of polygraph which defendant took on joint motion of himself and state; polygraph results are not admissible in Tennessee; also inadmissible is fact that defendant offered to take, took, or refused to take polygraph); State v. Campbell, 904 S.W.2d 608 (Tenn. Crim. App. 1995) (no error in refusing to require victim to take polygraph or to admit results of defendant's polygraph); State v. Damron, 151 S.W.3d 510, 515 (Tenn. 2004) (polygraph test results are inadmissible in Tennessee); State v. Stephenson, 195 S.W.3d 574, 599 (Tenn. 2006) (polygraph examinations, results, testimony about such results, or testimony concerning a defendant's willingness or refusal to take a polygraph examination are not admissible during capital or non-capital sentencing hearings). *See generally* Anton L. Jackson, Note, *State v. Pierce: Refining the Standard for the Admisson of Polygraph Evidence*, 2 TENN. J.L. & POL'Y 370 (2006); State v. Sexton, 368 S.W.3d 371, 409 (Tenn. 2012) (polygraph evidence is inadmissible as "inherently unreliable" and it lacks any indicia of reliability and is not probative).

[421] *Cf.* Nolan v. State, 568 S.W.2d 837 (Tenn. Crim. App. 1978).

[422] State v. Damron, 151 S.W.3d 510, 515–16 (Tenn. 2004); State v. Sexton, 368 S.W.3d 371, 409 (Tenn. 2012) (polygraph evidence is not probative; it lacks relevance).

[423] *See, e.g.,* State v. Atkins, 681 S.W.2d 571, 578 (Tenn. Crim. App. 1984), *cert. denied,* ***470 U.S. 1028 (1985)***; Marable v. State, 203 Tenn. 440, 313 S.W.2d 451 (1958); State v. Damron, 151 S.W.3d 510, 515 (Tenn. 2004) (criminal defendant's refusal to take a polygraph test is inadmissible in Tennessee); State v. Sexton, 368 S.W.3d 371, 409 (Tenn. 2012) (the defendant's refusal to take a polygraph had "no place" in the trial).

[424] State v. Damron, 151 S.W.3d 510, 515 (Tenn. 2004).

[425] Hembree v. State, 546 S.W.2d 235, 240 (Tenn. Crim. App. 1976).

[426] *See* State v. Irick, 762 S.W.2d 121, 127 (Tenn. 1988) (capital defendant not permitted to introduce evidence, for impeachment purposes, that prosecution witness had shown "deception" during polygraph exam concerning the homicide); State v. Hartman, 42 S.W.3d 44, 60 (Tenn. 2001) (capital defendant barred from introducing polygraph test results to establish residual doubt at capital sentencing hearing).

to use for investigative and negotiating purposes.[428] In extremely limited circumstances, the Sixth Circuit Court of Appeals has permitted evidence regarding a polygraph test.[429]

Statements Made in Connection with Polygraph Exams. While polygraph results are inadmissible in Tennessee, voluntary, non-coerced statements made in connection with a polygraph exam are not excluded simply because they were made before, during, or after the exam. The key is whether the statements were voluntary. In *State v. Damron*,[430] the defendant, charged with child rape, requested a polygraph test. After the test was completed (the "post-instrument phase"), he made incriminating statements when told about the test results. The Tennessee Supreme Court held that the statements were admissible since they were voluntary.

Erroneous Admission of Polygraph Proof. If proof is erroneously admitted that a person took a polygraph, the court has the discretion to declare a mistrial or may use curative instructions.[431] However, if the criminal defendant first mentioned the polygraph and in so doing suggested that he or she passed the polygraph exam, language in one Tennessee case suggests that the state would be permitted to offer proof that the defendant failed the polygraph test.[432] A party should not be permitted to bring out inadmissible proof that leaves the jury with a misimpression that is unlikely to be cured by jury instructions asking that the evidence about polygraphs be disregarded.

If, by mistake, proof is admitted that a person refused to take a polygraph, the Tennessee appellate courts frequently conclude that the error was harmless.[433] They are especially likely to uphold the lower court if there was no timely objection and if the side objecting to the question also interrogated the witness about the polygraph.[434]

On the other hand, on rare occasions a reference to a polygraph test has resulted in a reversal. In *Hembree v. State*,[435] a manslaughter case, the deceased was shot by either the criminal accused or another witness. During cross-examination the other witness blurted out that he had taken a lie detector test. The Tennessee Court of Criminal Appeals reversed the conviction, partly because of this inadmissible disclosure. The court held that the statement about the polygraph probably bolstered the credibility of the witness and induced the jury to give it greater weight than the testimony of the accused.

Voice Stress Analysis. Voice stress analysis, like polygraph testing, has not been received favorably in Tennessee.[436]

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[427] *State v. Hailey, 658 S.W.2d 547 (Tenn. Crim. App. 1983)* (criminal accused cannot require trial judge to order state to give accused a polygraph test).

[428] *Nolan v. State, 568 S.W.2d 837 (Tenn. Crim. App. 1978)*.

[429] *United States v. Weiner, 988 F.2d 629 (6th Cir. 1993)* (limited use of polygraph permitted to show why defendant was no longer involved in cooperative investigation with FBI).

[430] *151 S.W.3d 510 (Tenn. 2004)*.

[431] *State v. Stephenson, 195 S.W.3d 574 (Tenn. 2006)* (prosecution witness, without solicitation from prosecutor, erroneously mentioned that defendant offered to take polygraph; no reversal because trial court issued curative jury instruction to disregard the comment).

[432] *Banks v. State, 556 S.W.2d 88, 91 (Tenn. Crim. App. 1977)*.

[433] *See, e.g., State v. Atkins, 681 S.W.2d 571 (Tenn. Crim. App. 1984)*, *cert. denied*, ***470 U.S. 1028 (1985)*** (court admitted investigator's notes mentioning accused's refusal to take polygraph; was harmless error).

[434] *See Marable v. State, 203 Tenn. 440, 313 S.W.2d 451 (1958)*.

[435] *546 S.W.2d 235 (Tenn. Crim. App. 1976)*.

[27] Field Sobriety Tests

Sometimes law enforcement officers will ask a suspected drunk driver to perform a "field sobriety test." This may require the suspect to walk a straight line, touch his or her nose with a finger, or perform other physical acts. According to *State v. Gilbert*,[437] field sobriety tests are not scientific tests and are not subject to the special conditions required for the admission of scientific tests.

In *State v. Murphy*,[438] however, the Tennessee Supreme Court held that the HGN or Horizontal Gaze Nystagmus test does constitute scientific, technical or specialized knowledge under Rule 702 and therefore must meet the standards for admitting scientific tests. The Court was careful to distinguish the HGN test from other field sobriety tests, perhaps suggesting that the other tests remain outside the realm of the special procedures that must be used for scientific tests. Where, however, the trial court allowed an officer to testify about how defendant failed to follow the officer's instructions during an array of performance field sobriety tests, including the Horizontal Gaze Gystagmus test, but informed the jury that the officer could not testify about the results of the test, the appellate court ruled that there was no error in admitting the officer's testimony.[438.1]

[28] DNA Tests

[a] In General

DNA testing (sometimes called DNA fingerprinting) is becoming an important source of evidence in many American courts.[439] Its accuracy and admissibility, however, are being questioned by some commentators and judges.[440] The admissibility of DNA evidence is still subject to scrutiny in Tennessee and some other jurisdictions, although a Tennessee statute[441] has eased its admissibility in most cases.[442] Under the

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[436] *Cf.* ***State v. Schiefelbein, 230 S.W.3d 88, 118 (Tenn. Crim. App. 2007)***. *See also* Tenn. Code Ann. §§ 50-1-311 (Supp. 2014) (voice stress analysis results are inadmissible by an employer in an employment proceeding, in which the defendant is entitled to due process, to establish employee misconduct); 40-17-101 (Supp. 2014) (voice stress analysis inadmissible in any criminal proceeding).

[437] 751 S.W.2d 454, 458–59 (Tenn. Crim. App. 1988). *See also* State v. Gwinn, 2017 Tenn. Crim. App. LEXIS 313 (Tenn. Crim. App. 2017) (trial court did not err in defendant's trial for driving under the influence of an intoxicant by permitting lay opinion testimony by the arresting officer as to defendant's fitness to drive a motor vehicle and as to defendant's performance on field sobriety tests; the fact that the officer was testifying based on the officer's training and experience did not move the testimony from that of a layman to that of an expert, while the officer's account was the sort of lay opinion testimony that would have been helpful in the case).

[438] 953 S.W.2d 200 (Tenn. 1997). State v. Bell, 429 S.W.3d 524, 527 n.5 (Tenn. 2014) (HGN test is scientific test and must meet the TRE 702 and 703 standards to be admissible, citing *State v. Murphy*).

[438.1] State v. Childress, 2016 Tenn. Crim. App. LEXIS 948 (Tenn. Crim. App. 2016).

[439] *See generally* PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, 2 SCIENTIFIC EVIDENCE 1-133 (4th ed. 2007); 84 A.L.R. 4th 313; DAVID H. KAYE, THE DOUBLE HELIX AND THE LAW OF EVIDENCE (2010). Tennessee law even authorizes certain persons convicted of enumerated offenses to file a petition requesting DNA analysis of evidence and there is no time limit for the request. Tenn. Code Ann. 40-30-303. *See generally* Powers v. State, 343 S.W.3d 36 (Tenn. 2011).

[440] *See* NATIONAL RESEARCH COUNCIL, NATIONAL ACADEMY OF SCIENCE, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009); Randi Weiss *et al., The Use of Genetic Testing in the Courtroom*, 34 Wake Forest L. Rev. 889–913 (1999); James Starrs, *Judicial Control over Scientific Supermen: Fingerprint Experts and Others Who Exceed the Bounds*, 35 CRIM. L. BULL. 234–276 (1999).

[441] Tenn. Code Ann. § 24-7-117 (2000). *See also* Tenn. Code Ann. § 40-2-104 (Supp. 2013) (prosecution may be commenced by an indictment, presentment, or warrant identifying the offender by a DNA profile).

statute, it is unnecessary under Tennessee law to present expert testimony on the trustworthiness and reliability of DNA analysis in order to introduce DNA test results.[443] However, the statute does not prohibit efforts to challenge the reliability or trustworthiness of DNA analysis.[444]

[b] Uses and Scientific Underpinning

DNA is the protein molecule that contains the human genetic pattern. Every individual, with the exception of identical twins, has a unique DNA pattern. DNA is found in the nucleus of every major cell except mature red blood cells. The DNA double-helix molecule in humans contains three billion pairs of four nucleotides. These nucleotides—adenine, cytosine, guanine and thymine—pair up as adenine-thymine and guanine-cytosine. Variations of the arrangement of these pairs are called polymorphisms. These polymorphisms are unique in each individual and are the basis of DNA print testing.[445]

The most typical use for DNA proof is in paternity and criminal cases. In the former, DNA evidence constitutes a genetic profile that provides proof of whether a child is the product of certain alleged parents. In criminal cases, DNA evidence is most frequently used to identify the offender. In rape or murder cases, for example, samples of blood, saliva, semen, or hair are removed from the scene and compared, at a genetic level, with those of the accused. The samples must be of sufficient size to permit adequate testing. The laboratory breaks the DNA into small pieces at specific points on the DNA chain, and then measures the fragments. Since it is hypothesized that the lengths of the pieces are unique in each individual, a lab analysis result identifying fragments of the same length in two samples—one from the defendant and one from the crime scene—constitutes strong evidence that the two samples came from the same person. Once the samples are visually compared and measured using computer-assisted digitalizing, the samples are considered a match if the bands of DNA do not differ more than plus or minus 1.8 percent.[446]

There are several different techniques for identifying the DNA coding sequences. Until recently, the most commonly utilized was a process known as Restriction Fragment Length Polymorphism (RFLP).[447] Another method used frequently today is known as Polymerase Chain Reaction (PCR). A more recent approach is STR (short tandem repeat) analysis.[448] All three methods involve the extraction of DNA from an evidentiary sample and the subsequent identification of the genetic codes. The sample is then compared to a sample known to be taken from the defendant in a criminal case, the putative father in a paternity case, or the individual whose identity is in question in other cases.

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[442] Some reported Tennessee cases have involved DNA evidence. *See, e.g.,* State v. Edwards, 868 S.W.2d 682 (Tenn. Crim. App. 1993) (no error when state did not provide funds for DNA defense expert); State v. Harris, 866 S.W.2d 583 (Tenn. Crim. App. 1992) (same).

[443] Tenn. Code Ann. § 24-7-118(b)(1) (2000). *See also* State v. Reed, ___S.W.3d___, 2020 Tenn. Crim. App. LEXIS 22 (Tenn. Crim. App. Jan. 16, 2020) (trial court did not abuse its discretion in determining that DNA evidence was admissible and that defendant's recourse was to challenge the evidence at trial, because under the plain terms of the statute the DNA evidence was admissible without a prior hearing on its reliability).

[444] *Id.* at § 24-7-118(b)(2).

[445] *See generally* C. Thomas Blair, Comment, *Spencer v. Commonwealth and Recent Developments in the Admissibility of DNA Fingerprint Evidence*, 76 Va. L. Rev. 853 (1990).

[446] Michael Damore, *DNA Fingerprinting: What Every Criminal Lawyer Should Know*, 27 Crim. L. Bull. 121 (1991).

[447] *See generally* National Commission On The Future Of Dna Evidence, Postconviction Dna Testing: Recommendations For Handling Requests (1999); Paul C. Giannelli & Edward J. Imwinkelried, 2 Scientific Evidence 15–48 (4th ed. 2007); Federal Judicial Center, Reference Manual On Scientific Evidence 273–329 (1994).

[448] David Kaye, David Bernstein, and Jennifer Mnookin, The New Wigmore: A Treatise on Evidence, Expert Evidence § 18.03[d] (2d ed. 2011).

If a laboratory, through either a visual or, preferably, computerized technique, concludes that two DNA prints match, it computes the probability that such a match could occur randomly in the United States. These probability figures are taken from a relatively small database of samples and divided into three ethnic groups: blacks, caucasians, and hispanics.

The identification portion of the process is not highly controversial, especially compared to the second phase, which is sometimes referred to as the application of the multiplication rule.[449] The multiplication rule is a formula utilizing theories of population genetics to determine the frequency with which a particular genetic sequence appears. Its proponents state that the population data bases used are accurate. Its critics disagree.[450]

Opponents of DNA evidence attack probability evidence as lacking a reliable statistical foundation and being falsely persuasive considering its statistical weaknesses. Another area of concern is the lack of knowledge of how gene samples vary among different ethnic subgroups and from people whose parents were of different ethnic groups.[451] Other alleged weaknesses in DNA evidence include the possibility of contaminated samples and judgment errors in determining whether two print patterns match one another.

[c] Admissibility

DNA testing was first introduced in the American courtroom in 1986. Today, its admission into evidence in trial courts is commonplace.[452]

Initially, most courts admitting DNA evidence found that it satisfied the *Frye* test, acknowledging that the evidence has reached the point where it is generally accepted as valid within the relevant scientific community. The *Frye* test was Tennessee law for many years but has now been replaced by the *McDaniel* test.[453] In recent years, even after the demise of the *Frye* test in federal and some state courts,[454] DNA evidence has been found to be admissible under a variety of standards.[455]

However, even in jurisdictions where DNA evidence has been admitted, there can be difficulty in the admission of such evidence in a particular case. Just as with other types of evidentiary samples, proper procedure in the gathering, maintaining and testing of samples is critical. Some courts have failed to admit

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[449] *See generally* PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, 2 SCIENTIFIC EVIDENCE 108–117 (4th ed. 2007).

[450] *Id.*

[451] *Id.*

[452] *Id. at 51* (reporting DNA evidence has been admitted in over 40 states).

[453] *See above § 7.02[14]*.

[454] *See Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993)*.

[455] *See, e.g., People v. Castro, 144 Misc. 2d 956, 545 N.Y.S.2d 985 (Sup. Ct. 1989)* (requires general acceptability in scientific community, proof that testing can produce reliable results and proof that procedures were correctly performed); *United States v. Two Bulls, 918 F.2d 56 (8th Cir. 1990)* (same); ***United States v. Yee, 134 F.R.D. 161 (N.D. Ohio 1991)*** (also includes requirements of Rule 702, FED. R. EVID.).

DNA evidence because of defects in lab procedures,[456] or where the record fails to demonstrate a proper evidentiary foundation.[456.1]

[d] Tennessee Statutes

Tennessee is among a number of jurisdictions having a statute that eases the admissibility of DNA evidence. In essence, the statute requires courts to take judicial notice of the general acceptance, reliability and validity of DNA testing so that a *McDaniel* hearing on this issue is unnecessary.[457] *Tennessee Code Annotated § 24-7-118* provides:

> (a) As used in this section, unless the context otherwise requires, "DNA analysis" means the process through which deoxyribonucleic acid (DNA) in a human biological specimen is analyzed and compared with DNA from another biological specimen for identification purposes.
>
> (b)(1) In any civil or criminal trial, hearing or proceeding, the results of DNA analysis, as defined in subsection (a), are admissible in evidence without antecedent expert testimony that DNA analysis provides a trustworthy and reliable method of identifying characteristics in an individual's genetic material upon a showing that the offered testimony meets the standards of admissibility set forth in the Tennessee Rules of Evidence.
>
> (2) Nothing in this section shall be construed as prohibiting any party in a civil or criminal trial from offering proof that DNA analysis does not provide a trustworthy and reliable method of identifying characteristics in an individual's genetic material, nor shall it prohibit a party from cross-examining the other party's expert as to the lack of trustworthiness and reliability of such analysis.
>
> (c) In any civil or criminal trial, hearing or proceeding, statistical population frequency evidence, based on genetic or blood tests results, is admissible in evidence to demonstrate the fraction of the population that would have the same combination of genetic markers as was found in a specific biological specimen. For purposes of this subsection, "genetic marker" means the various blood types or DNA types that an individual may possess.[458]

This provision was obviously designed to ease the barriers to DNA evidence in Tennessee courts and will do so to some extent. The Tennessee Supreme Court has held that the statute applies to both RFLP and

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[456] *See, e.g., People v. Castro, 545 N.Y.S.2d 985 (Sup. Ct. 1989)*.

[456.1] *See, e.g.*, *State v. Jenkins, 2018 Tenn. Crim. App. LEXIS 856 (Tenn. Crim. App. 2018)* (testimony from a Tennessee Bureau of Investigation agent, that there was a Combined DNA Index System (CODIS) hit linking DNA from a cigarette butt recovered from the scene to defendant's name, was inadmissible hearsay, where there was no testimony at trial as to who generated the defendant's DNA profile that was uploaded into CODIS, who uploaded the defendant's DNA into CODIS, how CODIS maintained this information, or any records concerning the use or operation of CODIS; moreoever, although the State argued that the agent's testimony regarding the hit was admitted for the effect on the listener, rather than the truth of the matter asserted, the testimony was clearly probative of the defendant's identity, a crucial element of the offense; consequently, although the agent was qualified as an expert, to the extent the CODIS hit was admitted without the procedural safeguards of *Tenn. R. Evid. 702* and *703*, any testimony concerning a match to defendant's identity was error).

[457] *Id.*

[458] *Tenn. Code Ann. § 24-7-118* (2000) (formerly § 24-7-117).

PCR methods of analyzing DNA proof, greatly simplifying their admissibility in Tennessee courts.[459] It also applies to other DNA methods.[460]

The statute relieves proponents of DNA evidence of the need for an expert to testify that "DNA analysis provides a trustworthy and reliable method of identifying characteristics in an individual's genetic material."[461] Although this statute makes it easier to admit DNA evidence in Tennessee courts, it does not ensure that DNA proof is admissible in every Tennessee trial. The statute applies broadly to any Tennessee trial, hearing or proceeding, whether civil or criminal. It does not, however, abrogate the Tennessee Rules of Evidence. DNA proof is admissible "upon a showing that the offered testimony meets the standards of admissibility set forth in the Tennessee Rules of Evidence."[462]

Furthermore, the statute does not relieve proponents of the test from laying the other foundations necessary for the admissibility of scientific evidence. There must still be proof that *this* test was properly administered and interpreted. Thus, proponents of DNA evidence should be prepared to prove that the proper instruments were used, the instruments functioned well and were used correctly, the personnel involved in the DNA analysis were adequately trained, and the specimens used in the comparison were preserved correctly.[463]

Under Rules 401 and 403, DNA evidence can be excluded if the handling or interpretation of the evidence was faulty. Opponents of DNA evidence can also attack it under Rules 401 and 403 on the basis of faulty population data if the expert witness's samples were too small or limited. While *Tennessee Code Annotated § 24-7-118(c)* appears to admit statistical population frequency evidence, it should not be interpreted as permitting inaccurate proof with a poor statistical basis that would otherwise be excluded by Rules 401 or 403. Thus, in *State v. Scott*[464] the Tennessee Supreme Court held that DNA analysis of hairs removed from a rape victim was inadmissible because the state failed to establish a proper foundation. Though there was testimony that hairs were taken from the victim and placed in an envelope, there was no chain-of-custody testimony that the hairs mounted on slides and analyzed were the hairs removed from the victim. Moreover, there was no evidence about who mounted the hairs or that the hairs were mounted in a manner sufficiently free of contamination or alteration.

Finally, opponents of DNA proof can attempt to persuade the trier of fact that the evidence should be given little or no weight. *Tennessee Code Annotated § 24-7-118(b)(2)* specifically permits persons opposing DNA evidence to offer proof that DNA analysis is untrustworthy and allows them to cross-examine the proponent's expert on the subject.

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[459] *State v. Begley, 956 S.W.2d 471 (Tenn. 1997)*, *noted in* D. Scott Porch, IV, *Comment*, *State v. Begley*: *When the Tennessee Supreme Court Meets PCR-Method DNA Analysis, It's Love at First Sight*, *28 U. Mem. L. Rev. 1239 (1998)*. *See also* *State v. Reid, 164 S.W.3d 286, 336 (Tenn. 2005)* (adopting opinion of Court of Criminal Appeals) (PCR DNA method is reliable and trustworthy method of identification without antecedent expert witness testimony as to reliability and trustworthiness, *citing Begley*).

[460] *See* *State v. Scott, 33 S.W.3d 746 (Tenn. 2000)* (mitochondrial DNA analysis).

[461] *Tenn. Code Ann. § 24-7-118(b)(1)* (2000). *Cf.* *State v. Begley, 956 S.W.2d 471 (Tenn. 1997)* (parties may offer evidence that DNA proof is not trustworthy and reliable; some possible proof is that there was a sloppy handling of samples, a failure to train personnel performing the testing, and a failure to follow protocol).

[462] *Tenn. Code Ann. § 24-7-118(b)(1)* (2000). *See also* *State v. Harris, 866 S.W.2d 583 (Tenn. Crim. App. 1992)* (trial occurred before passage of § 24-7-118; DNA testing satisfies *Frye* test; explanation of theory of DNA testing; Tennessee Court of Criminal Appeals found a "growing tidal wave of opinion that DNA analysis should be admissible evidence and should be helpful in deciding future [rape] cases … .").

[463] *See above* *§ 7.02[15]*.

[464] *33 S.W.3d 746 (Tenn. 2000)*.

Several other Tennessee statutes explicitly endorse the concept of DNA evidence. One statute authorizes the Tennessee Bureau of Investigation (TBI) to develop procedures for the collection and preservation of human biological specimens for DNA analysis in various sex offense cases. The TBI also is to develop a system to cross-reference DNA data and to perform DNA analysis for law enforcement purposes.[465]

Tennessee law also requires individuals sentenced for various sex offenses and many other felony offenses to provide a biological specimen for purposes of DNA analysis. Providing the specimen can be a condition of probation, community correction, or parole or release from imprisonment.[466]

Other Tennessee statutes deal with DNA evidence in paternity cases. One such provision[467] specifies that a court may order DNA testing to determine parentage. If the tests exclude paternity, the case is dismissed. A near-conclusive (99% or greater) or rebuttable (95% to 98.99%) presumption of paternity is present, depending on the probability of paternity. The written report of the DNA test results is admissible without proof of accuracy of the test unless a party files a written objection thirty days before the hearing.

A related statute[468] authorizes a court to order a DNA test if a person files an acknowledgment of paternity that is questioned as to accuracy or voluntariness. Although this statute provides that the results "shall be admissible on the issue of paternity,"[469] it is likely the court has the discretion to exclude them in unusual cases.

[e] Post-Conviction Analysis

The Post-Conviction DNA Analysis Act[470] was passed in 2001 as a safeguard against the wrongful conviction and sentencing of defendants accused of certain serious crimes, including first or second degree murder, aggravated rape, aggravated sexual battery, or rape of a child.[471] It provides that, at any time after conviction and sentencing, the defendant may file a petition requesting forensic DNA analysis of evidence that may contain biological evidence and is related to the investigation or prosecution that resulted in the conviction.[472]

After the prosecution is given notice and an opportunity to respond, the court is required to order the DNA analysis if it determines that certain criteria are met.[473] There must be a reasonable probability that exculpatory DNA results would have prevented a conviction, the evidence must still be in existence, in such a condition that DNA analysis is possible, and it must not have been previously subjected to the DNA analysis now being requested. Finally, the court must find that the analysis is being requested for the purpose of proving innocence, not for delay.[474] If instead the court finds that the DNA analysis might have resulted in a more favorable verdict or sentence, the court has discretion to grant the relief sought, but is

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[465] *Tenn. Code Ann. § 38-6-113(b)* (2010).

[466] TENN. CODE ANN. at § 40-35-321 (2010).

[467] TENN. CODE ANN. at § 24-7-112 (2000). The statute requires DNA or other scientific testing if preclusive effect is to be given agreed orders or agreed divorce decrees that declare an individual not to be the parent, except in termination of parental rights or adoption cases. TENN. CODE ANN. at 24-7-112(a)(1)(C) (2000).

[468] TENN. CODE ANN. at § 24-7-113 (2000).

[469] TENN. CODE ANN. at § 24-7-113(e)(3) (2000).

[470] *Tenn. Code Ann. . §§ 40-30-301 et seq*. (2006).

[471] *Id.* at § 40-30-303.

[472] *Id.*

[473] *Id.* at § 40-30-304.

[474] *Id.*

not required to do so.[475] If the DNA analysis results in evidence favorable to the defendant, the court shall order a hearing. Otherwise, the petition will be dismissed.[476]

[475] *Id*. at § 40-30-305.

[476] *Id.* at § 40-30-312.

§ 7.03 Rule 703. Bases of Opinion Testimony by Experts

[1] Text of Rule

Rule 703 Bases of Opinion Testimony by Experts

> **The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence. Facts or data that are otherwise inadmissible shall not be disclosed to the jury by the proponent of the opinion or inference unless the court determines that their probative value in assisting the jury to evaluate the expert's opinion substantially outweighs their prejudicial effect. The court shall disallow testimony in the form of an opinion or inference if the underlying facts or data indicate lack of trustworthiness.**

Advisory Commission Comment:

Experts in any field may base opinions on facts not in evidence under this rule. Requisite foundations are that (1) the facts must be "reasonably relied upon by experts in the particular field" and (2) the facts must be trustworthy. With such foundations, inadmissible hearsay could support an admissible expert opinion.

***New Jersey Zinc Co. v. Cole, 532 S.W.2d 246 (Tenn. 1975)*, allows a treating doctor to base an opinion on reports of other professionals.**

If the bases of expert testimony are not independently admissible, the trial judge should either prohibit the jury from hearing the foundation testimony or should deliver a cautionary instruction. Unfairly prejudicial facts or data should be dealt with under Rule 403. With respect to cross-examination, see Rule 705.

2009 Advisory Commission Comment:

The third sentence is new. Normally a jury should not be allowed to hear the reliable but inadmissible bases underlying an expert's opinion.

[2] In General

An expert may base his or her opinion on information from a number of sources. Rule 703 realistically recognizes that experts may make an important contribution to a trial, yet base their opinions on facts that would not be admissible in court. Rule 703 specifically notes two sources of data or information upon which expert testimony may be based. The first source is data or information actually perceived by the expert.[477] The second source is information made known to the expert at or before the hearing.[478] In order to ensure that the

[477] *See below § 7.03[3].*

expert's opinions have some sound factual basis, Rule 703 also provides that the facts, from either source, underlying the expert's opinion must be of a type other similar experts reasonably rely on[479] and may not stem from an untrustworthy source.[480] Expert testimony based on reliable information prepared by others may survive a challenge that it violates the *confrontation clause*.[481]

An expert, like any witness, may be cross-examined. The information an expert uses as a basis for his or her direct testimony may open the door to other evidence that would otherwise be inadmissible. For example, in *Duran v. Hyundai Motor America*[482] a pathologist testified that a plaintiff could not have passed out as represented. The pathologist based his conclusion on many sources (his experience, a review of medical records, several depositions, and the literature in the area) and stated that based on this information it was "medically impossible" for the plaintiff to have passed out under the circumstances. To explore the pathologist's opinion of medical impossibility, the defense was permitted to present reports of two other incidents involving the same vehicle where people claimed to have passed out.

[3] Information Perceived by Expert

Rule 703 clearly states that one source an expert may base his or her testimony on is facts or data perceived by the expert at or before the hearing. This rule essentially places the expert in the same situation as the lay witness; the personal knowledge provision of Rule 602 is satisfied.

[a] Perceived Before the Hearing

There are countless illustrations of how an expert may use his or her senses to obtain information upon which the expert draws an opinion or inference. For example, a physician who performed a physical exam may use the information gathered from the exam as the basis for an opinion about the patient's health.

[b] Perceived At the Hearing

Since Rule 703 also permits the expert to use data obtained at the hearing itself, the expert could observe another witness or a courtroom experiment and reach a conclusion based on that data. A good illustration is a federal case where plaintiff's expert was permitted to base his opinion, about the impact of a log-moving device's lack of an alarm, on plaintiff's own in-court testimony.[483]

[4] Information Made Known to Expert by Others

Rule 703 also permits an expert to base his or her testimony on facts or data "made known to the expert at or before the hearing." Before or during trial an expert may obtain information from others and use that data in formulating the expert's opinion about a relevant matter. A traditional method for providing this information is by the use of a hypothetical question, where facts are presented to the expert while testifying and the expert is then asked his or her opinion based on these facts.[484]

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[478] *See below § 7.03[4]*.

[479] *See below § 7.03[5]*.

[480] *See below § 7.03[6]*.

[481] *See State v. Kennedy, 7 S.W.3d 58 (Tenn. Crim. App. 1999)* (expert may testify about results of DNA tests conducted by expert's lab technician; *confrontation clause* satisfied because testing procedures were reliable). New developments in confrontation law may place this conclusion in doubt. *See below § 8.02[4]* (*confrontation clause*).

[482] ***Duran v. Hundai Motor America, 271 S.W.3d 178 (Tenn. Ct. App. 2008)***.

[483] *Carter v. Massey-Ferguson, Inc., 716 F.2d 344 (5th Cir. 1983)*. *See also United States v. Seale, 600 F.3d 473 (5th Cir. 2010)*.

[484] *See below § 7.05[2]*.

Another way for experts to testify on the basis of information presented by others at the hearing is illustrated when the expert is permitted to listen to the testimony of another witness and then testifies that it would be scientifically impossible for the accident to have happened as described by the other witness. It should be noted that permission of the judge may be necessary if the expert is to base his or her opinion on information from other witnesses during the trial. Rule 615 provides for the rule of sequestration, commonly called "The Rule," that requires the exclusion of witnesses during the hearing if requested by a party.[485] However, the court will permit the presence of "a person whose presence is shown by a party to be essential to the presentation of the party's cause."[486] If it can be demonstrated that the presence of the expert witness is essential, the rule will be waived as to the expert.

Other sources are also possible. For example, two Tennessee physicians were permitted to read a tabulation of medical bills and to testify that various medical bills on the tabulation were necessary and reasonable.[487] Other data may be gleaned from authoritative treatises, journal articles, and videotapes from the relevant field. For example, a pathologist was permitted, in part, to base his testimony on studies reported in textbooks widely used by pathologists and subjected to peer review.[488] Another illustration is a pathologist, testifying for the defense about the cause of an automobile accident, who based his testimony on his experience as a pathologist, a review of plaintiff's medical records, several depositions in the case, and the "literature of the area."[489]

[5] Information Reasonably Relied Upon by Experts in That Field

[a] In General

It is common for an expert witness's opinion to be based on facts or data that are not admissible into evidence, but are reliable.[489.1] For example, a treating physician's expert opinion about the condition of a patient might be based in part on the reports of a pathologist and a radiologist, whose conclusions were based upon blood samples and x-rays taken by technicians, and on statements the patient's spouse made shortly before the patient collapsed. Although the opinion of the treating physician is in fact based on inadmissible hearsay, it is sufficiently trustworthy to permit a physician to act on it. Indeed, the physician might be negligent if this information were ignored. Because this information is deemed reliable by knowledgeable physicians, the Tennessee Rules of Evidence also consider it reliable enough to be used as the basis for expert testimony, even though the "reliable" underlying data are not themselves admissible under evidence rules. Note that this permissible source of information may not satisfy Rule 602's personal knowledge requirement for lay witnesses, but is deemed admissible because of the expert's unique treatment in the rules of evidence.

Rule 703 permits the expert's opinion to be based on facts or data "of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject." It must be stressed that

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[485] *Tenn. R. Evid. 615*.

[486] *Id. See above § 6.15[6]*.

[487] *Long v. Mattingly, 797 S.W.2d 889, 893 (Tenn. Ct. App. 1990)*.

[488] *State v. Ayers, 200 S.W.3d 618, 623 (Tenn. Crim. App. 2005)* (whether death was homicide or suicide).

[489] ***Duran v. Hyundai Motor Am., Inc., 271 S.W.3d 178 (Tenn. Ct. App. 2008)***.

[489.1] *See, e.g.*, *Allen v. Albea, 476 S.W.3d 366, 380 (Tenn. Ct. App. 2015)* (admitting deposition of physician who said he relied in part on written report of another physician). *See also*, *Lucchesi v. Lucchesi, 2019 Tenn. App. LEXIS 27 (Tenn. Ct. App. 2019)* (forensic accountant's valuation of real property, which was based on tax assessments, was admissibe since the testimony did not reveal a lack of trustworthiness in the underlying assessments, and the witness merely identified the source and content of the particular records upon which he based his opinions; moreover, the use of a tax appraisal to value property has been held to be competent evidence of the value of real property).

Rule 703 does not mandate that the facts or data themselves be admissible pursuant to other rules of evidence.[489.2] In *United States v. Unruh,*[490] a bank examiner was permitted to base his expert opinion on his notes and his prepared report even though the report was not otherwise admissible.

Similarly, in *Herbert v. Brazeale*,[491] an accident reconstruction expert was permitted to testify on the basis of, among other sources of information, deposition testimony of witnesses when the depositions themselves were not entered into evidence. The Tennessee Court of Appeals held that under Rule 703 the expert could base his testimony on evidence (the depositions) that were not themselves admissible into evidence. In another Tennessee case, experts testifying about the value of property relied on statements by buyers and sellers of property in the same area.[492] This was appropriate as a common practice of real estate experts providing appraisals.

Hunter v. Ura[493] is an expansive illustration. A medical expert in a medical malpractice action testified that the "medical literature" supported his testimony. The Tennessee Supreme Court held that this was proper evidence to establish the basis of the expert's testimony. In another illustrative case, an expert in genetics was permitted to testify about her own analysis of the laboratory test results obtained in tests performed by another geneticist in the same laboratory.[494] And in another case, the Tennessee Supreme Court indicated that the data relied upon by the expert could involve self-reported statements of very interested parties, even after an indictment, if the data were reasonably relied upon by experts in the field.[495]

External, Objective Standard. It should be emphasized that Rule 703 creates an objective, external standard for assessing the reliability of the underlying data. The underlying data must be such that experts in that field reasonably rely on them in forming the same kinds of opinions or inferences that the expert in this case did. The word "reasonably" suggests that the underlying data must be more than actually used by this expert, they must be reasonably used. Moreover, the standard asks whether experts in the field use these kinds of data. It does not ask only whether this particular expert used these data. The wording of this standard implies that some data actually used by experts are insufficiently reliable to satisfy Rule 703.

Federal Illustrations. Under the virtually identical federal version of Rule 703, courts have admitted opinions based on various types of otherwise inadmissible evidence. This included a drug agent who was permitted

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[489.2] *Holder v. Westgate Resorts Ltd., 356 S.W.3d 373, 379 (Tenn. 2011)* (expert opinion may be based on inadmissible evidence if the facts or data on which the opinion is based are trustworthy and of a type reasonably relied upon by experts); *Lake v. Memphis Landsmen, 405 S.W.3d 47, 68 (Tenn. 2013)* (expert who testified where plaintiff was seated in bus properly relied on information provided by another passenger). *See also*, *State v. Smith, 2018 Tenn. Crim. App. LEXIS 488 (Tenn. Crim. App. 2018)* (toxicology expert's opinion was not inadmissible hearsay where expert relied on Winek toxicology chart that is regularly used by experts in the field, and the chart itself was based on studies from across the field of toxicology as well as a widely-used toxicology treatise; it is not uncommon for the opinion of an expert witness to be based on facts or data that are not admissible into evidence, but which are reliable; in determining the reliability of the underlying information under *Tenn. R. Evid. 703*, the underlying data must be such that experts in that field reasonably rely on them in forming the same kinds of opinions or inferences that the expert did).

[490] *855 F.2d 1363 (9th Cir. 1988)*.

[491] *902 S.W.2d 933, 938 (Tenn. Ct. App. 1995)*. *See also* *Ratliff v. Schiber Truck Co., 150 F.3d 949 (8th Cir. 1998)* (accident reconstruction expert may be cross-examined with state trooper's accident report which expert had read and not followed and which was type of document reasonably relied upon by accident reconstructionists in forming their opinions).

[492] *Willamette Industries, Inc. v. AAC, 11 S.W.3d 142 (Tenn. Ct. App. 1999)*.

[493] *163 S.W.3d 686 (Tenn. 2005)*

[494] *State v. Lewis, 235 S.W.3d 136, 151 (Tenn. 2007)*.

[495] *State v. Scott, 275 S.W.3d 395 (Tenn. 2009)*.

to form his opinion on the street value of drugs by talking with other drug agents,[496] and an expert in aeronautical psychology who testified on the basis of statements by the patient's friends and a former professor.[497]

Disclosure to Jury. An amendment to both Federal and Tennessee Rules 703 clarifies that the facts or data underlying the expert's opinion that are otherwise inadmissible under the rules of evidence will not necessarily be disclosed to the jury. The court must determine that the probative value of such underlying facts or data in assisting the jury to evaluate the expert's testimony substantially outweighs their prejudicial effect.[498] Under this provision, underlying data such as a laboratory report relied upon by a physician might well come into evidence. However, a psychologist testifying as an expert might be precluded from repeating an inflammatory hearsay statement made to him or her by a non-party, non-witness during the course of an evaluation and relied upon in forming an expert opinion.

On rare occasions, however, an overriding public policy bars expert testimony based on certain inadmissible evidence. These unusual situations involve an expert's reliance on information that, often by statute, is inadmissible. If the expert were allowed to use this as the basis for his or her testimony, the policy behind making the evidence inadmissible would be thwarted. Such cases must be resolved on the basis of a careful analysis of the facts and statutes at issue.[499]

[b] Foundation

The judge, not the jury, decides whether the data underlying an expert's opinion are of a type reasonably relied upon by experts in that field in forming opinions or inferences upon the subject, Rule 104(b). Often the expert who relies on the challenged underlying facts will provide the necessary foundation by testifying about the types of information these experts use in forming this kind of opinion. Counsel for the other side may offer contrary expert proof. When the judge resolves this issue, the rules of evidence do not apply, Rule 104(a). This means that the court may use a learned treatise[500] or other information in deciding whether the expert may base an opinion on the challenged underlying data.

[c] Inadmissible Underlying Data

Sometimes under Rule 703, an expert will testify about his or her opinion, which is based on facts or data perceived by or made known to the expert at or before the hearing.[501] As long as those facts or data are of a type reasonably relied upon by similar experts, the expert may use the information as the basis for the opinion. The problem is that the expert may also testify about those underlying facts. If the facts or data are admissible as substantive evidence under some evidence rule, the expert's testimony about them is permissible and the jury may use the facts or data as substantive evidence.

However, if the expert presents the underlying facts or data but they are not admissible under the evidence rules,[502] there is a danger the jury will nevertheless consider them as substantive evidence. For example,

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[496] *United States v. Golden, 532 F.2d 1244 (9th Cir.)*, *cert. denied*, ***429 U.S. 842 (1976)***.

[497] *Stevens v. Cessna Aircraft Co., 634 F. Supp. 137 (E.D. Pa.)*, *aff'd*, ***806 F.2d 254 (3d Cir. 1986)***.

[498] FED. *R. EVID. 703*; *Tenn. R. Evid. 703*. *See below § 7.03[5][c]*.

[499] *See, e.g., Robertson v. Union Pac. R. Co., 954 F.2d 1433 (8th Cir. 1992)* (plaintiff's expert ordered not to rely on Arkansas Highway Department's data made inadmissible by statute).

[500] Under the Tennessee Rules of Evidence, a learned treatise may be used to impeach but not as substantive evidence. *Tenn. R. Evid. 618*. *See above § 6.18[2]*.

[501] For example, under Tennessee law a learned treatise is admissible to impeach but not as substantive evidence. TENN. R. EVID. 618. Even though inadmissible as substantive evidence, it is often used and relied upon by experts in the particular field as the basis for the expert's opinion in the case.

the expert could base an opinion on inadmissible hearsay that other experts in the field routinely rely on. Though it is permissible for the expert to use the inadmissible information, it is not proper for the jury to consider the disclosed inadmissible information as substantive evidence.

To guard against this possibility, Tennessee Evidence Rule 703, consistent with the federal rule,[503] provides that the otherwise inadmissible facts or data are not to be disclosed to the jury by the proponent of the expert's opinion unless the court first considers whether the risk is worthwhile. The court makes this decision by balancing the probative value of disclosure in assisting the jury to evaluate the expert's opinion against the prejudicial effect of disclosure. Only if court finds that the probative value *substantially outweighs* the prejudicial effect should the inadmissible underlying information be disclosed to the jury.

It is clear that Rule 703 is structured to make it difficult for the proponent of an expert to have the expert disclose inadmissible underlying facts or data even if the expert's opinion was legitimately based on those data or facts. It should be noted, however, that Rule 703 does not bar the other side—the one against whom the expert testifies—from asking the expert about the inadmissible data or facts on cross examination.

If, after making the balancing required by Rule 703, the court permits the expert to relay the otherwise inadmissible facts or data, the jury should be instructed that the facts or data are to be used only to evaluate the expert's testimony; they are not substantive evidence and should not be used as proof of the underlying facts.[504] This instruction is not required if the facts referred to by the expert are otherwise admissible.[505]

[6] Opinion Excluded if Based on Untrustworthy or Prejudicial Data

[a] In General

Although Rule 703 clearly provides that an expert's opinion may be based on inadmissible evidence, it does not suggest that the opinion may be based on any data the expert chooses to use. There are several limits on the types of data available to the expert. As described above,[506] the data must be of a type reasonably relied upon by experts in the particular field. Tennessee Rule 703 specifically provides that "the court shall disallow [expert] testimony in the form of an opinion or inference if the underlying facts or data indicate lack of trustworthiness."[507] In addition, the data cannot be from an untrustworthy source and cannot be excluded by Rule 403.

[b] Untrustworthy Source

If there is an indication that the underlying facts or data are not trustworthy, the court will not permit the opinion testimony. Tennessee Rule 703 specifically provides that "the court shall disallow [expert] testimony in the form of an opinion or inference if the underlying facts or data indicate lack of trustworthiness. Federal

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[502] *See, e.g.*, *State v. Casey, 868 S.W.2d 737 (Tenn. Crim. App. 1993)* (Rule 703 does not authorize the admission of documents that are otherwise inadmissible).

[503] FED. R. EVID. 703.

[504] *State v. Jordan, 325 S.W.3d 1, 54 (Tenn. 2010)*.

[505] *Id. at 55 n.12*.

[506] *See above § 7.03[5]*.

[507] *Tenn. R. Evid. 703*. *See also*, *Nelson v. Justice, 2019 Tenn. App. LEXIS 35 (Tenn. Ct. App. 2019)* (underlying source of data was not untrustworthy merely because the expert was a member of a professional organization that included cats and a prisoner among its members, where the expert's conclusions were not based specifically on data from that organization).

Rule 703 contains no such specific limitation,[508] but federal cases have excluded expert opinion based on untrustworthy data.[509]

This determination of underlying trustworthiness requires the court to look carefully at the reliability of the source of the expert's opinion. For example, if an expert testifies on the basis of scientific tests that used poorly calibrated instruments, the expert's opinion based on the tests could be excluded since the source of the opinion would be untrustworthy facts. Similarly, where an expert's opinion is based on an examination that is too remote in time, or on a statement that she failed to read, the opinion may be held untrustworty and, therefore, excluded.[509.1] The court may also decide to exclude evidence where there is minimal evidence that the expert's opinions and conclusions are widely accepted in the scientific community.[509.2] Peer-review, although helpful, does not necessarily make the evidence admissible.[509.3]

Another illustration involved a Memphis fire investigator who, during an offer of proof, testified that the fire was caused by a malfunctioning shredding machine.[510] The Tennessee Court of Appeals held that the trial court properly disallowed the fire investigator's testimony under Rule 703 because of questions about the trustworthiness of the underlying facts. The investigator apparently based his opinion entirely on statements by people at the location of the fire who told him the fire started near the exhaust system of the shredding machine. The investigator was unaware of any problem with the shredding machine and could not explain how the shredding machine malfunctioned.

Another illustrative case involved an economist whose testimony about lost profits was rejected because his analysis of financial records was seriously flawed.[511]

An unusual case involved a lawyer who wanted to testify as an expert in his own bar disciplinary hearing.[511.1] The Tennessee Supreme Court held his obvious bias indicated a lack of trustworthiness under Rule 703.

Where an expert's proposed testimony is simply too novel and lacks identifiable support in the scientific community, it will generally be held unreliable for untrustworthiness and excluded. In *State v. Lowe*,[511.2] for instance, the defendant attempted to introduce expert evidence that his confession was coerced, based on the expert's conclusion that the defendant had a "submissive, easily-coerced personality." The trial court properly excluded the expert's testimony, since he failed to cite any reliable tests that he used to measure defendant's personality, and further, did not list any publications in the field that supported his opinion.

Sometimes the problem is not that there is no data to support the expert's opinion, but rather, there is a discrepancy in the underlying data. This was the case in *Russell v. Ill. Cent. R.R.*,[511.3] where an expert's

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[508] *See* FED. *R. EVID. 703*.

[509] *See, e.g., In re "Agent Orange" Products Liability Litigation, 818 F.2d 187 (2d Cir. 1987)* (expert's testimony cannot be based on mere speculation); *In re TMI Litig., 193 F.3d 613 (3d Cir. 1999)* (expert cannot rely on medical histories or summaries prepared for litigation).

[509.1] *State v. Lowe, 2016 Tenn. Crim. App. LEXIS 497 (Tenn. Crim. App. 2016)*.

[509.2] *State v. Keel, 2017 Tenn. Crim. App. LEXIS 14 (Tenn. Crim. App. 2017)* (science behind doctor's testimony was not reliable enough).

[509.3] *Id.*

[510] *Tire Shredders, Inc. v. ERM-North Central, 15 S.W.3d 849 (Tenn. Ct. App. 1999)*.

[511] *Waggoner Motors v. Waverly Church of Christ, 159 S.W.3d 42 (Tenn. Ct. App. 2004)*.

[511.1] *Mabry v. Bd. of Prof'l Responsibility, 458 S.W.3d 900 (Tenn. 2014)*.

[511.2] *State v. Lowe, 2016 Tenn. Crim. App. LEXIS 497 (Tenn. Crim. App. 2016)*.

testimony was based on a number of different supporting facts and data, but one of the sources was an article that had limited reliability due to methodological flaws. The opposing party challenged the expert's testimony as a whole, arguing that because the expert had partially relied on flawed data, his testimony should be excluded. The trial and appellate courts disagreed, ruling that the expert's testimony was not inherently unreliable, since he was able to explain the limitations of the flawed source and why he relied on a portion of it. The court also balanced his reliance on just a portion of one flawed article against the considerable weight of other sources he relied on in reaching his conclusions. The decision underscores the case-by-case nature of the reliability/untrustworthiness analysis each court must undertake. It also underscores how admissibility (or exclusion) of expert testimony can depend on the degree to which an expert adequately acknowledges and exlains any limitations in the underlying data.

[c] Exclusion Under Rule 403

If the source of an expert's testimony is of questionable reliability, the opinion could be excluded under Rule 403. This rule permits a court to exclude evidence when the probative value is substantially outweighed by the danger of unfair prejudice, confusion of issues, or misleading the jury. If the factual basis for the opinion is weak, the probative value may also be quite weak. Since an expert is testifying, however, the jury may be inclined to give the testimony more weight than it deserves. Rule 403 authorizes the judge to exclude the opinion evidence because of the likely misuse by the jury.

[d] Confrontation Clause

When an expert testifies for the prosecution in a criminal case and, pursuant to Rule 703, uses information provided by others, the criminal accused may argue the *confrontation clause* is violated.[512]

In *State v. Kennedy*[513] a DNA expert employed by the FBI laboratory testified about the results of DNA testing that strongly suggested the defendant was guilty of rape. The expert described the FBI's procedures for testing and analyzing DNA evidence and the quality controls utilized by the FBI laboratory. Since the samples analyzed in the case were prepared by the expert witness's technician rather than by the expert witness personally, the defendant argued his confrontation rights were violated since the technician did not testify. The Tennessee Court of Criminal Appeals held that the *confrontation clause* was satisfied because the expert providing the expert opinion was available for cross-examination and the lab reports contained sufficient particularized guarantees of trustworthiness to satisfy the *confrontation clause*.

Because of recent developments in the law of confrontation,[514] *Kennedy* would be analyzed differently today. It would first have to be determined whether the technician made a hearsay statement that was used against the criminal accused. This means that the technician's out of court statement would be used to prove the truth of its contents. If so, then the confrontation issue becomes whether the statement was

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511.3 *Russell v. Ill. Cent. R.R., 2015 Tenn. App. LEXIS 520 (Tenn. Ct. App. 2015)*.

512 *See below § 8.02[4]*.

513 *7 S.W.3d 58 (Tenn. Crim. App. 1999)*.

514 *See below § 8.02[4]*.

testimonial or nontestimonial.[515] Of course a confrontation objection may be forfeited if the defendant intentionally procured the unavailability of the witness.[516]

In *State v. Lewis*,[517] the Tennessee Supreme Court held that the confrontation clause was not violated when a genetics expert witness based her testimony on the analysis of another geneticist in her lab who had actually conducted the tests producing the data. The data were not introduced in evidence. The Tennessee Supreme Court found no confrontation violation because the expert testified and was subject to cross examination, and the underlying data themselves were not evidence nor communicated to the jury. The continuing viability of *Lewis* must be assessed in view of recent confrontation cases by the United States Supreme Court.[518]

State v. Hutchinson[518.1] provides a useful summary of the evolution of federal Confrontation Clause precedent and its recent application in Tennessee. In *Hutchinson*, the Tennessee Supreme Court addressed whether a medical examiner violated the Confrontation Clause by relying on an inadmissible autopsy report as the basis for her testimony. The defendant objected based on the Confrontation Clause, because the autopsy had been performed by the previous medical examiner, not the person testifying. Applying the "targeted individual" standard enunciated under federal precedent, the court held that the autopsy did not violate the Confrontation Clause. Since a statement is testimonial only if it is "made for the purpose of proving the guilt of a particular criminal defendant at trial,"[518.2] where an expert relies on an out-of-court statement "solely for the purpose of explaining the assumptions on which that opinion rests", the statement is not offered for its truth and, therefore, falls outside the scope of the Confrontation Clause.[518.3]

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[515] *See generally* An out-of-court statement is deemed testimonial under the Confrontation Clause if its primary purpose is accusing a targeted individual.

State v. Maclin, 183 S.W.3d 335 (Tenn. 2006). Under current confrontation law, the technician's statement today would likely be deemed testimonial and the technician would either have to testify at the trial or be unavailable at trial but have been examined in a previous hearing. *See*, *e.g.*, Bullcoming v. New Mexico, 564 U.S. ___, 131 S. Ct. 2705, 180 L. Ed. 2d 610 (2011) (lab technician who tested blood sample and prepared report certifying results was unavailable at trial (for unspecified reasons); report was testimonial and confrontation clause barred another lab employee from testifying about the test results or from entering the report into evidence).

[516] State v. Lewis, 235 S.W.3d 136 (Tenn. 2007); State v. Ivy, 188 S.W.3d 132, 146 (Tenn. 2006); Davis v. Washington, 547 U.S. 813, 126 S. Ct. 2266, 165 L. Ed. 2d 224 (2006); Giles v. California, 128 S. Ct. 2678, 171 L. Ed. 2d 488 (2008).

[517] State v. Lewis, 235 S.W.3d 136, 149 (Tenn. 2007).

[518] *See below* § 8.02[4].

[518.1] State v. Hutchison, 482 S.W.3d 893 (Tenn. 2016).

[518.2] Id., 914, quoting Williams v. Illinois, 567 U.S. 50, 132 S. Ct. 2221 (2012)). The "targeted individual" standard requires multiple levels of inquiry: "We will look first to whether the autopsy report satisfies the broad standard … under which a statement would be deemed testimonial if its primary purpose is to prove past events potentially relevant to a criminal prosecution. Once past that threshold, we will consider whether: (1) the autopsy report has 'indicia of solemnity' … or (2) the primary purpose of the autopsy report was to accuse a targeted individual, in accordance with Justice Alito's plurality in *Williams* [cites omitted] … . If the autopsy report meets the threshold standard and either of the latter two standards, it is considered testimonial within the meaning of the Confrontation Clause." Id., *910–911. *See also* State v. Dotson, 450 S.W.3d 1 (Tenn. 2014) (an out-of-court statement is testimonial if "its primary purpose is evidentiary and it is either a targeted accusation or sufficiently formal in character"), construing Williams v. Illinois, 567 U.S. 50, 132 S. Ct. 2221 (2012).

[518.3] State v. Hutchison, 482 S.W.3d 893, *914 (Tenn. 2016). The court explained: "An expert's testimony may be based on inadmissible evidence, and until [the] expert['s] testimony crosses the line from the formation of an independent opinion based on underlying raw data to a reliance on the conclusions and opinions of the author of the autopsy or a mere parroting of the report's findings, then that testimony is admissible subject to the rules of evidence." Id., *915.

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§ 7.04 Rule 704. Opinion on Ultimate Issue

[1] Text of Rule

Rule 704 Opinion on Ultimate Issue

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.

Advisory Commission Comment:

The Supreme Court has already approved this language. *City of Columbia v. C.F.W. Construction Co., 557 S.W.2d 734 (Tenn. 1977)*. But *Blackburn v. Murphy, 737 S.W.2d 529 (Tenn. 1987)*, places limitations on lay witnesses testifying to some ultimate issues, such as whether an accident was unavoidable.

1996 Advisory Commission Comment:

One ultimate issue is outside the scope of expert testimony in a criminal case. *T.C.A. § 39-11-501* provides that "no expert witness may testify as to whether the defendant was or was not insane."

[2] Testimony on Ultimate Issue Admissible

[a] Prior Tennessee Law

Tennessee common law has not historically precluded an expert witness from testifying about the ultimate issue of the lawsuit if expert testimony is necessary to intelligently decide the case.[519] A pre-rules decision of the Tennessee Supreme Court held that "an expert's opinion is not objectionable merely because it embraces an ultimate issue to be decided by the trier of fact, so long as it is helpful to the court."[520] Lay witnesses were not typically extended the same latitude to express an opinion as to the ultimate issue.[521]

[b] Rule 704

Rule 704 clearly provides that the mere fact that opinion or inference testimony embraces the ultimate issue of the lawsuit does not render it inadmissible, regardless of whether the testimony is elicited from a lay or expert witness.[522] It should be stressed, however, that this rule does not make ultimate-issue testimony

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[519] *See, e.g., National Life & Acc. Ins. Co. v. Follett, 168 Tenn. 647, 80 S.W.2d 92 (Tenn. 1935)*.

[520] *City of Columbia v. C.F.W. Constr. Co., 557 S.W.2d 734, 742 (Tenn. 1977)*. *See also State v. Purkey, 689 S.W.2d 196, 200 (Tenn. Crim. App. 1984)*.

[521] *Lawrence Cty. Bank v. Riddle, 621 S.W.2d 735 (Tenn. 1981)*. *See also Blackburn v. Murphy, 737 S.W.2d 529 (Tenn. 1987)*.

admissible. Rather, Rule 704 simply removes one possible objection to such testimony. As described in the next section,[523] testimony on the ultimate issue is inadmissible unless it also satisfies other evidence rules.

[3] Limits on Ultimate Issue Testimony

[a] In General

Although Rule 704 could be read as providing that a lay or expert witness is free to testify about an ultimate issue, the rule is not so expansive. There are a number of limits on this testimony. Rule 704 is written in the negative. It states that a witness's testimony is not objectionable because it embraces an ultimate issue. By implication, the testimony must still satisfy all other evidence rules.

[b] Lay Witnesses

Rules 701 and 702 place major limits on ultimate issue testimony. Rule 701 states that a lay witness may not give an opinion or inference unless rationally based on the witness's perception and helpful to an understanding of the testimony or the determination of a fact in issue. Since testimony about the ultimate issue will always involve an opinion, Rule 701 will bar some lay opinions on the ultimate issue because such opinions are not "helpful" to the trier of fact.[524]

[c] Expert Witnesses

Similarly, Rule 702 will prevent some experts from testifying about the ultimate issue. Under this rule an expert may testify only if his or her testimony will "substantially assist the trier of fact to understand the evidence or to determine a fact in issue." An expert's testimony about the ultimate issue in the case may fail to satisfy the substantial assistance rule for several reasons.

First, the scientific validity of the tests or knowledge may be insufficient.[524.1] Second, the conclusions on the ultimate issue may offer little assistance to the jury, which is as qualified as the expert to draw conclusions about the particular ultimate issue.[525] This is an especially likely result when the expert offers a legal

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[522] *See, e.g.,* Scheerer v. Hardee's Food Sys., 148 F.3d 1036 (8th Cir. 1998), *cert. denied*, ***525 U.S. 1105 (1999)*** (lay witness permitted to give opinion as to cause in slip-and-fall case). *See generally* DAVID KAYE, DAVID BERNSTEIN, AND JENNIFER MNOOKIN, THE NEW WIGMORE: A TREATISE ON EVIDENCE, EXPERT EVIDENCE § 2.2 (2d ed. 2011).

[523] *See below* § 7.04[3].

[524] *See above* § 7.01[4].

[524.1] *See, e.g.*, State v. Jenkins, 2018 Tenn. Crim. App. LEXIS 856 (Tenn. Crim. App. 2018) (testimony from a Tennessee Bureau of Investigation agent, that there was a Combined DNA Index System (CODIS) hit linking DNA from a cigarette butt recovered from the scene to defendant's name, was inadmissible hearsay in violation of Tenn. R. Evid. 703, where there was no testimony at trial as to who generated the defendant's DNA profile that was uploaded into CODIS, who uploaded the defendant's DNA into CODIS, how CODIS maintained this information, or any records concerning the use or operation of CODIS; moreoever, although the State argued that the agent's testimony regarding the hit was admitted for the effect on the listener, rather than the truth of the matter asserted, the testimony was clearly probative of the defendant's identity, a crucial element of the offense; consequently, any testimony concerning a match to defendant's identity was error).

[525] The Advisory Committee's Note to Federal Rule 704, discussing language virtually identical to Tennessee Rule 704, observed: The abolition of the ultimate issue rule does not lower the bars so as to admit all opinions. Under Rules 701 and 702, opinions must be helpful to the trier of fact, and Rule 403 provides for exclusion of evidence which wastes time. These provisions provide ample assurances against the admission of opinions which would merely tell the jury what result to reach … . *See also*, State v. Gray, ___ S.W.3d ___, 2018 Tenn. Crim. App. LEXIS 849 (Tenn. Crim. App. 2018) (expert's testimony properly held inadmissible where, during offer of proof, the expert could only offer his opinion based on the "possibility" that the victim's testimony had been influenced; this speculative opinion was not based on scientific or technical knowledge, and moreover, the

conclusion about the evidence in the case.[526] In some such instances it is doubtful that the substantial assistance test is satisfied.

On the other hand, sometimes the expert's testimony about an ultimate issue is most helpful to the trier of fact. In *State v. Atkins*,[527] a forensic expert was permitted to testify that, based on his autopsy and understanding of the mechanical limitations of the hands and arms, the deceased could not have committed suicide. The Tennessee Court of Criminal Appeals held that this testimony was helpful to the jury and should have been admitted.

Rule 403 applies and could bar some testimony about the ultimate issue. This rule precludes evidence if its probative value is substantially outweighed by the danger of unfair prejudice.[528] If the witness's opinion on the ultimate issue is of slight probative value, the court should consider excluding it because of the real danger that the jury will give it an inordinate amount of weight, particularly if the witness is an expert.

[4] Mental Condition in a Criminal Case

A criminal defendant in Tennessee may raise, as an affirmative defense, that at the time of committing the acts giving rise to the criminal charge, he or she lacked the ability to appreciate the nature or wrongfulness of the actions because of a severe mental disease or defect.[529] The burden of proof for this insanity defense falls on the defendant to show, by clear and convincing evidence, the existence of the above criteria. This statute bars both sides from calling an expert witness to testify that the defendant was, or was not, insane, a determination to be made by the trier of fact rather than an expert.[530]

Federal Rule 704(b) contains a specific provision prohibiting expert testimony as to the criminal defendant's mental state or condition as an element of a crime or defense. Tennessee did not adopt such a rule when the Tennessee Rules of Evidence were enacted, thereby leaving open the opportunity to provide expert testimony regarding mental competence in a criminal case. *Tennessee Code Annotated § 39-11-501* changed this and, in general, followed the federal rule.

It should not be presumed that mental health experts will no longer testify in criminal cases on the issue of insanity. Indeed, their observations, test results, and diagnoses will continue to be important evidence in such cases. The Tennessee statute simply means that it will now be necessary for the expert to stop short of opining that a defendant was or was not insane, leaving the ultimate conclusion for the jury or judge.[530.1] The expert,

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expert's testimony would have encroached on the jury's task of weighing the veracity and credibility of the victim's testimony, which was central to the case).

[526] *See* *Coffey v. City of Knoxville, 866 S.W.2d 516 (Tenn. 1993)* (cardiologists testified they did not believe that plaintiff's stroke arose out of and in the course of his employment as a police officer; testimony was improper because it was an opinion about a legal conclusion rather than an opinion of fact; Rule 704 allows an expert to testify about an opinion that reaches an ultimate fact if the testimony establishes a conclusion about the cause of a particular fact, or establishes the existence of a fact that may be the ultimate fact to be proven; expert may not express an opinion as to the applicable legal conclusion to be drawn from the ultimate fact proven; only the court may reach legal conclusions); *State v. Turner, 30 S.W.3d 355 (Tenn. Crim. App. 2000)* (error to permit medical expert to testify that holding a child's arm against a kerosene heater was child abuse; testimony did not substantially assist jury); *United States v. Scop, 846 F.2d 135 (2d Cir. 1988)* (SEC investigator should not have been permitted to testify that the evidence presented at trial satisfied the elements of the applicable criminal statute); *Askanase v. Fatjo, 130 F.3d 657 (5th Cir. 1997)* (lawyer barred from testifying whether defendants breached their fiduciary duty).

[527] *681 S.W.2d 571 (Tenn. Crim. App. 1984)*, *cert. denied*, ***470 U.S. 1028 (1985)***.

[528] *See above §§ 4.03[4]–[8]*.

[529] *Tenn. Code Ann. § 39-11-501* (2010).

[530] This prohibition against expert testimony is a departure from prior Tennessee law. Until 1995, such ultimate issue opinion testimony on the issue of insanity was permitted in state court.

however, may still testify as to the constituent parts of the insanity defense. Thus, the expert can testify whether the accused suffered from a severe mental disease or defect, and whether he or she could appreciate the nature or wrongfulness of his or her conduct at the time of the offense.[531] However, the expert may not put these facts together for the trier of fact and testify whether the severe mental disease or defect prevented the offender from appreciating the nature or wrongfulness of the conduct.[532]

On issues other than insanity, the criminal defendant may attempt to use other evidence rules to prevent lay and expert testimony on whether a mental disease or defect caused a lack of capacity to form the mental state required for the crime.[533]

[5] Jury Instructions on Jury Responsibilities

If a witness, particularly an expert witness, is permitted to give an opinion on an ultimate issue in the case, there is a danger that the jury may give too much weight to this testimony. Counsel should consider requesting a jury instruction in which the jury is informed or reminded that it, not the witness, is responsible for determining the facts in the case.[534] Jurors could even be informed that they may believe part of the witness's testimony without agreeing with the witness's conclusions about the ultimate issue.

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[530.1] *See* State v. Parker, 2019 Tenn. Crim. App. LEXIS 127 (Tenn. Crim. App. 2019) (the jury is not required to accept testimony of a psychiatrist on the issue of sanity to the exclusion of lay testimony or to the exclusion of evidence of the actions of the defendant inconsistent with sanity; thus, the trier of fact may consider both lay and expert testimony, may look to the evidence defendant's actions and words before, at, and immediately after the commission of the offense, and may discount expert testimony which it finds to be in conflict with the facts of the case).

[531] State v. Perry, 13 S.W.3d 724, 742 (Tenn. Crim. App. 1999).

[532] *Id.*

[533] *See* State v. Hall, 958 S.W.2d 679, 689–90 (Tenn. 1997); State v. Phipps, 883 S.W.2d 138 (Tenn. Crim. App. 1994); State v. Maraschiello, 88 S.W.3d 586, 607 (Tenn. Crim. App. 2000) (excluding nurse-witness's testimony about Gulf War Syndrome; there was no testimony how this syndrome affected defendant's capacity to form requisite mental state).

[534] *See above* § 7.02[12].

§ 7.05 Rule 705. Disclosure of Facts or Data Underlying Expert Opinion

[1] Text of Rule

Rule 705 Disclosure of Facts or Data Underlying Expert Opinion

> **The expert may testify in terms of opinion or inference and give reasons without prior disclosure of the underlying facts or data, unless the court requires otherwise. The expert may in any event be required to disclose the underlying facts or data on cross-examination.**

Advisory Commission Comment:

This rule gives a lawyer the option of not using a hypothetical question in examining an expert; the lawyer can ask the expert simply to state an opinion. Tennessee presently requires the hypothetical unless the expert bases testimony on personal observation. *See, e.g.,* *Valentine v. Conchemco, 588 S.W.2d 871 (Tenn. Ct. App. 1979)*.

[2] Abolition of Requirement for Hypothetical Question

Rule 705 represents a significant departure from Tennessee common law. Under prior Tennessee law, an expert witness could testify on the basis of personal observation or facts presented in a hypothetical question. Rule 705, adopted from Federal Rule 705,[535] provides that the expert, even one with no personal observation of the facts, ordinarily may give opinion testimony without first disclosing the underlying facts upon which the opinion is based. This means that the expert may relate his or her conclusion at the beginning of testimony and abolishes the requirement of using a hypothetical question, which has been heavily criticized for many years.[536]

The hypothetical question involves asking the expert with no personal knowledge of particular facts to assume certain facts and then to express a professional opinion based on those facts.[537] The facts presented in the hypothetical question must be supported by the evidence.[538] Prior to the adoption of Rule 705, Tennessee decisions held that the hypothetical question must contain enough facts, supported by evidence, to permit an

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[535] Federal Rule 705 differs from Tennessee Rule 705 in one respect. While the Federal Rule now states the expert may testify "without first testifying to the underlying facts or data," the Tennessee provision, adopting the language in the original federal version, states that the expert may testify "without prior disclosure of the underlying facts or data." The new federal language was chosen to make it clear that it did not prevent disclosure during discovery or pre-testimony hearings on the admissibility of the expert testimony.

[536] *See, e.g.*, FED. *R. EVID. 705*, Advisory Committee's Note ("The hypothetical question has been the target of a great deal of criticism as encouraging partisan bias, affording an opportunity for summing up in the middle of the case, and as complex and time consuming.").

[537] *See* MCCORMICK ON EVIDENCE 36 (6th ed. 2006).

[538] *Id. See, e.g.*, *Pentecost v. Anchor Wire Corp., 662 S.W.2d 327 (Tenn. 1983)*; *Griffin v. State, 578 S.W.2d 654 (Tenn. Crim. App. 1978)*, *cert. denied*, ***444 U.S. 854 (1979)***; *Davenport v. Taylor Feed Mill, 784 S.W.2d 923, 926 (Tenn. 1990)* (hypothetical question must be supported by evidence presented at trial); *State v. Prentice, 113 S.W.3d 326, 335 (Tenn.Crim. App. 2001)* (not proper for hypothetical questions to assume facts that are not supported by the evidence).

expert to give a reasonable opinion which is not based on mere speculation or conjecture and which is not misleading to a trier of fact.[539]

This rule probably is still valid for hypothetical questions after enactment of Rule 705. Since Rule 705 does not require that the expert disclose the underlying facts before giving an opinion and since Rule 703 indicates that an expert may rely on facts not in evidence, if a hypothetical question is used it should not have to include all the relevant facts and need not be limited to facts already in evidence. On the other hand, the answer to an incomplete or misleading hypothetical question can be disallowed.[540] It may be barred under Rule 401 as irrelevant or under Rule 403 as misleading, unfairly prejudicial, or a waste of time. A more effective remedy may be for adversary counsel to restate the hypothetical question during cross-examination to demonstrate the inaccuracies in the original hypothetical question.[541]

It must be emphasized that Rule 705 does not prohibit the use of hypothetical questions. When expert opinion testimony is elicited under the rule without a hypothetical and thus without disclosure of the underlying facts, those facts may be obtained on cross-examination, and the court even has discretion to require such disclosure on direct examination.

Rule 705 permits counsel who uses an expert witness to have the expert, on direct examination, give his or her opinion or inference without disclosing the facts underlying the opinion or inference. This option should be taken only after careful reflection. Often it is advisable that the underlying facts be developed on direct examination. Sometimes the underlying data will have to be revealed to qualify the expert as providing substantial assistance under Rule 702. And often the expert's testimony will be more comprehensible and convincing if the facts behind the expert's opinion are fully articulated.

The hypothetical question itself has some advantages that should be considered before a decision is made to abandon it. The hypothetical question assists in structuring the expert's conclusions, it permits counsel to remind the jury of the testimony of other witnesses, and it adds weight to the expert's conclusions by relating them to the specific facts of the case.

If a hypothetical question is not used, another option is to have the expert on direct examination state the information upon which the conclusion is based. This approach adds credibility to the expert since the jury will hear from the expert a logical and factual basis for the expert's conclusion. However, this may not be permitted if the underlying data are inadmissible.[542]

On the other hand, Rule 705 states that if the expert does not give the underlying data on direct examination, he or she may be required to do so on cross-examination. The danger is that the cross-examiner will only elicit, or at least will focus on, the data that conflict with the expert's opinion. If the data were first brought out on direct examination, counsel will have more control over its content and presentation.

Another danger is that cross-examination may be used as a vehicle to admit evidence, whether admissible on its own or relied upon by the expert witness. In *Melton v. BNSF Railway Company*[543] the trial court erroneously permitted counsel to cross examine an expert witness by reading and referring to the otherwise inadmissible deposition of another expert. The testifying expert had not relied on the deposition in forming her expert opinion.

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[539] *Pentecost v. Anchor Wire Corp., 662 S.W.2d 327, 329 (Tenn. 1983)*. *See, e.g.*, *State v. Prentice, 113 S.W.3d 326, 335 (Tenn. Crim. App. 2001)* (appellate court will ascertain whether hypothetical question contained enough facts, supported by evidence, to permit an expert to give a reasonable opinion that is not based on mere speculation or conjecture and that is not misleading to the trier of fact).

[540] *See, e.g.*, *Griffin v. State, 578 S.W.2d 654 (Tenn. Crim. App. 1978)*, *cert. denied*, ***444 U.S. 854 (1979)***.

[541] *See Davenport v. Taylor Feed Mill, 784 S.W.2d 923, 926 (Tenn. 1990)* ("restating the hypothetical in cross-examination is the proper remedy for pointing out deficiencies in the opposing party's question").

[542] *See above* § 703[5][c].

[543] *322 S.W.3d 174 (Tenn. Ct. App. 2010)*.

[3] Disclosure of Independently Inadmissible Evidence

The requirements of Rule 705 regarding disclosure of the facts or data underlying expert testimony work in conjunction with the provisions of Rule 703, which deal with expert opinions based on independently inadmissible evidence. The latter rule permits opinion testimony to be based on independently inadmissible evidence, if trustworthy and generally relied upon by experts in that field. While there are limits on the sharing of these underlying facts on direct examination, their disclosure can be required on cross-examination by Rule 705.[543.1]

A good illustration is *Steele v. Fort Sanders Anesthesia Group,*[544] where a physician, who was a defense expert, read a discovery deposition of another physician prior to testifying. The plaintiff was allowed to use this deposition during cross-examination. The deposition directly contradicted the witness's testimony about the cause of paralysis. It should be noted that the testifying physician admitted reading and considering the discovery deposition but denied relying on it in forming his opinion. Nevertheless, the Tennessee Court of Appeals upheld its use on cross-examination because the witness used the deposition to get information, referred to it during testimony, and had considered it. The deposition was used on cross-examination to reduce the impact and reliability of the expert witness's testimony.

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[543.1] *See, e.g.*, *Johnson v. State, 2018 Tenn. Crim. App. LEXIS 369 (Tenn. Crim. App. 2018)* (plain language of *Tenn. R. Evid. 705* authorizes the post-conviction court to require disclosure of the underlying facts or data before an expert witness testifies; "a trial court will require disclosure of the underlying data of the expert's opinion when the court believes that the party opponent will be unable to cross-examine effectively and the reason for such inability is other than the prejudicial nature of such facts or data").

[544] *897 S.W.2d 270 (Tenn. Ct. App. 1994)*.

§ 7.06 Rule 706. Court-Appointed Experts

[1] Text of Rule

Rule 706 Court-Appointed Experts

(a) Appointment. The court may not appoint expert witnesses of its own selection on issues to be tried by a jury except as provided otherwise by law. As to bench-tried issues, the court may on its own motion or on the motion of any party enter an order to show cause why expert witnesses should not be appointed and may request the parties to submit nominations. The court ordinarily should appoint expert witnesses agreed upon by the parties, but in appropriate cases, for reasons stated on the record, the court may appoint expert witnesses of its own selection. An expert witness shall not be appointed by the court unless the witness consents to act. A witness so appointed shall be informed of the witness's duties by the court in writing, a copy of which shall be filed with the clerk, or at a conference in which the parties shall have opportunity to participate. A witness so appointed shall advise the parties of the witness's findings, the witness's deposition may be taken by any party, and the witness may be called to testify by the court or any party. The witness shall be subject to cross-examination by each party, including a party calling the witness.

(b) Compensation. Expert witnesses so appointed are entitled to reasonable compensation in whatever sum the court may allow. The compensation thus fixed is payable from funds which may be provided by law in criminal cases and civil actions and condemnation proceedings. In other civil actions and proceedings the compensation shall be paid by the parties in such proportion and at such time as the court directs and thereafter charged in like manner as other costs.

(c) Disclosure of appointment. Where a court-appointed expert is permitted otherwise by law to testify on an issue to be tried by a jury, no one may disclose to the jury the fact that the court appointed the expert witness.

(d) Parties' experts of own selection.Nothing in this rule limits the parties in calling expert witnesses of their own selection.

Advisory Commission Comment:

The Commission was wary of the undue impact a court-appointed expert might have on a jury, and the rule prohibits such experts in jury trials unless expressly permitted by statute. Even where the trial court wants its own expert in a bench trial, the judge normally should defer to the parties' suggestions. Either party may discover and cross-examine the court's expert.

[2] Court-Appointed Experts

[a] In General

Frequently, a judge may believe that the trier of fact needs expert testimony to understand evidence or resolve a factual issue. Usually the parties will provide the necessary witnesses. Indeed, Rule 706(d) specifically provides that nothing in the rule limits the parties in calling expert witnesses of their own choosing. Sometimes a party will call an expert witness after gentle persuasion by the judge who believes that expert testimony would be of assistance.[545]

On rare occasions, however, the judge may want the authority to call his or her own expert. Perhaps the parties do not provide adequate expert testimony. For example, the experts used by the parties may have minimal or suspicious credentials, are too partial to the party paying them, testify in a non-convincing or unclear way, or disagree so much with one another's testimony that the trier of fact will find it difficult to resolve an important question. Occasionally neither party will call an expert to testify, even though the judge may believe that an expert's testimony would be helpful in the case. Also, a court may want to call an expert witness in order to encourage the parties to settle the case out of court. Sometimes a judge may believe that the mere possibility that he or she could call an expert witness may lead the party-called witnesses to temper their testimony and avoid exaggeration.

[b] Radical Departure from Federal Rule

Rule 706 provides a mechanism for the judge to appoint an expert to testify in a trial. Tennessee Rule 706, however, is a marked departure from federal Rule 706 and represents a considerable departure from traditional lore about the proper role of court-appointed expert witnesses. In general terms, Federal Rule 706 liberally permits a federal trial judge to appoint an expert.[546] No criteria are given to guide the federal judge in determining whether a court-appointed expert witness is desirable or appropriate.

Jury Trial. Tennessee Rule 706, on the other hand, clearly rejects the federal approach and places severe limits on a Tennessee trial judge's capacity to appoint an expert to testify as the court's witness. For example, the federal rule permits such an appointment in a jury-tried case while the Tennessee provision bars the appointment in a jury case unless authorized by statute.

Selection of Court's Expert Witness. Also, Tennessee Rule 706 greatly restricts the judge's capacity to select a court-appointed witness not approved by the parties. The Tennessee provision states that "ordinarily" the court's expert should be selected by the parties, though the judge retains discretion to appoint an expert witness not picked by the parties.

Rationale for Restrictions on Judge-Selected Expert Witness. The Tennessee Advisory Commission, the body which drafted the Tennessee provision, succinctly explained this hostility to court-appointed experts by noting that it "was wary of the undue impact a court-appointed expert might have on a jury."[547]

This short statement summarizes a number of reasons why Tennessee has restricted court-appointed experts. One is that the use of a court-appointed expert removes an element of control from the lawyers, who have traditionally been permitted to decide which witnesses to call. Other critics of court-appointed experts have expressed concern that a judge who calls a witness not wanted by either party alters the traditional role of the American judge as neutral referee and substitutes the role of judge as investigator. It has also been argued that a judge will be unable to find a truly neutral expert, yet the jury will get the impression that the expert is in fact neutral, and may give the "judge's expert" more credence than the parties' experts.

[3] Appointment

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[545] *See, e.g.*, *Holland v. Commissioner of Internal Revenue, 835 F.2d 675 (6th Cir. 1987)* (government called handwriting expert after trial judge suggested that the witness's testimony would be helpful.

[546] FED. *R. EVID. 706(A)*.

[547] *Tenn. R. Evid. 706* Advisory Commission Comment.

[a] In General

Rule 706 severely limits a Tennessee trial judge's capacity to appoint an expert to testify. Because of concerns that a court-appointed expert's testimony would be given too much weight by a jury, the rule differentiates between appointment of an expert in a jury and a nonjury case.

[b] Jury Case

Rule 706(a) clearly states that a "court may not appoint expert witnesses of its own selection on issues to be tried by a jury except as provided otherwise by law." The clear reason for this highly unusual provision, that restricts what has been considered the court's inherent authority, is a concern that the jury would give too much weight to the court-appointed expert's testimony. Since Tennessee law contains very few instances where a law authorizes a court to appoint an expert to testify in a jury case, such appointments will be rare.[547.1] The appointment will occur in some criminal jury trials where the defendant offers a defense based on a mental condition and the court orders the defendant to be examined by a psychiatrist or other expert.[548]

[c] Nonjury Case

Rule 706(a) permits a judge in a bench trial to appoint an expert witness. Since no criteria are given for when this should be done, the Tennessee trial judge ordinarily has significant discretion in deciding whether a court-appointed expert should be called in a nonjury case. Nevertheless, one Tennessee court has cited the dangers in court-appointed experts by stating that a court should appoint an expert witness only "when the court is dissatisfied with the proof presented by the parties."[549] And in a civil case involving relatively small sums, a judge should be hesitant to appoint an expert whose fees will be substantial in proportion to the amount at issue.

Questions of Law. Rule 706 does not include the authority to appoint an expert on a question of law. In *Mayhew v. Wilder*[550] the Tennessee Court of Appeals held that a trial court could not appoint a legal expert on a question of constitutional law. The appellate court noted that it was the trial court's duty to determine the law, but in rare and unusual cases the trial judge could appoint an amicus curiae to assist the court.

Authorized by Statute. Sometimes a trial judge must appoint an expert because case law or statute mandates this procedure.[551] The applicable provision may prescribe the mechanics of this appointment.

[d] Request by Party or *Sua Sponte* by Judge

Tennessee Rule 706(a) states that in a nonjury case the court upon "its own motion or on the motion of any party" may enter a show cause order why an expert witness should not be appointed. A party may prefer to

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[547.1] *See, e.g.*, Mansell v. Bridgestone Firestone N. Am. Tire, 417 S.W.3d 393 (Tenn. 2013) (***Tenn. Code Ann. § 50-6-204(d)(9)***, which governs the appointment of experts in the medical impairment rating (MIR) program under the Worker's Compensation Act, allows the trial court to call its own expert for all issues arising under the MIR process except disputes concerning the degree of medical impairment; the statute does not impermissibly conflict with a court's authority under Tenn. R. Evid. 706 to appoint an expert, because the court can still appoint a physician for purposes not barred by the statute).

[548] Tenn. R. Crim. P. 12.2.

[549] Dover v. Dover, 821 S.W.2d 593, 595 (Tenn. Ct. App. 1991).

[550] 46 S.W.3d 760, 778 (Tenn. Ct. App. 2001).

[551] *See, e.g.*, Van Tran v. State, 6 S.W.3d 257 (Tenn. 1999) (requiring appointment of mental health professional to assess prisoner's mental competence to be executed).

have a court-appointed expert to save costs; ordinarily both sides share the court-appointed expert's fee under Rule 706(b).

[e] Show Cause Order

Rule 706 provides that in a bench trial the court begins the process of appointing an expert by issuing a show cause order. Ordinarily this should be done before trial to permit both sides to respond to the order and to think about possible experts to suggest. The show cause procedure gives both parties notice of the judge's plan and an opportunity to react to it. It suggests that a hearing on the show cause order may be appropriate. Often the process will begin during a pretrial conference[552] when the court discovers that a court-appointed expert may be helpful. In a criminal case where pretrial conferences are unusual, the court may discover the need for a court-appointed expert in the middle of trial. In such cases, the court should consider granting a continuance to permit the parties to respond to the show cause order and to give the expert time to study the issue, report to the parties, give a deposition, and prepare for testimony, as required by Rule 706.

[f] Selection of Court-Appointed Expert

The trial judge is responsible for selecting its court-appointed experts. The court may obtain the names of possible experts from many sources. The court's own knowledge, perhaps gleaned from years of experience with many expert witnesses in the geographical area, is one such source. The court may also seek guidance from such people as other experts or educators, or from professional groups.

Under Rule 706(a), the court also may—and usually should—request the parties to submit nominations. Since the expert selected by the court may have a significant impact on the outcome of the case, counsel will want to participate in the expert's selection in most situations. Rule 706(a) encourages this participation by stating that the court should ordinarily appoint expert witnesses agreed upon by the parties. Courts often lack the expertise and time to delve deeply into the availability, qualifications, and biases of potential expert witnesses. If the parties agree on a particular witness, the court is likely to feel that the witness is sufficiently neutral and well qualified to be appointed.

In unusual cases, the court may appoint an expert not agreed to by the parties. According to Rule 706(a), in such cases the court should state its reasons on the record.

[g] Consent

Rule 706 protects the freedom of court-appointed experts by providing that the witness cannot be appointed as the court's witness unless the witness consents to the appointment. This rule gives an expert the opportunity to refuse to testify in a case, which is probably wise since a reluctant witness may be of little value as a neutral witness. Moreover, it guards against a form of involuntary servitude, compelling an expert to sell his or her services to a public entity. A non-consensual appointment deprives the expert of the freedom to choose for whom he or she works, when and where to work, and what issues to work on.

[h] Formal Notification of Appointment

Rule 706(a) provides two procedures to use in the appointment of a court expert. The more formal approach requires the witness to be notified in writing of the appointment and the expert's duties. A copy should be filed with the clerk and sent to both parties. The second approach requires the court, at a conference in which all parties are invited to participate, to notify the witness of the appointment and of his or her duties. If the first procedure is used, Rule 706 does not mandate that such a conference be held, but it may be a sound procedural device to minimize misunderstandings and eliminate quibbling over minor details.

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[552] A pretrial conference is authorized in civil cases by *Tenn. R. Civ. P. 16.01* and in criminal cases by *Tenn. R. Crim. P. 17.1*.

[4] Duties and Testimony

[a] Duties of Court-Appointed Expert

Under Rule 706(a), a court-appointed expert has several duties, in addition to the usual ones of testifying and preparing for testimony.[553] The court-appointed expert must advise the parties of the witness's findings. Although Rule 706 does not indicate how this is to be done, clearly the better way is for the expert to prepare a written report and submit it to both parties.

The court-appointed expert also must submit to a deposition if requested by either party. The requirement of a mandatory deposition is highly unusual in criminal cases where depositions are rare.[554]

[b] Testimony of Court-Appointed Expert

The court-appointed expert may be asked to testify in a nonjury trial. Rule 706(a) provides that the witness may be called to testify by either party or by the court. No matter who called the court-appointed expert, he or she may be cross-examined by either or both parties, Rule 706(a). This includes the right to use leading questions during the interrogation.[555] One Tennessee decision read Rule 706 as contemplating:

> If the findings of the expert witness are to be considered as evidence, the expert will be called to testify. This requirement is not a departure from the general rule that the court may not rely on an unsworn report from an expert to decide issues before the court.[556]

Although nothing in Rule 706 specifically mandates that the court-appointed expert must testify in order to have a report considered by the court, the report may be hearsay and could have to satisfy a hearsay exception in order to be admitted, unless the parties stipulate to its admissibility or do not object to the proof. Of course, under Rule 706, any party or the judge can call the court-appointed expert as a witness.

[c] Parties' Contact with Court-Appointed Expert

Rule 706 apparently places no limits on the parties' contacts with the court-appointed expert. Some federal decisions, however, hold that the trial judge has the inherent authority to order the parties to refrain from contacting directly the court-appointed expert.[557]

[5] Compensation

[a] In General

Rule 706(b) states that a court-appointed expert is entitled to reasonable compensation for his or her services. The trial judge determines what constitutes reasonable compensation. Presumably, this issue will

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[553] A few federal decisions have invoked Federal Rule 706 to justify appointing experts to perform tasks other than traditional courtroom testimony. *See, e.g.*, *United States v. Michigan, 680 F. Supp. 928, 987–89 (W.D. Mich. 1987)* (psychiatric expert appointed to assist in implementing plan to treat seriously mentally ill inmates); *Webster v. Sowders, 846 F.2d 1032, 1038–39 (6th Cir. 1988)* (expert on asbestos appointed to monitor process of removing asbestos from prison, pursuant to request for preliminary injunction).

[554] *See* *Tenn. R. Crim. P. 15* (depositions permitted in criminal cases in exceptional circumstances in the interest of justice).

[555] *See* *Tenn. R. Evid. 611(c)* (leading questions may be used on cross-examination).

[556] *Dover v. Dover, 821 S.W.2d 593, 594 (Tenn. Ct. App. 1991)*.

[557] *See, e.g.*, *Leesona Corp. v. Varta Batteries, Inc., 522 F. Supp. 1304, 1312 n. 18 (S.D.N.Y. 1981)* (court has authority to order parties not to communicate directly with court-appointed expert; all communications with expert to be done through the court, with copies retained in the record).

have been resolved before the expert consents to the appointment and should be confirmed in writing as part of the appointment process.

[b] Payment

The court-appointed expert is paid in different ways, depending on whether public funds are available. Rule 706 states that in a criminal case and in a civil action or condemnation action, the expert's compensation may be paid from funds provided by law. In other civil cases where public funds are not available, the compensation shall be paid by the parties in the proportion and manner as the court directs. Sometimes this means that the parties will share the expense equally. But if the parties are of markedly different financial abilities so that payment of half would be an extreme hardship to one party, the court has the discretion to require payment in any appropriate manner. Since Rule 706(b) provides that the expert's fee may be charged in like manner as costs, the court also has the discretion to require the losing party in a civil case to pay the fees of the court-appointed expert.

[6] Disclosure of Appointment

On those rare occasions where a law permits a court-appointed expert to testify in a jury trial, Tennessee Rule 706(c) states that "no one may disclose to the jury the fact that the court appointed the expert witness." The purpose for this rule is to prevent the jury from giving too much weight to the expert's testimony by associating the expert with the judge, a person of neutrality and stature.

Sometimes this laudable goal will fail. The jury may quickly perceive that this witness, unlike other witnesses, is interrogated by the judge and seems to be rejected by both parties. The jury may well figure out the special status of the court-appointed expert and give the witness's testimony special weight. For this reason Federal Rule 706,[558] contrary to the Tennessee counterpart, gives the court the discretion to inform the jury that the expert witness was appointed by the court.

End of Document

[558] FED. *R. EVID. 706(C)*.