



FREDERICK WILLIAMS, Appellant, vs. THE STATE OF FLORIDA, Appellee.

CASE NO. 95-2476

COURT OF APPEAL OF FLORIDA, THIRD DISTRICT

710 So. 2d 24; 1998 Fla. App. LEXIS 2706; 23 Fla. L. Weekly 752

March 18, 1998, Opinion Filed

SUBSEQUENT HISTORY: [**1] As Corrected April 22, 1998, Reported at: *1998 Fla. App. LEXIS 4951*. Rehearing Denied June 10, 1998. Released for Publication June 10, 1998. Petition for Review Denied September 24, 1998, Reported at: *1998 Fla. LEXIS 1937*.

PRIOR HISTORY: An Appeal from the County Court for Dade County, Maxine Cohen Lando, Judge. LOWER TRIBUNAL NO. 245998,9-I.

DISPOSITION: Affirmed.

COUNSEL: Bennett H. Brummer, Public Defender, and Craig J. Trocino, Special Assistant Public Defender, for appellant; The Florida Association of Criminal Defense Lawyers, Miami Chapter, and Robert S. Reiff, and H. Scott Fingerhut, as an Amicus Curiae on behalf of appellant.

Robert A. Butterworth, Attorney General, and Paulette R. Taylor, Assistant Attorney General; Katherine Fernandez Rundle, State Attorney, and Brenda Mezick, and Stephen Talpins, Assistant State Attorneys, for appellee.

JUDGES: Before COPE, GERSTEN, and SHEVIN, JJ. GERSTEN, J. SHEVIN, J., concurs. COPE, J. (concurring in part and dissenting in part).

OPINION BY: GERSTEN

OPINION

[*25] GERSTEN, J.

Charged with driving under the influence of a controlled substance, defendant Frederick Williams appeals an order admitting into evidence drug recognition expert opinion testimony and evidence based upon a twelve step drug influence examination protocol. Notwithstanding the many twists and turns along the DUI enforcement road, we affirm, [*2] concluding that the drug recognition protocol does not constitute an apotheosis of drug impairment prosecutions.

I. FACTS

Frederick Williams (the "defendant") was stopped at a field sobriety checkpoint. After failing a series of field sobriety tests, he was given a breath test which registered an alcohol level of 0.07, just below the legal limit of 0.08. Two police officers trained as drug recognition experts then asked the defendant to take a Drug Influence Evaluation test ("DIE"), because the breath test result was not consistent with their observations of the [*26] degree of impairment. ¹ Based on the results of the DIE, the officers concluded the defendant was under the influence of alcohol, a central nervous system stimulant, and cannabis. The officers then arrested the defendant for driving under the influence. The defendant's urine sample tested positive for marijuana metabolite and cocaine.

¹ The DIE is a standardized, systematic test which was developed by law enforcement to assist trained officers in identifying drug-impaired

drivers. For a discussion of the Drug Evaluation and Classification Program which utilizes the DIE, see *infra* note 5.

[**3] Prior to trial, the State filed a motion in limine seeking to introduce the results obtained from the DIE. The defendant moved to exclude the evidence under *Frye v. United States*, 54 App. D.C. 46, 293 F. 1013 (D.C. Cir. 1923). The Frye test for the admissibility of scientific evidence requires that novel scientific evidence be generally accepted in the relevant scientific community as accurate and reliable.²

2 Under Frye, it must be shown that a scientific principle or test is "sufficiently established to have gained general acceptance in the particular field in which it belongs." *Frye*, 293 F. at 1014. This ensures a jury will not be misled by experimental scientific methods which may ultimately prove to be unsound. See *Stokes v. State*, 548 So. 2d 188 (Fla. 1989)("[A] courtroom is not a laboratory, and as such it is not the place to conduct scientific experiments. If the scientific community considers a procedure or process unreliable for its own purposes, then the procedure must be considered less reliable for courtroom use.")

[**4] At the hearing on the motion, the State presented testimony which explained that a certified drug recognition expert ("DRE") receives specialized instruction to learn the twelve step evaluation for conducting the DIE.³ The DIE basically consists of the usual DUI investigation, including the standard field sobriety tests, with the addition of a physical examination.⁴ The physical examination includes measuring pupil size and observing [*27] pupil reaction to light, taking blood pressure and pulse rate, examining the nose and mouth for evidence of drug use, and touching the arm to determine muscle tone. The information obtained by the physical exam is then recorded on a symptomatology matrix (grid chart). The various symptoms of drug use, such as an increased pulse, are matched by a process of elimination to the corresponding drug category. This grid helps to narrow the type of drugs a suspect may have in their system.⁵ Subsets of the DRE protocol include the Horizontal Gaze Nystagmus test ("HGN"), Vertical Gaze Nystagmus test("VGN"), and the Lack of Convergence test ("LOC"). The State submitted numerous studies and articles,

including testimony from several doctors, supporting the [**5] reliability of the DIE protocol.⁶

3 DRE's are certified by the International Association of Chiefs of Police ("IACP") with the endorsement of at least two training instructors. Training materials are provided by the federal government through the National Highway Traffic Safety Administration and are standardized nationwide.

The DRE training consists of two days of preparatory school, seven days at a DRE school, and then a certification training period during which trainees conduct evaluations on actual DUI suspects. Physicians, psychologists, toxicologists and nurses, routinely teach at the DRE schools and mandatory recertification classes. Officer trainees are instructed on the significance of the vital signs, how to take blood pressure, pulse, and temperature, and attend classes on the physiology of the body, including the major organs and systems of the body and how they are affected by various drugs. For a comprehensive discussion and overview of the IACP program, see International Association of Chiefs of Police, Drug Evaluation and Classification Program (visited March 9, 1998) <<http://www.theiacp.org/highway/brief/paper.html>>.

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4 The drug evaluation and classification consists of the following twelve steps:

1. Breath Alcohol Test. A breath alcohol test is administered to rule out alcohol intoxication. The drug influence evaluation will not be conducted if the breath test result is consistent with the degree or type of impairment.

2. Interview With Arresting Officer. The arresting officer interviews the defendant to ascertain whether the defendant gave any statement and to ascertain whether any drugs or drug paraphernalia were found in the defendant's possession.

3. Preliminary Examination. The defendant is questioned about his or her medical history and examined for signs of illness or injury. The defendant's eyes and pupils are checked for

serious trauma and to see if the eyes are bloodshot or retracted. At this time, the first of three pulse rates is taken.

4. Eye Examination. The following tests are administered: the Horizontal Gaze Nystagmus test ("HGN") (rapid involuntary horizontal oscillation of the eyes when attempting to follow a target moved from side to side); the Vertical Gaze Nystagmus test ("VGN")(inability to smoothly track the up-and-down progress of a stimulus); and the Lack of Convergence test ("LOC")(inability to cross eyes to focus on a target directly before the eyes).

5. Field Sobriety Test. A second field sobriety test is conducted which includes the Romberg Balance Test, walk and turn test, one leg stand, the finger to nose test, and the HGN test.

6. Vital Signs. Blood pressure, temperature, and a second pulse rate are taken using the standard sphygmomanometer, stethoscope, and thermometer.

7. Darkroom Examination. The defendant's pupil size is measured in four different lighting conditions using a pupilometer. Oral and nasal cavities are also examined for signs of ingestion.

8. Physical Examination. The defendant's muscle tone is examined for signs of flaccidity or rigidity which could indicate use of alcohol or certain drugs.

9. Injection Sites Check. Arms, wrists, ankles, etc... are checked for signs of injection indicating possible drug abuse. A third pulse rate is also taken at this stage.

10. Post Miranda Interrogation. Once the evaluator reaches this stage and determines that the defendant is under the influence, the defendant is questioned about any history of surgery or other medical condition.

11. DRE Opinion. The evaluator forms an opinion as to whether the defendant is under the influence of a certain category of drugs.

12. Toxicological Examination. A toxicological examination is administered to

confirm the presence of the drug.

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5 The drug symptomatology matrix chart lists seven common categories of drugs across the top, and then lists the eight observable symptoms associated with those drugs along the left side. The drugs are categorized according to their observable signs and symptoms on the central nervous system ("CNS"). The seven categories are: 1) CNS depressants, e.g., alcohol; 2) inhalants, e.g., solvents and nitric oxide; 3) angel dust (PCP); 4) cannabis (marijuana); 5) CNS stimulants, e.g., cocaine, 6) hallucinogens, e.g., LSD; and 7) narcotic analgesics, e.g., morphine. The eight observable signs are horizontal gaze nystagmus (HGN), vertical gaze nystagmus (VGN), lack of convergence (LOC), pupil size, pupil reaction to light, pulse rate blood pressure, and body temperature.

6 The Drug Evaluation and Classification Program was developed in the 1970's by the Los Angeles Police Department to confront the problem of the state's inability to prosecute impaired drivers where the impairment was not alcohol related. See generally E.V. Adler and M. Burns, Drug Recognition Expert (DRE) Validation Study, Final Report to Governor's Office of Highway Safety, State of Arizona (1994). Thereafter in 1984, the National Highway and Traffic Safety Administration ("NHSTA") coordinated a study by the National Institute of Drug Abuse to evaluate the reliability and effectiveness of the Los Angeles DRE program. See Richard P. Compton, Field Evaluation of the Los Angeles Police Department Drug Detection Program, U.S. D.O.T. H.S. 807 012 (1986). This report, known as the "Compton" study, compared the DRE opinions with the toxicological analysis of blood samples of 173 subjects. The Compton study found the DRE's were 94% accurate in making the call and had an overall accuracy rate of 87% in identifying at least one drug where multiple drugs were used. Id. As a result of the Compton study, NHSTA became instrumental in the funding, development, standardization, and dissemination of the DRE training program.

A subsequent study sponsored by NHSTA was conducted in 1992 by the Preusser Research Group. See D.F. Preusser, et. al., Evaluation of

the Impact of the Drug Evaluation and Classification Program on Enforcement and Adjudication, National Highway Traffic Safety Administration, U.S. D.O.T H.S. 808 058 (1992). The Preusser study evaluated the accuracy of the program by comparing the DRE's conclusion with laboratory test results. The study found an overall confirmation rate of 84.1 percent. *Id.*

As pointed out by the State, hundreds of law enforcement agencies employ similar DRE programs. Moreover, the DRE program is endorsed by the Dade County Medical Association, the Broward County Medical Association, the Brol Liberties Union, the International Association of Chiefs of Police and the United States Department of Transportation. The American Optometric Association has further endorsed the use of HGN as a field sobriety test. See 64 J. Am. Optometric Assoc. 663 (Sept. 1993).

[**8] In opposition to the motion, several doctors testified on behalf of the defendant that the protocol was flawed, and that police officers were not capable of accurately recognizing or categorizing impairment. The defendant argued that admitting the DRE scientific testimony of a minimally trained officer referred to as a "drug recognition expert" misleads the jury and prejudices DUI defendants.

The trial court allowed the police officer to testify that he concluded the defendant was impaired by specific categories of drugs based on the officers' application of the DIE protocol and matrix. The order granting the motion to admit the DRE testimony held that Frye's general acceptance standard did not apply to the DRE protocol because the [*28] "tests, signs and symptoms are well within the common understanding of the average layman." Alternatively, the trial court found Frye inapplicable to the DIE tests, because they are not new or novel scientific evidence.

With regard to the HGN, VGN, and LOC tests, the trial court found Frye inapplicable because these tests are not new or novel. The trial court further ruled that the State could prove blood alcohol content based upon the officers' [*9] use of the HGN test if the State laid a proper predicate establishing the testing officer's qualifications pursuant to *State v. Bender*, 382 So. 2d 697 (Fla. 1980). Finally, the trial court's order certified the

following questions as of great public importance: 1. Is the Frye general acceptance standard applicable to the DRE protocol?

2. Assuming the Frye general acceptance standard is inapplicable, is DRE testimony and evidence admissible under the relevancy standard?

3. Is DRE testimony and evidence admissible if the Frye general acceptance standard is applicable?

4. May the State prove that a subject had an unlawful breath or blood alcohol level based on HGN test results alone under *Bender*

The defendant accepted a negotiated plea reserving his right to appeal the order granting the motion in limine. The defendant appeals the order admitting into evidence the DRE opinion testimony, the standardized field sobriety test, and the HGN test.

II. APPLICABILITY OF FRYE TO DRE TESTIMONY AND EVIDENCE

The defendant contends that the trial court erred in admitting the DRE testimony and evidence because the State failed to establish the reliability [**10] of the DRE protocol at the hearing. According to the defendant, the DRE protocol constitutes a scientific test, and fails to meet the Frye standard as generally accepted by the relevant scientific community. We disagree and affirm the trial court's order granting the State's motion to admit the DRE testimony and evidence, including the standardized field sobriety and horizontal gaze nystagmus tests. In order to accurately address the issues as framed by the trial court, we must first distinguish between the general portion of the DRE protocol and its subsets, the HGN, VGN, and LOC.

A. General DRE Protocol Excluding HGN, VGN, and LOC

First, regarding the general portion of the DRE protocol, the Frye standard does not apply because the protocol is not scientific. The protocol essentially consists of a twelve step systematic assessment of the defendant's vital signs and physical appearance, which in fact is the usual DUI investigation, including the standard field sobriety tests, plus a physical examination. The physical examination incorporates a narrow application of techniques borrowed from the medical field, and

includes measuring pupil size and observing pupil reaction [**11] to light, taking blood pressure and pulse rate, inspecting the oral and nasal cavities, and touching the arm to determine muscle tone.

These tests are clearly within the common experience and understanding of the average person. For example, the average person has had his or her blood pressure, pulse rate, and temperature taken. Similarly, the fact that pupils become larger or smaller in different lighting conditions is well within the average person's common experience, as is examining someone's nose or mouth.

Because the tests, signs and symptoms of the protocol are within the common understanding of the average layman, the general portion of the protocol is not "scientific" within the meaning of Frye. The fact that some of the examinations in the protocol are borrowed from the medical profession, does not elevate the protocol to scientific status.

Police officers and lay witnesses have long been permitted to testify as to their observations of a defendant's acts, conduct, and appearance, and also to give an opinion on the defendant's state of impairment based on those observations. See, e.g., *Cannon v. State*, 91 Fla. 214, 107 So. 360 (Fla. 1926); *City of Orlando* [**12] v. *Newell*, 232 So. 2d 413 (Fla. 4th DCA 1970). Objective observations based on observable signs and conditions are not classified [*29] as "scientific" and thus constitute admissible testimony.

For example, in), the court held that a police officer was allowed to testify about the defendant's performance on a standard field sobriety test. In drawing a distinction between the psychomotor portion of the test and the HGN portion of the test, the court noted that the psychomotor portion consisted of objective components which are commonly understood, and therefore did not require expert interpretation. Thus, the officer was permitted to testify as to his observations of the psychomotor portion of test which were found to be in the "same category as other commonly understood signs of impairment such as glassy or blood-shot eyes, slurred speech, staggering, flushed face, labile emotions, [and the] odor of alcohol." *State v. Meador*, 674 So. 2d 826 at 832.

Here, the general portion of the DRE protocol consists of nothing more than objective observations and simple tests which are easily performed and commonly

understood. Contrary to the defendant's assertion, the DRE's opinion is not derived [**13] from the symptomology matrix and does not constitute a medical diagnosis. The general DRE protocol is just a "list of the things a prudent, trained and experienced officer should consider before formulation or expressing an opinion whether the subject is under the influence of some controlled substance," and thus does not constitute a scientific test. *State v. Klawitter*, 518 N.W.2d 577, 584 (Minn. 1994). Accordingly, Frye does not apply to this portion of the test.

B. DRE Protocol Subsets: HGN, VGN and LOC

Second, regarding the HGN, VGN, and LOC (hereafter collectively referred to as "HGN"), ⁷ we find no error in the trial court's determination that Frye is inapplicable. The trial court found that the protocol subsets are "scientific" within the meaning of Frye, but that Frye does not apply because none of the tests are "new or novel."

⁷ Of the three subset tests, HGN, VGN, and LOC, the HGN is the most heavily relied upon in the protocol. Nystagmus is an involuntary jerking of the eyeball that can be aggravated by drugs or alcohol. As explained by one court:

In the HGN test the driver is asked to cover one eye and focus the other on an object (usually a pen) held by the officer at the driver's eye level. As the officer moves the object gradually out of the driver's field of vision toward his ear, he watches the driver's eyeball to detect involuntary jerking. The test is repeated with the other eye. By observing (1) the inability of each eye to track movement smoothly, (2) pronounced nystagmus at maximum deviation and (3) onset of the nystagmus at an angle less than 45 degrees in relation to the center point, the officer can estimate whether the driver's blood alcohol content (BAC) exceeds the legal limit of .10 percent.

State v. Superior Court In and For Cochise County, 149 Ariz. 269, 718 P.2d 171, 173 (Ariz. 1986).

[**14]

The Frye test is used in Florida to guarantee the

reliability of "new or novel scientific evidence." See *Brim v. State*, 695 So. 2d 268 (Fla. 1997). What exactly constitutes "new or novel scientific evidence" is often difficult to ascertain. Several courts do not even consider the HGN test to be a "scientific" test necessitating a Frye analysis. See, e.g., *State v. Sullivan*, 310 S.C. 311, 426 S.E.2d 766 (S.C. 1993); *State v. Murphy*, 451 N.W.2d 154 (Iowa 1990); *State v. Clark*, 234 Mont. 222, 762 P.2d 853 (Mont. 1988). Those courts finding the HGN test to be scientific, generally have held that it passes admissibility requirements. See, e.g., *State v. Meador*, 674 So. 2d at 833; *State v. O'Key*, 321 Ore. 285, 899 P.2d 663 (Or. 1995). Cf. *State v. Witte*, 251 Kan. 313, 836 P.2d 1110 (Kan. 1992).⁸

8 In *State v. Witte*, the Supreme Court of Kansas noted its concerns with the HGN test after reviewing several conflicting studies. The court remanded the case for the trial court to conduct a full evidentiary hearing to determine whether Frye had been satisfied. *State v. Witte*, 836 P.2d at 1110. Two years later the Supreme Court of Oregon and specifically disagreed with *Witte's* suggestion that the HGN test did not satisfy Frye admissibility requirement stating to the contrary:

Our review of the record in this case, the legal and medical literature on the HGN test, including various publications and research studies concerning the HGN test, and our own research lead us to conclude that the scientific disciplines of pharmacology, ophthalmology, and to a lesser extent optometry should be included with behavioral psychology, highway safety, neurology, and criminalistics in the relevant scientific community. Each of those disciplines has been involved in the study of alcohol-induced nystagmus.

Our research also leads us to conclude that the following propositions have gained general acceptance within the relevant scientific community: (1) HGN occurs in conjunction with alcohol consumption; (2) its onset and distinctness are correlated to BAC; (3) in conjunction with other field sobriety tests (e.g., the walk-and-turn test and the one-leg-stand test), the HGN test is a reliable indicator of whether a driver is impaired by alcohol, and (4) officers can be trained to observe these phenomena

sufficiently to detect alcohol impairment.

[**15] [*30] Although clothed in scientific garb, we recognize the HGN does not involve any particular "scientific" skill or equipment and for that reason courts have struggled with its classification.⁹ Nevertheless, the HGN is premised on the asserted scientific proposition that the automatic tracking mechanisms of the eyes are affected by drug consumption. Thus, while we are not convinced that the HGN is truly "scientific," because its application is dependent on a scientific proposition and requires a particular expertise outside the realm of common knowledge of the average person, we conclude the HGN is "quasi-scientific" evidence.¹⁰ We are now faced with the "novel" circumstance of whether the Frye test nonetheless must apply to a scientific principle which does not encompass new, novel or emerging scientific techniques.

9 See *State v. Bresson*, 51 Ohio St. 3d 123, 554 N.E.2d 1330, 1336 (Ohio 1990), where the court recognized:

The HGN test cannot be compared to other scientific tests, such as a polygraph examination, since no special equipment is required in its administration. Thus, the only requirement prior to admission is the officer's knowledge of the test, his training, and his ability to interpret his observations. The admission of the results of the HGN test is no different from any other field sobriety test, such as finger-to-nose, walk-and-turn, or one-leg stand.

Finding that a majority of other appellate courts had admitted HGN testimony, the court also noted:

Appellate courts generally have held that the HGN test is similar to other field sobriety tests and is admissible without expert testimony. See, e.g., *State v. Nagel*, 30 Ohio App. 3d 80, 506 N.E.2d 285 (1986); *State v. Welday*, 1989 Ohio App. LEXIS 3696 (Sept. 27,

1989), Medina App. No. 1793, unreported, 1989 WL 111784; *State v. Brug*, 1987 Ohio App. LEXIS 8160 (1987); *State v. Earley*, supra; *State v. Hintz*, 1985 Ohio App. LEXIS 6303 (1985); *State v. Lewis*, 1986 Ohio App. LEXIS 6702 (Apr. 29, 1986), Seneca App. No. 13-84-21, unreported, 1986 WL 5364.

There is a split of opinion in other states concerning this issue. Some jurisdictions have held that the HGN test is a scientific test, which requires expert testimony regarding the test's scientific reliability and acceptance. See, e.g., *State v. Barker* (W.Va.1988), 179 W. Va. 194, 366 S.E.2d 642; *State v. Reed* (1987), 83 Ore. App. 451, 732 P.2d 66; *Commonwealth v. Miller* (1987), 367 Pa. Super. 359, 532 A.2d 1186; *State v. Borchardt* (1986), 224 Neb. 47, 395 N.W.2d 551. Other jurisdictions have held that evidence of a HGN test is admissible so long as a proper foundation is laid as to the techniques used and the officer's ability to use it. See, e.g., *State v. Superior Court*, supra. See, also, *State v. Clark* (Mont.1988), 234 Mont. 222, 762 P.2d 853. In a recent Supreme Court of Iowa decision, the court, relying on *State v. Nagel*, supra, held that some of the uncertainty surrounding the HGN test might stem from its 'pretentiously scientific name.' *State v. Murphy* (Iowa 1990), 451 N.W.2d 154, 156.

State v. Bresson, 554 N.E.2d at 1334. See also, *State v. Ruthardt*, 680 A.2d 349, 356 n.10 (Del. 1996)(listing jurisdictions holding HGN test is scientific); *City of Fargo v. McLaughlin*, 512 N.W.2d 700 (N.D. 1994)(overview of different decisions considering whether HGN test is

considered scientific); *State v. Murphy*, 953 S.W.2d 200, 202 n.3 (Tenn. 1997)(listing other jurisdictions which held that HGN testing is not scientific).

[**16]

10 In concluding that HGN test evidence is "scientific" evidence, one court has observed that:

Although the function of the HGN test, like other field sobriety tests, is to spot 'observable symptoms' or 'signs' of alcohol impairment, it is different from other field sobriety tests because it rests on a manifestation of alcohol consumption not easily recognized or understood by most people. The relationship between the effects of alcohol on the central nervous system, the nystagmus phenomenon, and the HGN test is not within the realm of common knowledge of the average person. Other field sobriety tests, such as the walk-and-turn test, the one-leg-stand test, and the modified finger-to-nose test, obtain their legitimacy from effects of intoxication based on propositions of common knowledge.

State v. O'Key, 899 P.2d at 675 (citations omitted). See also *State v. Murphy*, 953 S.W.2d at 200 (HGN testing is scientific because the underlying basis of the test must be explained in order for testimony to make sense to the average juror).

We hold that where a scientific principle has [**17] been established and generally accepted in the relevant scientific community, [*31] and has also been Frye tested in the legal community, it is no longer "new or novel" and there is simply no need to reapply a Frye analysis. See *State v. Meador*, 674 So. 2d at 826; *Bostic v. State*, 772 P.2d 1089 (Alaska Ct. App. 1989), reversed on other grounds, 805 P.2d 344 (Alaska 1991); *Whitson v. State*, 314 Ark. 458, 863 S.W.2d 794 (Ark. 1993); *State v. Klawitter*, 518 N.W.2d at 577; *State v. Jones*, 71 Wash. App. 798, 863 P.2d 85 (Wash. Ct. App. 1993), review denied, 124 Wash. 2d 1018, 881 P.2d 254 (Wash. 1994).

This is not to say that "new or novel" is necessarily a threshold requirement for Frye, and we do not suggest that particular areas or principles should be immunized from such an analysis on the basis of longevity.¹¹ Rather these descriptive terms of art are helpful in identifying when a particular scientific technique can be excluded from an unnecessary Frye analysis, thereby avoiding

needless waste of judicial resources on sufficiently established principles.

11 The fact that a scientific technique has existed for some period of time or even has been admitted into evidence in prior cases does not, in and of itself, demonstrate a basis for admissibility. As noted by the Florida Supreme Court in *Brim v. State*, 695 So. 2d at 274 n.8: "We recognize, however, that there may be times at which new scientific revelations may actually prove older methods unreliable, as opposed to simply unnecessary. In those isolated contexts, the older methods would not satisfy a Frye test."

[**18] Turning to the HGN, while the admissibility of evidence based on the horizontal and vertical nystagmus and for convergence testing have not previously been addressed by this court, the HGN has been nationally used for many years and its admissibility has been scrutinized by many other courts in numerous states. See *People v. Joehnk*, 35 Cal. App. 4th 1488, 42 Cal. Rptr. 2d 6 (Cal. Ct. App. 1995); *State v. Garrett*, 119 Idaho 878, 811 P.2d 488 (Idaho 1991); *State v. Klawitter*, 518 N.W.2d at 584; *City of Fargo v. McLaughlin*, 512 N.W.2d at 700.

The seminal HGN admissibility case is *State v. Superior Court In and For Cochise County*, 718 P.2d at 171, which was decided in 1986. In holding that the HGN test satisfied Frye, the Supreme Court of Arizona stated:

The evidence demonstrates that the following proposition has gained general acceptance in the relevant scientific community: (1) HGN occurs in conjunction with alcohol consumption; (2) its onset and distinctness are correlated to BAC; (3) BAC in excess of .10 percent can be estimated with reasonable accuracy from the combination of the eyes' tracking ability, the angle of onset of nystagmus and the degree [**19] of nystagmus at maximum deviation; and (4) officers can be trained to observe these phenomena sufficient to estimate accurately whether BAC is above or below .10 percent.

State v. Superior Court, 718 P.2d at 181.

Since *State v. Superior Court* was decided, several other states have also applied Frye to HGN test evidence and held such evidence admissible. See *State v. Garrett*, 811 P.2d at 491 (recognizing other state courts finding HGN satisfies Frye, including Alaska, Arizona, Iowa,

Louisiana, Montana, Ohio, and Texas). See also *Schultz v. State*, 106 Md. App. 145, 664 A.2d 60 (Md. 1995); *State v. Klawitter*, 518 N.W.2d at 577; *People v. Quinn*, 153 Misc. 2d 139, 580 N.Y.S.2d 818, 826 (N.Y. Dist. Ct. 1991), rev'd on other grounds, 158 Misc. 2d 1015, 607 N.Y.S.2d 534 (N.Y. Sup. Ct. 1993); *State v. O'Key*, 899 P.2d at 663; *Emerson v. State*, 880 S.W.2d 759 (Tex. Crim. App.), cert. denied, 513 U.S. 931, 130 L. Ed. 2d 284, 115 S. Ct. 323 (1994).

Here, numerous medical experts testified that the individual subsets of the protocol are not new or novel, and that the procedures used in the categorization process were derived from neurological [**20] and physiological examinations relied upon by the medical profession for many years. ¹² In other words, the [*32] principles underlying the protocol are a "compilation of tried and true procedures utilized by medical science and the law enforcement community in similar contexts for many years." See *People v. Quinn*, 580 N.Y.S.2d at 826.

12 Dr. Burns, a research psychologist specializing in the area of the impact of alcohol and drugs on human performance, specifically testified that none of the protocol's underlying principles or procedures was new or novel. Dr. Prockop, a neurologist, Dr. Zuk, a medical doctor, Dr. Dobbie, an otolaryngologist, Dr. Peed, a behavioral optometrist, and Dr. Maulion, a psychiatrist and addictionologist, similarly testified that the DIE tests had been used in the medical profession for many years and were not new or novel to the scientific community. Of course, we recognize that the effectiveness of HGN as an element in determining drug impairment is not universally accepted. However, even the defendant's witnesses conceded the procedures used in the DIE are not new or novel to medicine, and no abuse of discretion has been shown in the trial court's conclusions.

[**21] The record evidence that HGN is generally accepted in the relevant scientific community and the fact that HGN has met the Frye test in other legal jurisdictions, obviated the need for the trial court to reapply a Frye analysis. We take judicial notice that HGN test results are generally accepted as reliable and thus are admissible into evidence once a proper foundation has been laid that the test was correctly administered by a qualified DRE. See *Hayes v. State*, 660 So. 2d 257, 264

(*Fla. 1995*) (court takes judicial notice that DNA test results are generally accepted as reliable in scientific community); *People v. Berger*, 217 Mich. App. 213, 551 N.W.2d 421 (Mich. 1996) (court judicially notices scientific acceptability and reliability of HGN in concluding trial court did not err in failing to hold a Davis-Frye hearing); see also *State v. Taylor*, 1997 Me. 81, 694 A.2d 907 (Me. 1997) (court judicially notices scientific conclusion that HGN is reliable and admissible evidence in driving under the influence cases); *Schultz v. State*, 664 A.2d at 60 (court judicially notices HGN reliability and acceptance in the relevant scientific and medical communities). The record [**22] reflects the HGN test was properly administered by a qualified DRE and thus there was no abuse of discretion in the trial court's admission of the evidence. See *Jordan v. State*, 707 So. 2d 816, 1998 Fla. App. LEXIS 1525 (Fla. 5th DCA 1998) (testimony sufficient to establish admissibility of HGN as generally reliable and accepted in medical community).

C. Inapplicability of Frye

We recognize the importance of the Frye standard in ensuring the admission of valid and reliable evidence based upon new scientific principles. Disputes over the validity of experimental or novel scientific techniques are best left to the scientific community - not the legal community. However, such concerns are not present here because the general portion of the DRE protocol is not scientific, and because use of the HGN test to establish the presence of alcohol has already gained general acceptance in the scientific community and has satisfied the requirements of Frye. Thus under the circumstances of this case, Frye is inapplicable.

Accordingly, because we find the Frye general acceptance standard is not applicable to the DRE protocol, we answer the first certified question in the negative. This finding [**23] requires that we next address the second certified question, and renders the third certified question moot.¹³

13 Although this issue has now been rendered moot, we note that had we reached the third certified question, our review of general acceptance in the scientific community would require application of the *de novo* standard. See *Brim v. State*, 695 So. 2d at 268; *Vargas v. State*, 640 So. 2d 1139 (Fla. 1st DCA 1994), quashed on other grounds, 667 So. 2d 175 (Fla. 1995).

Once it has been determined that Frye applies, the issue of whether or not novel scientific evidence meets the Frye test requires application of a *de novo* standard of review by the appellate court. See *Hadden v. State*, 690 So. 2d 573 (Fla. 1997). Application of the *de novo* standard under these circumstances recognizes the need for appellate courts to consider current scientific material and prevents inconsistent treatment of similar cases. See *Hadden v. State*, 690 So. 2d at 573; *Brim v. State*, 695 So. 2d at 268.

However, if it is determined that Frye does not apply, the admissibility of expert testimony lies within the broad discretion of the trial court which will not be reversed on appeal absent a showing of abuse. See *Atlantic Coast Line R.R. Co. v. Ganey*, 125 So. 2d 576 (Fla. 3d DCA 1961). See also *Hayes v. State*, 660 So. 2d at 257; *Ramirez v. State*, 651 So. 2d 1164 (Fla. 1995).

[**24] III. ADMISSIBILITY UNDER THE RELEVANCY STANDARD

Having determined the Frye general acceptance standard is inapplicable, we next address the relevancy and admissibility of the protocol under Chapter 90, Florida Evidence Code, Florida Statutes (1997). *Section 90.401, Florida Statutes* (1997), defines relevant [**33] evidence as "evidence tending to prove or disprove a material fact."

All relevant evidence is admissible unless the party seeking to exclude the evidence can show its exclusion is required on grounds of prejudice or confusion. § 90.403, *Fla. Stat.* (1997). If the evidence has any logical tendency to prove or disprove a fact, it is relevant and admissible, except as provided by law. *Taylor v. State*, 648 So. 2d 701 (Fla. 1995); *State v. Meador*, 674 So. 2d at 826.

Here, the bulk of the scientific research and the weight of the experts' testimony establish the relevancy of the DRE evidence in determining impairment. See *State v. Ruthardt*, 680 A.2d at 360.¹⁴ While we acknowledge the potential concerns with the physical application of the HGN test portion of the test in the field, and the risk of misdiagnosis due to other causes of nystagmus, common sense [**25] mandates DRE testimony is relevant in a prosecution for driving under the influence of a controlled substance, because it shows

a probability that a person was impaired by alcohol and/or drugs. See *State v. Nagel*, 30 Ohio App. 3d 80, 506 N.E.2d 285 (Ohio Ct. App. 1986)(objective manifestations of insobriety based on personal observations of [*34] officer held always relevant where the defendant's physical condition is at issue).

14 The majority of studies, scientific articles, state court decisions and literature noted throughout this opinion, establish the DIE as a reliable tool in the war against drug-impaired drivers. The dissent's argument to the contrary is premised upon a 1996 research project published in a toxicological journal that reported lower DRE accuracy levels than several previous studies. See Stephen J. Heishman, et. al., Laboratory Validation Study of Drug evaluation and Classification Program: Ethanol, Cocaine and Marijuana, 20 Journal of Analytical Toxicology 468 (1996). Significantly, this study did not examine actual field accuracy rates. Thus any reliance upon this study to support the argument that the DRE program is "unreliable" is clearly misplaced.

The primary goal of the study was to determine the validity of the Drug Evaluation and Classification Program variables. The authors concluded that DRE testing variables are highly accurate noting: "17-28 variables of the DEC evaluation predicted the presence or absence of each of the three drugs with a high degree of sensitivity and specificity and low rates of false-positive and false-negative errors." *Id.* at 475.

The secondary goal of the research project was to determine the accuracy of the DRE's in detecting ethanol, cocaine, or marijuana. The authors concluded from a controlled laboratory test that DRE predictions were consistent with toxicology test results in 51% of the cases. Based upon this result, the dissent concludes that: "Obviously, where there is a fifty-percent error rate, the proposed scientific evidence is too unreliable to be introduced at trial." Dissent at 1998 Fla. App. LEXIS 2706, *59-60.

This conclusion misses the point. DRE accuracy cannot be examined in a vacuum. Realistic accuracy rates cannot be derived solely

from controlled settings where "an abbreviated DEC evaluation was used that was different from the [actual] standardized test used in the field." 20 Journal of Analytical Toxicology at 480. This study cannot realistically predict the scientific reliability of the DIE program because it examined a method that is not used by the DRE's and which does not exist in law enforcement today.

Moreover, substantial differences exist between the controlled laboratory conditions of the study and actual field conditions. *Id.* at 480-81. Perhaps most critical is the fact that the study administered lower doses of active ingredients as a comparison to substantially higher potency street level doses and evaluated subjects using a repeated measures design where sessions were separated by only 48 hours. Tolerant users who are given low substance dosages and have had multiple exposures to an examination profile, will not present realistic evaluative signs and symptoms for detection. Simply, this study did not replicate actual DRE procedures or field conditions.

By contrast, those studies which did examine actual field DRE prediction rates reflect DRE predictions highly consistent with toxicology tests. For example, in a research project sponsored by NHTSA to study Arizona's DRE program, the DRE's findings were consistent with laboratory findings in 91% of the cases studied. See E.V. Adler and M. Burns, Drug Recognition expert (DRE) Validation Study, Final Report to Governor's Office of Highway Safety, State of Arizona (1994). This comprehensive validation study further noted that data from DRE programs in California, Texas, and Minnesota, demonstrated similarly high identification accuracy rates at 88.2%, 81.3% and 84.5% respectively. *Id.* at 5. As to the issue of reliability for legal admissibility purposes, we are far more persuaded by actual field studies which confirm DRE accuracy rates, than by a journal article which conducted an isolated study under distinctly different laboratory conditions. See *Schultz v. State*, 106 Md. App. at 172 n.12 (noting most studies indicate a reliability factor of between 85% to 90% when HGN is administered

with standard NHTSA field sobriety test); see also Lionel P. Raymon, Bernard W. Steele and H. Chip Walls, Analytical Confirmation Versus DRE Evaluation of Cannabis Use: A Comparative Study, Report at American Academy of Forensic Sciences Annual Meeting (1998)(toxicological studies confirm 79.4% accuracy rate in Dade County DRE evaluations of cannabis intoxication).

[**26] The fact remains that most studies indicate a reliability factor of between 80% to 90%. See supra note 14. Moreover, we note that there are several safeguards inherent in the DRE process and intrinsic to the prosecution of DUI cases, which adequately protect a suspect's rights.¹⁵ The innate possibility of error in a test, does not provide a sound basis for rejecting the test results as evidence. See *Reid v. State*, 267 Ind. 555, 372 N.E.2d 1149 (Ind. 1978). Any discrepancies in the precise method used goes to the weight, rather than to the admissibility of such evidence. *Troedel v. State*, 462 So. 2d 392 (Fla. 1985). See also *State v. Johnson*, 717 S.W.2d 298 (Tenn. Crim. App. 1986)(objection as to lack of unanimity in medical profession regarding breath-alcohol testing devices goes to weight of testimony not its admissibility); *People v. Bobczyk*, 343 Ill. App. 504, 99 N.E.2d 567 (Ill. App. Ct. 1951)(witness may testify as to opinion regarding objective symptoms commonly associated with alcohol impairment even though medical science recognizes many other pathological conditions that produce similar impairment).

15 First, as pointed out by the State, the DRE protocol is designed to err in favor of the accused. See *People v. Quinn*, 580 N.Y.S.2d at 827. If the DRE is unsure that a suspect is impaired, the suspect must be found not under the influence of drugs. Second, DRE test results are recorded in the DRE's evaluation report and thus subject to peer review. Third, toxicological samples are used to confirm or corroborate the use of a particular drug or drugs. Fourth, DRE coordinators and a medical doctor review Dade County DRE opinions. Fifth, DUI cases are assessed by prosecutors with the assistance of laboratory personnel. Finally, if the defendant is impaired by a medical condition, the defendant has ample opportunity to provide medical testimony to refute the DRE's opinion.

[**27]

The persuasiveness of such evidence is a matter for the jury. See *Hayes v. State*, 660 So. 2d at 262. A defendant's rights are adequately protected by the ability to subject witnesses to cross examination and to attack the scientific basis and methods used in administering a test. See *Martinez v. State*, 549 So. 2d 694 (Fla. 5th DCA 1989); *Troedel v. State*, 462 So. 2d at 396; *State v. O'Key*, 899 P.2d at 689. We see no reason to reject evidence derived from a testing procedure simply because it is subject to error, since the burden is still on the State to provide a proper foundation by demonstrating the test was reliably administered by a qualified technician. See *Zimmerman v. State*, 693 A.2d 311 (Del. 1997).

In sum, contrary to the defendant's implication, conclusive test results and opinions are not required in order to admit probative evidence in a criminal proceeding. See *Mills v. State*, 476 So. 2d 172, 177 (Fla. 1985)(Neutron Activation Residue test results held admissible despite inherent inconclusiveness "because it shows a probability that the subject did or did not fire a gun and its probative value is for the jury to determine"), cert. denied, [**28] 475 U.S. 1031, 89 L. Ed. 2d 349, 106 S. Ct. 1241 (1986); *People v. Rogers*, 86 Misc. 2d 868, 385 N.Y.S.2d 228 (N.Y. Sup. Ct. 1976)(recognizing blood alcohol tests are not conclusive of intoxication but are commonly admissible and numerous state statutes have established presumptions of impairment based on certain blood alcohol levels). Accordingly, finding no abuse of discretion in the trial court's determination that DRE testimony and evidence is probative as tending to prove the defendant's condition at the time of arrest, we answer the second certified question in the affirmative. See *Sims v. Brown*, 574 So. 2d 131 (Fla. 1991).

IV. USE OF THE HGN TEST TO PROVE A SPECIFIC BLOOD ALCOHOL LEVEL

The trial court's fourth certified question asks whether the state may prove that a subject had an unlawful breath or blood alcohol level based on HGN results alone under Bender.¹⁶ HGN is used as indicator of blood alcohol content and drug impairment. The three most important components of the test [**35] used to identify alcohol induced nystagmus are: (1) the ability of the eye to track a moving object smoothly, (2) the distinctness of the jerking movement at the extreme lateral gaze, [**29] and (3) the angle of onset of nystagmus.¹⁷

16 In *State v. Bender*, 382 So. 2d 697 (Fla. 1980), the Florida Supreme Court upheld the constitutionality of the implied consent statutes in Chapter 322 creating procedures for breath and blood testing for alcohol. The Court recognized the overall purpose of Chapter 322 is to assist in implementing *Section 316.193* which provides that driving while impaired is unlawful. The Court further noted that the purpose of the implied consent statutes was to insure that approved testing techniques and methods produce "reliable scientific evidence for use in future court proceedings." *State v. Bender*, 382 So. 2d at 699.

17 The expected angle of onset for a BAC of .10% is 40.2 degrees for the right eye and 40.1 degrees for the left eye. "Improved Sobriety Testing," National Highway Traffic Safety Administration, DOT-HS-806-512 (1984 NHTSA Study). In *State v. Witte*, 836 P.2d at 1119, the court noted that according to the NHTSA study, where nystagmus is observed at a 45-degree angle, a BAC of .10% can be estimated correctly 78 percent of the time. The court further noted that nystagmus can be caused by many factors in addition to intoxication and that 50-60 percent of sober individuals will exhibit horizontal gaze nystagmus when moving their eyes more than 40 degrees to one side that cannot be distinguished from alcohol gaze nystagmus. *State v. Witte*, 836 P.2d at 1119.

[**30] We recognize that experts do not universally agree about the reliability and acceptability of the HGN. 18 However, in addition to supportive case law from other jurisdictions and numerous testifying witnesses, the State filed over two thousand pages of medical literature and studies relating to the effects of alcohol and drugs on the body, which demonstrate the accuracy and reliability of the HGN test. 19 In spite of the potential causes of error and the fact that other causes for nystagmus cannot be ruled out, the HGN test when properly administered is a reliable indicator for establishing the presence of alcohol in the blood. 20 The question remaining to be answered is whether the HGN is admissible as the sole evidence to establish a precise blood-alcohol content. We think not in the absence of a statutory mandate authorizing use of the HGN test as direct evidence to establish an unlawful BAC.

18 The main criticism of the HGN is that the

angle of onset cannot be accurately measured in the field. The accuracy of the BAC determination is directly related to the accuracy of the measurement of the angle of the onset. If the angle is not measured correctly, the blood alcohol results could be wrong.

[**31]

19 For an overview of case law supporting the admissibility of HGN test results, see *People v. Buening*, 229 Ill. App. 3d 538, 592 N.E.2d 1222, 170 Ill. Dec. 542 (Ill. App. Ct.), appeal denied, 146 Ill. 2d 634, 602 N.E.2d 460 (Ill. 1992). A comprehensive discussion of the various NHSTA studies and other articles published on the HGN test can be found in *State v. O'Key*, 899 P.2d at 663. The court in *Schultz v. State*, 106 Md. App. at 172 n.12 also refers to several studies which indicate a reliability factor of between 85% and 90% when HGN is administered with standard NHTSA field sobriety tests. See also *Emerson v. State*, 880 S.W.2d at 759 (noting estimations of accuracy of HGN have ranged as high as 88%).

20 According to the United States Department of Transportation Test Manual, the HGN test is the most accurate field test to determine whether a person is alcohol impaired. See United States Department of Transportation, National Highway Safety Administration, Improved Sobriety Testing 4 (1984), as cited to in *State v. Bresson*, 554 N.E.2d at 1332; *People v. Buening*, 592 N.E.2d at 1227. See also *State v. Ruthardt*, 680 A.2d at 360 (Del. 1996)(error rate of properly administered HGN test lower than all other field sobriety tests routinely admitted into evidence).

The State presented testimony from several specialists confirming a high correlation between the angle of onset of HGN and blood alcohol content. Dr. Burns, a research psychologist specializing in the area of the impact of alcohol and drugs on human performance, was involved in a research group commissioned by NHTSA to develop a battery of field sobriety tests. The study conducted by the group revealed that BAC can be accurately estimated from the angle of onset of nystagmus. The research group recommended the walk and turn test, the one leg stand and the HGN as being the most reliable indicators of alcohol impairment.

[**32]

Under *Section 316.193(1), Florida Statutes* (1993), a person is guilty of DUI if the facts reflect that the person was in control of a vehicle and:

(a) The person is under the influence of alcoholic beverages, any chemical substance set forth in s. 877.111, or any substance controlled under chapter 893, when affected to the extent that the person's normal faculties are impaired;

(b) The person has a blood-alcohol level of 0.08 or more grams of alcohol per 100 milliliters of blood; or

(c) The person has a breath-alcohol level of 0.08 or more grams of alcohol per 210 liters of breath.

Section 316.1934(2), Florida Statutes (1993), specifically provides that impairment is presumed [*36] where a chemical analysis of blood or physical test of breath shows a BAC of 0.08 or higher.²¹

21 *Section 316.1934* provides in relevant part:

(1) It is unlawful and punishable as provided in chapter 322 and in s. 316.193 for any person who is under the influence of alcoholic beverages or controlled substances, when affected to the extent that the person's normal faculties are impaired or to the extent that the person is deprived of full possession of normal faculties, to drive or be in actual physical control of any motor vehicle within this state

(2) At the trial of any civil or criminal action or proceeding arising out of acts alleged to have been committed by any person while driving, or in actual physical control of, a vehicle while under the influence of alcoholic beverages or controlled substances, when affected to the extent that the person's normal faculties were impaired or to the extent that he or she was deprived of full possession of his or her normal faculties, the results of any test administered in accordance with s. 316.1932 or s. 316.1933 and this section

are admissible into evidence when otherwise admissible, and the amount of alcohol in the person's blood or breath at the time alleged, as shown by chemical analysis of the person's blood, or by chemical or physical test of the person's breath, gives rise to the following presumptions:

. . . .

(c) If there was at that time a blood-alcohol level or breath-alcohol level of 0.08 or higher, that fact is prima facie evidence that the person was under the influence of alcoholic beverages to the extent that his or her normal faculties were impaired. Moreover, such person who has a blood-alcohol level or breath-alcohol level of 0.08 or higher is guilty of driving, or being in actual physical control of, a motor vehicle, with an unlawful blood-alcohol level or breath-alcohol level.

The presumptions provided in this subsection do not limit the introduction of any other competent evidence bearing upon the question of whether the person was under the influence of alcoholic beverages to the extent that his or her normal faculties were impaired.

[**33] It is apparent that while the legislature may have left the door open to admit other types of testing methods as evidence of impairment, the legislature clearly intended that a presumption as to whether a person was or was not under the influence of alcoholic beverages to the extent of legal impairment, can only arise based upon chemical analysis of blood or breath testing.

It is the legislature's role to determine which tests may be used to establish a presumption of impairment. Where the legislature has prescribed specific tests for a specific purpose, it is not this court's role to add others. Therefore, we must answer the fourth certified question in the negative.

Accordingly, we hold that HGN test results alone, in the absence of a chemical analysis of blood, breath, or urine, are inadmissible to trigger the presumption provided by *Section 316.1934*, and may not be used to establish a BAC of 0.08 percent or more. See *State v. O'Key*, 899 P.2d at 681; *State v. Bresson*, 554 N.E.2d at 1336.²² However, HGN test results are admissible

independently of other evidence as proof that a defendant was impaired under Section 316.193(1)(a). See *State ex rel. Hamilton v. City Court* [**34] of *City of Mesa*, 165 Ariz. 514, 799 P.2d 855, 857 (Ariz. 1990)(HGN test administered by properly trained officer admissible as to the issues of probable cause to arrest and whether driver was operating vehicle while under the influence of alcohol); *State v. Bresson*, 554 N.E.2d at 1336 (same); *State v. Webber*, 1998 Ohio App. LEXIS 134, No. CA97-03-059 (Ohio Ct. App. Jan. 20, 1998)(same).

22 As noted in *State v. Bresson*, 554 N.E.2d at 1336 (quoting *State v. Superior Court*, 149 Ariz. at 279, 718 P.2d at 181)(emphasis added):

Although results on an HGN test may be admissible at trial by a properly trained officer, such an officer may not testify as to what he or she believes a driver's actual or specific BAC level would be, based solely on the HGN test results. " * * * Such a use of HGN test results would raise a number of due process problems different from those associated with the chemical testing of bodily fluids. The arresting officer's 'reading' of the HGN test cannot be verified or duplicated by an independent party. * * * The test's recognized margin of error provides problems as to criminal convictions which require proof of guilt beyond a reasonable doubt. The circumstances under which the test is administered at roadside may affect the reliability of the test results. Nystagmus may be caused by conditions other than alcohol intoxication. And finally, the far more accurate chemical testing devices are readily available.

See also, *State v. Taylor*, 694 A.2d at 912 (HGN may not be used to quantify particular blood alcohol level); *Emerson v. State*, 880 S.W.2d at 759(same).

[**35] V. CONCLUSION

The real issue here is not the admissibility of the evidence, but the weight it should [*37] receive. As properly recognized by the trial court, this is a matter for the jury to decide.²³ The mere fact that DRE testimony is admitted, does not automatically translate to a guilty verdict. The State is still required to prove beyond a reasonable doubt that the defendant is impaired by a chemical or controlled substances. § 316.193, Fla. Stat. (1997). Moreover, the existence of any conflicting studies or scientific articles can always be introduced by the defense to challenge the weight of the DRE testimony.

23 We agree with the trial court that it is somewhat misleading for the State to present the officers as "Drug Recognition Experts." In the words of the trial court, the "appellation assumes the conclusion. If the officer is an 'Expert,' then, obviously, his or her opinion is admissible pursuant to Fla. R. Evid. 90.702 (1994). Accordingly, the State must lay a proper predicate before referring to a DRE as anything other than a DRE or Drug Recognition Evaluator or Examiner. See also *State v. Klawitter*, No. C6-93-2092 (Minn. June 30, 1994)(unpublished opinion)."

[**36] The magnitude of problems caused by drug-impaired drivers cannot be underestimated. Yet prior to DIE implementation, drivers suspected of drug-impairment far too often escaped detection or prosecution.²⁴ We are convinced that the DIE program and the DRE's play a critical role in accurately identifying and removing impaired drivers from our streets and highways. Accordingly, we affirm the order below.

24 As noted in the 1994 Arizona study of 500 drivers examined by DRE's, most of these drivers would have passed a breathalyser test and could not have been arrested without the evidence of impairment obtained from the DRE evaluation. See E.V. Adler and M. Burns, Drug Recognition expert (DRE) Validation Study, Final Report to Governor's Office of Highway Safety, State of Arizona (1994). The 1992 NHTSA study also reveals the impact of the DIE program on increasing detection and prosecution of drug-impaired drivers. See D.F. Preusser, et. al., Evaluation of the Impact of the Drug Evaluation and Classification Program on Enforcement and

Adjudication, National Highway Traffic Safety Administration, U.S. D.O.T H.S. 808 058 (1992). The study compared eleven police agencies in five states with DIE programs to similar police agencies without DIE programs. In the DIE sites, arrests for drugged driving and convictions increased, while there was no similar increase in the comparison communities. Drug presence was confirmed by chemical tests for most of the suspects accused of drug use. Id. See also Lionel P. Raymon, Bernard W. Steele and H. Chip Walls, Analytical Confirmation Versus DRE

Evaluation of Cannabis Use: A Comparative Study, Report at American Academy of Forensic Sciences Annual Meeting (1998)(toxicological studies confirm 79.4% accuracy rate in Dade County DRE evaluations of cannabis intoxication leading to higher conviction rate for chemically impaired drivers).

[**37] Affirmed.

SHEVIN, J., concurs.

APPENDIX				
INDICATORS CONSISTENT WITH DRUG CATEGORIES				
	DEPRESSANT	STIMULANTS	HALLUCINOGEN	PCP
HGN	PRESENT	NONE	NONE	PRESENT
VERTICAL	PRESENT			
NYSTAGMUS	(HIGH DOSE) *	NONE	NONE	PRESENT
LACK OF				
CONVERGENCE	PRESENT	NONE	NONE	PRESENT
PUPIL SIZE	NORMAL (1)	DILATED	DILATED	NORMAL
REACTION TO				
LIGHT	SLOW	SLOW	NORMAL (3)	NORMAL
PULSE RATE	DOWN (2)	UP	UP	UP
BLOOD				
PRESSURE	DOWN	UP	UP	UP
BODY				
TEMPERATURE	NORMAL	UP	UP	UP
* high dose for that particular individual				

APPENDIX			
INDICATORS CONSISTENT WITH DRUG CATEGORIES			
	NARCOTIC	INHALANT	CANNABIS
HGN	NONE	PRESENT	NONE
VERTICAL		PRESENT	
NYSTAGMUS	NONE	(HIGH DOSE)*	NONE
LACK OF CONVERGENCE	NONE	PRESENT	PRESENT
PUPIL SIZE	CONSTRICTED	NORMAL (4)	DILATED (6)
REACTION TO LIGHT	LITTLE OR NONE VISIBLE	SLOW	NORMAL
PULSE RATE	DOWN	UP	UP
BLOOD PRESSURE	DOWN	UP/DOWN (5)	UP
BODY TEMPERATURE	DOWN	UP/DOWN/ NORMAL	NORMAL
* high dose for that particular individual			

FOOTNOTE:

to individual reaction, dose taken and drug interaction

[**38]

These indicators are those most consistent with the category, keep in mind that there may be variations due

- | | |
|----|---|
| 1. | SOMA, Quaaludes usually dilate pupils. |
| 2. | Quaaludes and ETOH may elevate. |
| 3. | Certain psychedelic amphetamines cause slowing. |
| 4. | Normal but may be dilated. |

5.	Down with anesthetic gases, up with volatile solvents and aerosols.
6.	Pupil size possibly normal.

CONCUR BY: COPE (In Part)

DISSENT BY: COPE (In Part)

DISSENT

COPE, J. (concurring in part and dissenting in part).

I.

The question presented is whether in a driving under the influence ("DUI") case, the State can introduce the entirety of the twelve-step Drug Influence Evaluation ("Drug Evaluation").²⁵ This is a screening test performed at roadside when an impaired driver has a zero, or low, alcohol reading and the arresting officer suspects that the driver's impairment is caused by drugs. The evaluation is done by a specially trained officer, known as a drug recognition examiner ("Drug Examiner"). The twelve-step procedure includes both scientific and nonscientific components.

25 The Drug Evaluation is also referred to as "Drug Evaluation and Classification." See National Highway Traffic Safety Admin., U.S. Dep't of Transp., Drug Evaluation and Classification Training (1993) [hereinafter NHTSA Training Manual]; see also *infra* note 19.

[**39] The county court ruled that the entire Drug Evaluation could be introduced at trial. This ruling should be reversed. The scientific portion of the Drug Evaluation is unreliable. It is in reality scientific evidence which does not satisfy the Frye²⁶ test; but even if Frye is inapplicable, the evidence should be excluded because it will mislead the jury and because its unfair prejudice outweighs its probative value. See § 90.403, Fla. Stat. (1993).

26 *Frye v. United States*, 54 App. D.C. 46, 293 F. 1013 (D.C. Cir. 1923).

[*38] The county court ruling also allows the Drug Examiner to be qualified as an expert and offer his opinion, among other things, that the driver's impairment was caused by specific substances, in this case, alcohol,

marijuana, and cocaine. This ruling should also be reversed, first, because the Drug Examiner's opinion is founded on an unreliable base--the Drug Evaluation--and second, because the Drug Examiner is not a toxicologist or other scientist and is not qualified to testify [**40] about the effects of alcohol or drugs on the human body.

The remaining question is whether the Drug Examiner's observation of horizontal gaze nystagmus ("HGN") is admissible to show the driver's alcohol level. HGN is an involuntary jerking of the eyeball as the eyes attempt to follow an object from side to side, and is said to occur sooner when a driver is under the influence of alcohol. It is claimed that by measuring the angle of onset, the Drug Examiner can calculate the driver's alcohol level.

I concur with the majority that HGN cannot substitute for the statutory alcohol tests. The majority opinion does, however, allow HGN to come in for some purposes. Because HGN-based alcohol calculations are unreliable, I would exclude them entirely, and dissent to the extent that the majority opinion allows such HGN results into evidence. II. Defendant Frederick Williams was stopped at a sobriety checkpoint. The defendant had a distinct odor of alcohol and bloodshot eyes. The officer asked the defendant to exit the vehicle and conducted several field sobriety tests.²⁷ The officer concluded that he had probable cause to believe that the defendant was impaired, and placed him under arrest [**41] for DUI pursuant to *section 316.193(1), Florida Statutes* (1993).

27 These were the Horizontal Gaze Nystagmus ("HGN") test, the Romberg Balance Test; the walk-and-turn test, the one-legged stand test, and the finger-to-nose test. See *The Florida Bar, DUI and Other Traffic Offenses in Florida* §§ 10.7-.12 (1993). The Romberg Balance Test requires the driver to stand with the head tilted back slightly and the eyes closed, and to estimate when thirty seconds have elapsed. See NHTSA Training Manual, *supra* note 1, at IV-13.

The officer administered a breath test, which registered 0.07%. Evidently concluding that the defendant's impairment exceeded that which would be

expected based on a 0.07% alcohol reading,²⁸ the officer initiated a Drug Evaluation.

28 The officer's report is in the record, but the officer's testimony was not taken. As explained in the majority opinion, "The drug influence evaluation will not be conducted if the breath test result is consistent with the degree or type of impairment." Majority opinion at 4 n.4.

Under *section 316.1934(2)(b), Florida Statutes* (1993), a 0.07% reading does not give rise to any presumption that the defendant was, or was not, impaired.

[**42] In this case, the arresting officer was also a certified Drug Examiner. He conducted the twelve-step Drug Evaluation. In the interview portion, the defendant was cooperative, told the officer that he had had a couple of beers, and also revealed that he had consumed marijuana several days ago. He conceded that he was "maybe a little" under the influence.

The Examiner had the defendant repeat the field sobriety tests,

²⁹ with the same results. As part of the twelve steps, the Examiner conducted a partial physical examination of the defendant. See majority opinion at 4 n.4, items 3-4, 6-9. The officer concluded, "In the opinion of this [Drug Recognition Examiner], subject Frederick Williams is under the combined influence of alcohol, [Central Nervous System] Stimulant and Cannabis to the extent that his normal faculties are impaired and is unable to operate a motor vehicle safely." The report went on to explain the reasons for this conclusion.

29 See *supra* note 3.

A urine sample was taken. Chemical [**43] testing showed the presence of cocaine and metabolites for marijuana and cocaine. As already stated, the breath alcohol result was 0.07%.

Prior to trial, the State filed a motion in limine seeking approval to introduce the entire results of the Drug Evaluation and to have the officer render the expert opinion just mentioned, namely, that the defendant [**39] was under the combined influence of alcohol, a central nervous system stimulant (cocaine), and cannabis to the extent that his normal faculties were impaired. The

defendant opposed the motion, arguing that the Drug Evaluation was scientific evidence which did not satisfy the Frye test and was otherwise unreliable.

After an evidentiary hearing, the county court ruled that the Drug Evaluation was admissible. The court reasoned that Frye did not apply and alternatively, if it did apply, the Frye test was satisfied. The court also ruled that the Drug Examiner could testify as an expert. The court certified four questions of great public importance to this court. See *Fla. R. App. P. 9.160*; see also *infra* Part VII.

The defendant entered a no contest plea, reserving his right to appeal the order granting the motion in [**44] limine. This appeal followed.

III.

In a typical DUI case, the State proves the offense partly by scientific and partly by nonscientific evidence. Insofar as pertinent here:

(1) A person is guilty of the offense of driving under the influence . . . if such person is driving . . . and:

(a) The person is **under the influence** of alcoholic beverages, . . . or any substance controlled under chapter 893, **when affected to the extent that his normal faculties are impaired**

§ 316.193, *Fla. Stat.* (1993) (emphasis added).³⁰ The State must therefore show that the driver was:

30 The statute also provides that a driver is guilty of DUI if he "has a blood or breath alcohol level of 0.08 or higher." *Id.* § 316.193(2). This is referred to as DUBAL--driving with an unlawful breath- or blood-alcohol level. See *The Florida Bar, supra note 3*, § 6.23, at 6-24. That subdivision of the statute does not apply here because in this case defendant had a 0.07% breath-alcohol level.

[**45]

(1) under the influence of specific substances

(2) to the extent that

(3) his normal faculties were impaired.

Under the influence of specific substances. This is typically shown by scientific evidence: chemical test results.³¹ Here, the chemical tests established that the driver had ingested alcohol, cocaine, and marijuana. The chemical tests do **not** establish that the driver was impaired. It is possible for a driver to be under the influence without his normal faculties being impaired. See *Cannon v. State*, 91 Fla. 214, 217, 107 So. 360, 362 (1926).

31 Lay testimony may also be admissible where the witness recognized, for example, the odor of alcohol or marijuana. Likewise admissible would be any admissions by the defendant.

Impairment. This is typically shown by nonscientific evidence: lay testimony. The proof must show that the "normal faculties are impaired . . ." § 316.193(1)(a), Fla. Stat. (1993). "Normal faculties include . . . the ability to see, hear, [**46] walk, talk, judge distances, drive an automobile, make judgments, act in emergencies, and, in general, normally perform the many mental and physical acts of daily life." Id. § 316.1934(1).

Impairment is normally shown by the lay observations of the police officer and other witnesses. See *Cannon v. State*, 91 Fla. at 220, 107 So. at 363; *State v. Weitz*, 500 So. 2d 657, 659 & n.7 (Fla. 1st DCA 1986), disapproved on other grounds by *State v. McClain*, 525 So. 2d 420 (Fla. 1988). Typical examples would be proof of erratic driving, causing an accident, slurred speech, unsteadiness on the feet, and inability to perform the roadside physical coordination tests.

Note also that there is no scientific test for impairment. Scientific tests of breath, blood, or urine will show whether the driver consumed alcohol or drugs. Those tests do not measure impairment. See Andre A. Moenssens et al., *Scientific Evidence in Civil and Criminal Cases* 842 (4th ed. 1995) [hereinafter *Scientific Evidence*] ("A positive result on a drug test does not indicate a person's impairment."); see also Stephen J. Heishman et al., *Laboratory Validation Study of Drug Evaluation and Classification [**47] Program: Ethanol, Cocaine, and Marijuana*, 20 J. Analytical Toxicology 468, 480 (1996) (hereinafter [**40] 1996 Validation Study) ("It is widely recognized that a positive urine drug

test does not indicate behavioral impairment."); *The Florida Bar*, supra note 3, § 7.7, at 7-6 ("Detecting the presence of a substance in urine does not establish whether an individual was impaired by that substance or how an individual was impaired by that substance.").

Causation. The State must also show that the driver's impairment resulted from the substances consumed. See § 316.193(1)(a), Fla. Stat. (1993) (DUI occurs when driver "is under the influence . . . **when affected to the extent that his normal faculties are impaired . . .**" (emphasis added)).

Where there is a positive test for alcohol or drugs, the jury is allowed to draw the inference that the impairment resulted from the substances consumed. The State need not call a toxicologist as an expert witness to establish the point. See *State v. McClain*, 525 So. 2d at 423; *The Florida Bar*, supra note 3, § 7.7, at 7-6.³² In sum, proof of a typical DUI case involves both scientific and nonscientific elements:

32 It has been held that where a drug test shows a trace amount, the test may be excluded from evidence. See *State v. McClain*, 525 So. 2d at 422. Because illegal substances may be detected in a urine test days or weeks after use (depending on the substance), see *Scientific Evidence*, supra, at 843, it is possible for a test to be positive after all active effect of the substance has worn off. Upon a showing that the detected amount could not cause, or contribute to, the driver's impairment, presumably the driver would be entitled to have the test result excluded. There is no suggestion that such circumstances apply to this case.

[**48] (1) Scientific tests of breath, blood, or urine showing that the driver had ingested alcohol and/or drugs.

(2) Nonscientific (lay) testimony by the officer or witnesses that the driver's normal faculties were impaired.

The next question is how the proposed Drug Evaluation evidence fits into this framework.

IV.

The Drug Evaluation system was created in order to deal with the following problem: what should an officer

do when he arrests an apparently impaired driver, but the driver shows a zero, or low, level on a breath test? According to the State's trial court memorandum:

In the early 1970's, LAPD [Los Angeles Police Department] officers noticed that many of the individuals they arrested for driving under the influence of alcohol registered very low or zero alcohol concentration readings. The officers suspected that the individuals were impaired by drugs. Unfortunately, the officers lacked the necessary training and skills to support their suspicions. However, in the mid-1970's, two LAPD sergeants, one a traffic officer and other a narcotics officer, collaborated with various medical doctors, research psychologists and other medical professionals in an effort to [**49] develop a simple, standardized procedure for recognizing drugs and impairment. Their efforts ultimately led to the development of a three-step protocol and the DEC [Drug Evaluation and Classification] program.

R. 19. The result was "a standardized and systematic method of examining a suspect to determine: '(1) Whether the suspect is impaired; and if so, (2) Whether the impairment relates to drugs or a medical condition; and if drugs, (3) The category or combination of categories of drugs that is the likely cause of the impairment.'" R. 20.

This evolved into what is now the twelve-step Drug Evaluation system, which has both scientific and nonscientific elements. The Drug Evaluation addresses the issues of impairment, and being under the influence, as follows.

Impairment. The nonscientific part of the Drug Evaluation is designed to determine whether the driver's normal faculties are impaired. Typically, the Drug Examiner is called to the scene after an officer has made a DUI arrest of a driver who has registered a zero, or low, breath alcohol reading.³³

33 In the present case there was a sobriety checkpoint and the arresting officer, a qualified Drug Examiner, performed all functions.

[**50] The Examiner repeats the standard roadside sobriety tests. See majority opinion at 4 [*41] n.4, item 5; see also supra note 3. The Examiner observes the driver's general appearance and any difficulties in speech or coordination. See majority opinion at 4 n.4, item 3. The Examiner interviews the arresting officer, see id. item 2, who may have observed erratic driving or that the driver caused an accident. The Examiner conducts a post-Miranda³⁴ interrogation. Based on these lay observations and inquiries, the Examiner reaches a conclusion about whether the driver is impaired.

34 *Miranda v. Arizona*, 384 U.S. 436, 16 L. Ed. 2d 694, 86 S. Ct. 1602 (1966).

This part of the Drug Evaluation is a garden-variety DUI investigation. An officer's lay observations of the driver's appearance and physical coordination are admissible on the issue of impairment. See *State v. Meador*, 674 So. 2d 826, 831 (Fla. 4th DCA 1996).

Under the Influence. The Drug Evaluation is also designed, as the name suggests, [**51] to come up with a preliminary opinion whether the driver consumed drugs and if so, what kind. For these purposes, the Drug Evaluation "uses seven drug classes: central nervous system (CNS) depressants, CNS stimulants, hallucinogens, phencyclidine, narcotic analgesics, inhalants, and cannabis." 1996 Validation Study, supra, at 468-69. Alcohol comes under the heading of "depressant"; cocaine, "stimulant"; and marijuana, "cannabis."

This is the scientific portion of the Drug Examination. It rests on the idea that particular substances produce particular physical reactions. Those reactions have been placed in a grid entitled "Indicators Consistent with Drug Categories," reproduced in the appendix to this opinion.³⁵

35 It will be observed that each of these categories has somewhat different characteristics. For example, alcohol (depressant) will produce HGN, but cocaine (stimulant) and cannabis will not. Alcohol and cannabis will produce lack of convergence of the eyes ("LOC"), but cocaine will not. Alcohol will not affect the pupil size, but cocaine will produce dilated pupils and the same may or may not be true of cannabis. The grid shows that alcohol, cocaine, and marijuana produce conflicting physical symptoms for pulse

rate, blood pressure and body temperature. Where the grid produces antagonistic results--that is, results that would cancel each other out--those symptoms are to be ignored.

[**52] The Drug Examiner conducts a miniature physical examination ("the mini-physical") in which the Examiner takes the driver's vital signs (blood pressure, pulse rate, and temperature);

³⁶ examines pupil size and reaction of pupils to light; ³⁷ examines oral and nasal cavities for signs of ingestion; ³⁸ examines muscle tone ³⁹; inspects for hypodermic injection sites; ⁴⁰ and conducts an eye examination for horizontal gaze nystagmus ("HGN"), vertical gaze nystagmus ("VGN"), and lack of convergence ("LOC"). In the test for HGN, the Drug Examiner is looking for an involuntary jerking of the eye that may occur as the eyes attempt to follow an object moved from side to side. In the test for VGN, the Drug Examiner is looking for a similar jerking as the eyes follow an object moved up and down. In the test for LOC, the Drug Examiner looks for the eyes' ability to track an object brought progressively closer to the bridge of the nose.

36 See majority opinion at 4 n.4, item 6.

37 See id. item 7.

38 See id.

39 See id. item 8.

40 See id. item 9.

[**53] The Examiner compares the results of the mini-physical against the grid to arrive at an opinion of what substances the driver has consumed. See majority opinion at 4 n.4, item 11. This amounts to a scientific analysis. In arriving at his conclusion, the Examiner is also allowed to rely on nonscientific evidence, such as admissions by the driver or the presence of contraband in the car.

The Examiner's opinion of what substances have been consumed is intended to be only preliminary. The final step in the Evaluation is to collect a urine or blood sample for chemical testing. See majority opinion at 4 n.4, item 12. As explained by the National Highway Traffic Safety Administration's ("NHTSA") training manual, "neither nystagmus nor any other elements of the drug [*42] recognition examination are intended to substitute for chemical testing." NHTSA Training Manual, *supra* note 1, at III-6. The chemical tests are

authoritative in confirming or denying the presence of drugs. The Drug Examiner's preliminary opinion is not authoritative.

The introduction of chemical test results into evidence is another garden variety component of DUI cases. What is different, however, is the State's [**54] proposal to introduce the scientific portion of the Drug Examination as evidence that the driver had consumed marijuana and cocaine. For the reasons stated in Part V *infra*, the defendant is entitled to have the scientific portion of the Drug Examination excluded from evidence.

Causation. The Drug Examiner in this case also rendered an opinion on causation. The Examiner opined that defendant was "under the combined influence of alcohol, CNS stimulant and Cannabis to the extent that his normal faculties are impaired and is unable to operate a motor vehicle safely." The trial court order allows this opinion to be given.

This, too, is new. The Examiner is being allowed to offer an opinion that the three substances caused the impairment, even though the Examiner is not a toxicologist and is not qualified to render an opinion on the effects of drugs on the body. See *infra* Part V.D.

V.

To be admitted at trial, expert testimony based upon the Drug Evaluation must satisfy the three requirements set forth by the Florida Supreme Court in *Ramirez v. State*, 651 So. 2d 1164 (Fla. 1995):

First, the trial judge must determine whether such expert testimony will assist [**55] the jury in understanding the evidence or in determining a fact in issue. Second, the trial judge must decide whether the expert's testimony is based on a scientific principle or discovery that is sufficiently established to have gained general acceptance in the particular field in which it belongs. . . . The third step in the process is for the trial judge to determine whether a particular witness is qualified as an expert to present opinion testimony on the subject in issue.

Id. at 1167 (citations and internal quotation marks omitted). Drug Examiner testimony fails all three

requirements.

The scientific portion of the Drug Evaluation should be excluded because it is (a) unreliable scientific evidence which fails the Frye test, (b) likely to be confusing to the jury as well as unfairly prejudicial, (c) cumulative of the chemical testing results, and because (d) the Drug Examiner is not qualified to render an expert opinion.

A.

The final step of the Drug Evaluation process is to conduct confirmatory chemical testing. In the present case, the chemical tests showed a 0.07% alcohol level, plus a positive result for cocaine and metabolites for cocaine and marijuana. [**56] These chemical test results are all admissible in evidence.

The State desires in addition to have the Drug Examiner testify about the scientific portion of the Drug Evaluation. In this phase of the testimony, presumably the Examiner would explain that particular substances cause particular effects on the human body, and that in the scientific portion of the Drug Evaluation, the Examiner is looking for those physical effects. The Examiner would review the various steps in the physical examination he performed, including the measurement of vital signs, examinations of pupils size and reaction of pupils to light, and the eye examination for HGN, VGN, and LOC. The Examiner would then state that based on his observations, he had formed an opinion that the defendant was under the influence of alcohol, cocaine, and marijuana. The Examiner would undoubtedly testify that in order to maintain certification with the International Association of Chiefs of Police, the Examiner must maintain a high accuracy rate for identification of substances, and that, to this end, the scientific portion of the Drug Evaluation is highly reliable. ⁴¹ The [*43] State's position is that this Drug Evaluation system [**57] is highly dependable and constitutes substantial evidence which can support a criminal conviction.

⁴¹ Accuracy rates in the range of eighty-four to ninety-four percent are claimed. See majority opinion at 5-6 n.5 (citing the Compton study and the Preusser study).

As a preliminary matter, these claims go far beyond what NHTSA claims for its own system. As already

stated, NHTSA makes clear that the scientific portion of the Drug Evaluation is not authoritative, and that the Examiner's preliminary opinion about drug or alcohol use **must** be confirmed by appropriate chemical testing. Chemical testing is authoritative; the Drug Evaluation is not.

More to the point, a recent study shows that the scientific portion of the Drug Evaluation system is downright unreliable: it has a fifty-percent error rate.

In 1996, NHTSA commissioned a rigorous peer-reviewed ⁴² study to determine if the Drug Evaluation could successfully detect the presence of alcohol, cocaine, and marijuana. See 1996 Validation Study, [**58] *supra*. The study was conducted because "the Drug Evaluation and Classification (DEC) ⁴³ program is used by police agencies to determine if individuals are behaviorally impaired because of drug use, and, if impaired, to determine the class of drug(s) causing the impairment. Although widely tested, the validity of the DEC evaluation has not been rigorously tested." *Id. at 468*.

⁴² "Peer review and publication provide the opportunity for others in the field to examine and critique the reasoning or methodology behind scientific theory." *State v. O'Key*, 321 Ore. 285, 899 P.2d 663, 679 (Or. 1995).

⁴³ The Drug Evaluation and Classification ("DEC") program is a term used by National Highway Traffic Safety Administration, and is the same system referred to here as the Drug Evaluation.

The scientists designed a double-blind study with eighteen volunteers and twenty-eight Drug Examiners participating in nine separate experimental sessions. ⁴⁴ The volunteers were given varying doses of alcohol, cocaine, [**59] or marijuana, or a placebo. The Drug Examiners were told that the subjects might be dosed with a single substance, multiple substances, or no substances. The volunteers themselves did not know whether they had consumed a substance or a placebo. The Examiners' opinions regarding what substances had been consumed had to be based on the Examiners' observations alone.

⁴⁴ The study was funded by the National Highway Traffic Safety Administration. *Id. at 482*.

The study found a forty-nine- to fifty-six-percent error rate. "When drug recognition examiners concluded subjects were impaired by [alcohol] or drugs or both, their predictions were consistent with toxicological analysis in 51% of cases. When [alcohol] only decisions, which were guaranteed to be consistent with toxicology, were excluded, [drug recognition examiners'] predictions were consistent in 44.0% of cases." *Id.* at 475. In other words, the Drug Examiners were wrong half the time.⁴⁵ Obviously, where there is a fifty-percent error rate, [**60] the proposed scientific evidence is too unreliable to be introduced at trial.⁴⁶

45 These results are considerably below the confirmation rates reported by police agencies in in-house studies, as well as confirmation rates required for Drug Examiners to maintain their certification. See *id.* at 474-75. What is the explanation for the discrepancy? The answer is that in the field, there are many other clues that make it "more likely that the individual has used drugs, and the Drug Examiners are aware of this before conducting the DEC evaluation." *Id.* These include incriminating statements or confessions obtained from interviewing the suspects; detection of the odor of marijuana or the presence or crystallin particles in the nostrils; observation of drugs or drug paraphernalia on the driver's person or in the car; and for alcohol cases, the Drug Examiner will have the breath test result at the outset. See *id.* Further, in counting cases for maintaining certification as a Drug Examiner, the examiner receives credit if he predicts two substances and toxicology confirms one, see *id.* at 475; there is no penalty for a wrong "guess" so long as one substance is confirmed.

[**61]

46 The trial court did not have the benefit of the 1996 Validation Study, which was announced after the trial court's order was entered. Under *Hadden v. State*, 690 So. 2d 573, 579 (Fla. 1997), this court's review in a scientific evidence case is *de novo*. Further, the Florida Supreme Court has made it clear that the appellate court is free to consider scientific studies that were not placed in the trial court record. See *id.* Accordingly, the 1996 study may be considered by this court, even though announced after the conclusion of trial court proceedings.

[*44] It is also clear that such unreliable scientific evidence does not satisfy Frye. Here, the State wishes to offer the scientific portion of the Drug Evaluation as substantive evidence that the defendant consumed alcohol, marijuana, and cocaine. NHTSA itself, however, is quite clear that the scientific portion of the Drug Evaluation is no substitute for chemical testing. That is why the last step of the Drug Evaluation procedure is a confirmatory chemical test. NHTSA regards chemical testing as authoritative and the Drug Evaluation [**62] as a preliminary procedure which is not to be relied on absent confirmatory testing.

Today, drug and alcohol testing is performed in many contexts for a variety of purposes. It is plain that in the scientific community, as well as the community at large, the generally accepted methods for detecting drugs or alcohol are chemical tests. No one in the scientific community, or the community at large, would rely on the scientific portion of the Drug Evaluation--measurement of vital signs, pupil size, and eye movement--as a reliable or authoritative means of determining whether alcohol or drugs have been consumed, and if so, how much. Chemical testing has sufficient scientific reliability. The scientific portion of the Drug Evaluation does not.⁴⁷

47 For these purposes, reliability refers "to evidentiary reliability--that is, trustworthiness." *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 590 n.9, 125 L. Ed. 2d 469, 113 S. Ct. 2786 (1993). The Daubert Court explained:

We note that scientists typically distinguish between "validity" (does the principle support what it purports to show?) and "reliability" (does application of the principle produce consistent results?). Although "the difference between accuracy, validity, and reliability may be such that each is distinct from the other by no more than a hen's kick," our reference here is to evidentiary reliability--that is, trustworthiness. . . . In a case involving scientific evidence, evidentiary reliability will be based upon scientific validity.

Id. (citations omitted).

[**63] Under Frye, the inquiry is whether both a scientific principle and the testing procedure used to apply that principle to the facts of the case at hand have achieved general acceptance in the scientific community. See, e.g., *Ramirez v. State*, 651 So. 2d 1164, 1167, 1168 (Fla. 1995). Appellate review under Frye consists of examining the record, scientific literature, and judicial decisions. See *Hadden v. State*, 690 So. 2d 573, 576 (Fla. 1997). The expert testimony reflected in the record here is conflicting. However, a survey of the scientific literature reveals only one study that is peer-reviewed and that passes on the validity of the Drug Evaluation. The 1996 Validation Study, as stated earlier, portrays the Drug Evaluation as a procedure far too unreliable for guilt-or-innocence purposes.

As to judicial decisions, only one other appellate court has to date addressed whether the Drug Evaluation should be admitted under Frye. In *State v. Klawitter*, 518 N.W.2d 577 (Minn. 1994), the Minnesota Supreme Court found that the Drug Evaluation was "not itself a scientific technique but rather a list of the things a prudent, trained and experienced officer should [**64] consider before formulating or expressing an opinion whether the subject is under the influence of some controlled substance." *Id.* at 584. While the Klawitter court had before it much of the same expert testimony as was presented below in the instant case, it did not, however, have the benefit of the 1996 Validation Study. Rather, it relied upon field evaluation studies that did not assess the scientific validity of the Drug Evaluation. Further, although the Minnesota court was correct to the extent that it found the field sobriety tests nonscientific, it erred by characterizing the mini-physical portion of the Drug Evaluation as nonscientific as well. The mini-physical is unquestionably scientific because it purports to allow the Drug Examiner to reach an opinion as to precisely what substances the driver has consumed on the basis of the scientifically measurable results the mini-physical produces. That sort of expert opinion is properly the province of a physician or toxicologist, not a police officer, no matter how prudent, trained, or experienced.

The scientific portion of the Drug Evaluation should be excluded at trial. The State may proceed on the basis of the breath [**65] and urine test results.

[*45] B.

It may be asked, however, whether there is any real harm in allowing the scientific portion of the Drug

Evaluation to come into evidence. Here the officer's observations of the defendant's vital signs, pupil size, and eye movements were all part of the steps which led up to a preliminary opinion, followed by confirmatory chemical testing. Since the chemical testing confirmed the officer's preliminary opinion, what is the harm in allowing the officer to testify to his preliminary opinion, as well as the fact that it was confirmed by chemical testing?

In the first place, the State is not proposing to brush quickly over the Drug Evaluation as a series of nonauthoritative, preliminary steps which led up to authoritative chemical testing. If that is what the State wanted to do, we would have a different case.

What the State is proposing to do is present the Examiner's examination of physical signs and symptoms as being a highly reliable, science-based procedure which can reliably be counted on to lead to an accurate diagnosis of what substances the defendant has consumed. If the State wants to present the Drug Evaluation in that light, then the proposed [**66] scientific evidence must be reliable and pass muster under Frye. This evidence does not.

The more substantial problem is the danger of jury confusion and unfair prejudice to the defendant. Traditionally, the law enforcement officer has given what amounts to lay observations that the driver's normal faculties were impaired. The inability of the driver to speak clearly, stand, walk in a straight line, or perform simple roadside tests of physical coordination are all matters which are within the common understanding of the jury and do not require special expertise for interpretation. The same is true of the officer's observation that a defendant was driving erratically, caused an accident, had the odor of alcohol, or made damaging admissions. In testifying to these matters, the officer appears as a fact witness, not as a scientist. This type of information is gathered under the nonscientific part of the Drug Evaluation.

The problem with the Drug Evaluation is that it contains scientific, as well as nonscientific, components. It introduces the Examiner as an expert to the jury, and allows the officer to render an opinion as a science-based expert.

By presenting the officer to the [**67] jury as a scientist and allowing the officer to testify in detail about

the scientific steps he performed in conducting the Drug Evaluation, the jury will be misled into thinking that the Drug Evaluation is a scientific test for impairment--which it is not. There is no scientific test for impairment. The scientific tests are designed solely to help identify what substances have been consumed. But the fact that a driver has consumed drugs or alcohol does not mean that the driver is impaired. Impairment of normal faculties must be established by other evidence.

It would take a sophisticated jury and a good deal of effort to differentiate the scientific and nonscientific portions of the Drug Evaluation, and explain the proper role of each. If the scientific portion of the Drug Evaluation were reliable, then perhaps it would be worth the effort.

However, the 1996 Validation Study reveals how unreliable the Drug Evaluation is. Since it is so unreliable, and since there is the potential for jury confusion and unfair prejudice, the scientific portion of the Drug Evaluation should be excluded.

C.

Even if the foregoing were not true, the scientific portion of the Drug Evaluation [**68] is also excludable on the ground that it is cumulative. Here, the confirmatory chemical tests show a 0.07% alcohol level and positive results for cocaine and metabolites of marijuana and cocaine. There is no need for a lengthy presentation of the scientific portions of the Drug Evaluation when the chemical test results have been obtained and can be presented in short order.

D.

The proposed Drug Examiner testimony is also objectionable because the Drug Examiner [*46] is not a toxicologist or other appropriate scientist.

The State proposes to have the Drug Examiner testify, among other things, that the defendant had consumed alcohol, cocaine, and marijuana to the extent that his normal faculties were impaired. The State proposes, in other words, for the Examiner to offer an opinion on causation by saying that the observed impairment was caused by, or at least consistent with, the consumption of alcohol, marijuana, and cocaine.

The appropriate expert to offer testimony on the

effect of such substances in the human body is a toxicologist, or conceivably a scientist from a related field, or a physician. The Drug Examiner is none of these. See *Murray v. State*, 692 So. 2d 157, 164 [**69] (Fla. 1997) (expert witness may not testify to matters that fall outside his area of expertise).

The Drug Examiner has received several days of specialized training aimed at teaching the Examiner how to use the Drug Evaluation system at roadside. If the State wants to present expert testimony which correlates the chemical test results with the observed impairment of the defendant, it must offer a properly qualified expert.

Even if the Examiner were a properly qualified scientist, the fact remains that the Drug Examiner is simply relating to the jury the results of the Drug Evaluation procedure. See *id.* (DNA evidence inadmissible where State's expert could not explain how he performed tests or basis for his statistical conclusions). The Drug Examiner's opinion is entirely dependent on the reliability of the Drug Evaluation. As already demonstrated, the Drug Evaluation is unreliable. The proposed expert opinion rests on an unreliable foundation and must be excluded.

VI.

The trial court's first three certified questions ⁴⁸ involved use of the Drug Evaluation where a driver has a low, or zero, alcohol reading.

⁴⁸ See majority opinion at 7; see also *infra* Part VII.

[**70] The fourth certified question raises a solely alcohol-related issue:

4. May the State prove that a subject had an unlawful breath or blood alcohol level based on HGN test results alone under *Bender* ⁴⁹

⁴⁹ *State v. Bender*, 382 So. 2d 697 (Fla. 1980).

A.

The fourth certified question has nothing to do with the facts of the present case. We should exercise our discretion to decline to answer it.

In the fourth certified question, the court posits a defendant who has been charged with driving with an unlawful blood or breath alcohol level ("DUBAL"), i.e., an alcohol level of 0.08% or higher. See § 316.193(1)(b), *Fla. Stat.* (1993). The fourth question further assumes that the officer administered HGN tests to the defendant and, based on those tests, concluded that the defendant had an alcohol level of 0.08% or higher. The fourth certified question asks whether an HGN-based estimate of the defendant's alcohol level is admissible in such a case.

We should decline to answer this question [**71] because it has nothing to do with the case now before us. In the present case, the defendant took a breath test and the result was 0.07%. He is not charged with DUBAL, that is, with having an alcohol level of 0.08% or higher. He is charged with DUI, that is, driving under the influence "when affected to the extent that his normal faculties are impaired" *Id.* § 316.193(1)(a). Defendant's HGN results do not show that he had an alcohol level in excess of 0.08%.

B.

If we are to answer the fourth certified question, then I agree that an HGN-based alcohol calculation cannot be used to establish an alcohol level of 0.08% or greater, see *id.* § 316.193(1)(b), nor may it be used to trigger any impairment presumptions under *section 316.1934, Florida Statutes*. See majority opinion at 24. The statute spells out what testing methods may be used, and HGN is not among them.

[*47] C.

I respectfully disagree with the part of the majority opinion which goes on to say, "However, HGN test results are admissible independently of other evidence as proof that a defendant was impaired ⁵⁰ under *Section 316.193(1)(a)*." Majority opinion at 27-28 (citing *State ex rel. Hamilton v. [**72] City Court, 165 Ariz. 514, 799 P.2d 855, 857 (Ariz. 1990); State v. Bresson, 51 Ohio St. 3d 123, 554 N.E.2d 1330 (Ohio 1990)*).

⁵⁰ In saying that HGN test results are admissible "as proof that a defendant was impaired under *Section 316.193(1)(a)*," majority opinion at 28, the majority opinion misspeaks. HGN testing is designed to give an indication whether a defendant has consumed alcohol or two other

classes of drugs. It operates as a preliminary test for consumption. It is not a test for impairment. A defendant may consume substances, yet not have his or normal faculties be impaired.

1.

HGN was designed to be one of several field sobriety tests to be administered at roadside, along with such other roadside tests as the one-legged stand and the walk and turn test. See *Scientific Evidence, supra*, at 207. HGN and the other tests were designed to aid an officer in deciding whether he has probable cause to believe that the driver is guilty of driving under the influence.

Bear in mind that an [**73] officer is not allowed to administer a breath- or blood-alcohol test under the informed consent law until **after** the officer has made a DUI arrest. See § 316.1932(1)(a), *Fla. Stat.* (1993) (driver is deemed to give implied consent to submit to certain testing "if he is lawfully arrested for any offense allegedly committed while the person was driving or in actual physical control of a motor vehicle while under the influence of alcoholic beverages, chemical substances, or controlled substances").

At roadside **before** arrest, the HGN test was found to be effective in aiding officers to form a preliminary opinion whether the driver's alcohol level was above or below 0.10%, especially when HGN was used along with other roadside tests. ⁵¹ See *Scientific Evidence, supra*, at 207-08.

⁵¹ HGN can be caused by alcohol as well as two drug classes not involved here: PCP and inhalants. HGN is **not** caused by cocaine or marijuana. See Appendix.

In administering the HGN test, the officer makes [**74] three observations for each eye: (1) lack of smooth pursuit; (2) maximum deviation; and (3) angle of onset.

(1) Lack of smooth pursuit.--this part of the test is administered as follows:

The HGN test . . . requires a suspected drunken driver to cover one eye and focus the other on an object such as a finger or pen held approximately twelve to fifteen inches from the subject's face. The subject

is then asked to keep the head facing straight ahead while following with the uncovered eye the object as it is moved laterally along a horizontal plane to the periphery of the subject's vision. . . . As the officer administers this first part of the test, called "smooth pursuit," if the subject's eyeball jerks involuntarily and fails to follow the object smoothly, a first clue of intoxication has been observed.

Id. at 207.

(2) Maximum deviation.--"While the officer holds the object at the extreme left or right of the subject's peripheral vision for a short period of time, an intoxicated person will also have a distinct, and involuntary, jerking of the eye. This is a second indicator of intoxication." *Id.*

(3) Angle of onset.--"This third stage seeks to measure [**75] the degree from center at which the jerking first occurs" *Id.* (footnote omitted). The theory is that "this 'jerking' of the eyeball begins before the eye has moved 45 degrees from forward gaze if the individual's BAC [blood-alcohol concentration] is 0.10% or higher." *Id.* at 206 (footnote omitted).

Thus, the final observation--angle of onset--is intended to give the officer an approximation of the driver's blood alcohol level. It is, however, intended to be a preliminary test, which must be corroborated by a chemical test in the event that a DUI arrest is made.

[*48] As explained in the NHTSA training manual:

The relationship between BAC and onset angle is not really a precise, mathematical one, but rather is an approximate, statistical average. Human beings, and their eyes, do not all react to alcohol or other drugs in exactly the same way. The correlation between BAC and onset angle is susceptible to a great degree of individual variation. Thus, the average person, at 0.10% BAC, may exhibit a nystagmus onset angle of about 40 degrees. But individual humans, at the same BAC, could easily exhibit onsets of 35 degrees, or 45, or even wider variations.

[**76] NHTSA Training Manual, *supra* note 1, at IV-10. ⁵²

52 In addition, at roadside the officer does not have a measuring instrument to measure the angle of onset, nor a device to hold the subject's head steady. See *State v. Witte*, 251 Kan. 313, 836 P.2d 1110, 1119-20 (Kan. 1992); see also *State v. Murphy*, 953 S.W.2d 200, 203 (Tenn. 1997).

The manual also states:

Keep in mind that neither nystagmus nor any other elements of the drug recognition examination are intended to substitute for chemical testing. It is true that there is an approximate, statistical relationship between BAC and angle of onset, but this approximate relationship is not sufficiently reliable to permit BAC "prediction" in any individual case.

Id. at III-6 (emphasis added).

Thus, HGN is designed to be used as a roadside field sobriety test, preferably in conjunction with other field sobriety tests, in order to give the officer guidance in determining whether he has probable cause to make an arrest [**77] for DUI. The officer is then to obtain a breath or blood test in order to have a more reliable determination of the driver's alcohol level.

In the present case, HGN tests showed (1) lack of smooth pursuit and (2) HGN when defendant's eyes were at maximum deviation. These results suggest that defendant had consumed alcohol--which defendant had admitted. As to (3), the angle of onset was normal.

According to the literature, this would indicate an alcohol level of below 0.10%, which is consistent with the defendant's breath alcohol level of 0.07%.

3.

The county court is asking whether an HGN-based estimate of alcohol level is sufficiently reliable to come into evidence to prove that the defendant driver's alcohol level was under, or over, the legal limit. The literature teaches that, as a screening device, if the angle of onset occurs at about forty degrees, then this would indicate an

alcohol level of 0.10%.⁵³ In the present case, there is little at stake because there was no premature onset of HGN. What the county court is really interested in is whether, in a case where the estimate is 0.10% or higher, the estimate can come into evidence.

53 The Dade County officers' HGN logs simply indicate whether the HGN result was over or under 0.10%. The officers do not attempt to record an exact angle measurement for each individual subject.

[**78] As I understand it, the majority opinion would allow the HGN-derived alcohol estimate into evidence, so long as the State first introduces the defendant's breath- or blood-alcohol level. See majority opinion at 27-28; *State ex rel. Hamilton v. City Court*, 165 Ariz. 514, 799 P.2d 855, 858 n.2 (Ariz. 1990).⁵⁴

54 Under *Hamilton*, if there has been no chemical test for alcohol level, then the officer cannot use HGN results to estimate a defendant's alcohol level. "The officer's testimony is limited to describing the results of the test and explaining that, based on the officer's experience, the results indicated a neurological impairment, one cause of which could be alcohol intoxication." 799 P.2d at 858.

In my view, the court should exclude any HGN test result which purports to establish the defendant's alcohol level. The NHTSA materials themselves indicate that HGN can only be used as a rough guide, and is not terribly reliable because of individual variations in eye behavior. See NHTSA Training [**79] Manual, supra note 1, at IV-10.

The lack of reliability of HGN results is confirmed by the 1996 Validation Study. [*49] That study examined whether the Drug Evaluation could detect test subjects' consumption of alcohol, cocaine, or marijuana. HGN is one of the tests which was used. The results showed about a fifty-percent error rate. That is simply too unreliable to allow HGN evidence to come in on a material issue like estimated alcohol level.⁵⁵

55 Proponents of the admissibility of this evidence claim high reliability rates. However, those studies were not as rigorous as the 1996 Validation Study. Moreover, the claimed success rate appears to be a product of the fact that when

the Examiner already knows the breath-alcohol result, this influences the Examiner's perception of the angle of onset of HGN. See *State v. Witte*, 251 Kan. 313, 836 P.2d 1110, 1120 (Kan. 1992).

"The clear majority of courts have held that HGN was a form of scientific evidence that needed to meet the Frye test of general [**80] acceptance, and that the technique had not reached the stage where it was generally recognized as reliable." Scientific Evidence, supra, at 209-10 (footnotes omitted); see also, e.g., *State v. Murphy*, 953 S.W.2d 200, 202-03 (Tenn. 1997); *State v. Witte*, 836 P.2d at 1119-20. VII.

The Drug Evaluation as well as HGN testing were designed to be used as a tool for roadside investigation in DUI cases. The officer's preliminary diagnosis must then be confirmed by appropriate chemical testing. The NHTSA is quite specific in saying that Drug Evaluation and HGN results are **not** definitive, and **must** be confirmed by appropriate chemical testing.

In its first certified question the county court asks:

1. Is the Frye general acceptance standard applicable to the DRE protocol?

The answer is yes. The Drug Examination includes scientific, as well as nonscientific elements. The scientific principles are being applied in a new way, to arrive at a science-based roadside test for drug and alcohol consumption. Frye is applicable.

The county court's second certified question is:

2. Assuming the Frye general acceptance standard is inapplicable, [**81] is DRE testimony and evidence admissible under the relevancy standard?

The Frye general acceptance standard is applicable. However, assuming arguendo that it is inapplicable, the scientific portions of the Drug Evaluation should be excluded. The 1996 Validation Study shows the Drug Evaluation results to be unreliable, confusing to the jury, and unfairly prejudicial to the defendant.

The third certified question is:

3. Is DRE testimony and evidence admissible if the Frye general acceptance

standard is applicable?

The scientific portions of the Drug Examination should be excluded. The NHTSA materials themselves make clear that the scientific portion of the Drug Evaluation is intended simply to give the Examiner guidance in making a **preliminary** diagnosis of what substances the driver has consumed. This **must** be confirmed by appropriate chemical testing. Chemical testing is authoritative; the Drug Evaluation is not. The 1996 Validation Study yields a forty-four- to fifty-one-percent confirmation rate, which is much too low to be permitted on the issue of guilt or innocence in a criminal case.

4. [**82] May the State prove that a subject had an unlawful breath or blood alcohol level based on HGN test results alone under Bender

The answer is no, for the same reasons outlined for question three.

The order under review should be reversed in its entirety.

[*50] APPENDIX

The fourth certified question is:

INDICATORS CONSISTENT WITH DRUG CATEGORIES			
	DEPRESSANT	STIMULANTS	HALLUCINOGEN
HGN	PRESENT	NONE	NONE
VERTICAL	PRESENT		
NYSTAGMUS	(HIGH DOSE)*	NONE	NONE
LACK OF			
CONVERGENCE	PRESENT	NONE	NONE
PUPIL SIZE	NORMAL (1)	DILATED	DILATED
REACTION TO			
LIGHT	SLOW	SLOW	NORMAL (3)
PULSE RATE	DOWN (2)	UP	UP
BLOOD			
PRESSURE	DOWN	UP	UP
BODY			
TEMPERATURE	NORMAL	UP	UP

3 Certain psychedelic amphetamines cause slowing.

- 1 SOMA, Quaaludes usually dilate pupils.
- 2 Quaaludes and ETOH may elevate.

INDICATORS CONSISTENT WITH DRUG CATEGORIES				
	PCP	NARCOTIC	INHALANT	CANNABIS
HGN	PRESENT	NONE	PRESENT	NONE
VERTICAL			PRESENT	

NYSTAGMUS	PRESENT	NONE	(HIGH DOSE)*	NONE
LACK OF				
CONVERGENCE	PRESENT	NONE	PRESENT	PRESENT
PUPIL SIZE	NORMAL	CONSTRICTED	NORMAL (4)	DILATED (6)
REACTION TO	LITTLE OR			
LIGHT	NORMAL	NONE VISIBLE	SLOW	NORMAL
PULSE RATE	UP	DOWN	UP	UP
BLOOD				
PRESSURE	UP	DOWN	UP/DOWN (5)	UP
BODY	UP/DOWN/			
TEMPERATURE	UP	DOWN	NORMAL	NORMAL
*high dose for that particular individual				
FOOTNOTE:				
These indicators are those most consistent with the category, keep				
in mind that there may be variations due to individual reaction,				
dose taken and drup interaction				

[**83]

solvents and aerosols.

6 Pupil size possibly normal.

4 Normal but may be dilated.

5 Down with anesthetic gases, up with volatile