

NORTH CAROLINA COURT OF APPEALS

EDWARD HORNE,	)	
	)	
Plaintiff-Appellant,	)	
	)	
v.	)	DOCKET NO. I-1608
	)	
MARVIN L. GOODSON LOGGING CO.,	)	I.C. NO. 809927
	)	
and	)	
	)	
SELF-INSURED (Hewitt, Coleman &	)	
Associates, Inc.),	)	
	)	
Defendants-Appellees.	)	

MOTION FOR LEAVE TO FILE BRIEF OF AMICI CURIAE
AND BRIEF OF
AMERICAN PSYCHOLOGICAL ASSOCIATION AND
NORTH CAROLINA PSYCHOLOGICAL ASSOCIATION
AS AMICI CURIAE IN SUPPORT OF APPELLANT

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Pursuant to Rule 28(i) of the North Carolina Rules of Appellate Procedure, the American Psychological Association and the North Carolina Psychological Association respectfully move this Court for leave to file a Brief Amici Curiae in this case.

The American Psychological Association (APA) is a voluntary, nonprofit, scientific and professional organization with more than 60,000 members, including 1,202 members in North Carolina. Since its founding in 1892, APA has been the major association of psychologists in the United States. APA includes the vast majority of psychologists holding doctoral degrees from accredited universities in this country. More than 40,000 of APA's members are psychologists who are licensed by their states to provide health care services. APA's Division of Clinical Neuropsychology (Division

Amici believe that the majority decision of the Industrial Commission is anachronistic and contrary to both modern rules of evidence and modern theory and practice in assessing and evaluating brain injury. As a national organization and a state organization of psychologists, amici believe they can offer this Court a comprehensive analysis -- from legal, professional, and empirical perspectives -- on the fundamental issue in this case. That issue is whether the Industrial Commission's failure to consider the testimony of a highly trained, experienced, and qualified neuropsychologist on the issue of disability resulting from brain injury was prejudicial and reversible error, at variance with North Carolina rules of evidence, unsupported by prior decisions of the courts of this State, and in violation of the North Carolina Constitution.

Amici hope that its expertise and the empirical data it seeks to present will both amplify the arguments of the parties on this issue and help this Court arrive at a carefully considered opinion in this case. APA has contributed amicus briefs in a number of cases in both the federal courts, including the Supreme Court, and state courts, at various levels. These briefs have addressed a wide variety of scientific and professional issues, including briefs on the admissibility of expert psychological testimony. See, e.g., State v. Kelly, 97 N.J. 178, 478 A.2d 364 (1984); Jenkins v. United States, 307 F.2d 637 (D.C. Cir. 1962) (en banc).

Amici recognize that this motion and accompanying brief are filed out of time. However, this case did not come to the attention of APA and NCPA until after the briefs of the parties were filed. Amici respectfully request that this Court use its discretion and grant their Motion so that the important information they seek to present can be made known to this Court.

N.C. 289, 139 S.E. 443 (1927); Robinson v. J.P. Stevens, 57 N.C. App. 619, 292 S.E.2d 144 (1982).

The Commission's legal conclusions are reviewable by this Court and should not be accorded any presumptive deference, particularly when its legal rulings fail to afford the plaintiff-appellant the right to fully and fairly present evidence in support of his claim under the North Carolina Worker's Compensation Act. Grant v. Burlington Industries, Inc., 77 N.C. App. 241, 335 S.E.2d 327 (1985); Hilliard v. Apex Cabinet Co., 305 N.C. 593, 290 S.E.2d 682 (1982). The Commission's failure to hear and consider Dr. Puente's testimony, amici respectfully submit, was clearly erroneous, an abuse of discretion, and based on a serious misunderstanding of the law of evidence in this State. 1 H. Brandis on N.C. Evidence § 133 (1982).

II. THE INDUSTRIAL COMMISSION'S MAJORITY DECISION TO EXCLUDE THE TESTIMONY OF THE EXPERT NEURO-PSYCHOLOGIST WITNESS WAS CLEARLY ERRONEOUS AS A MATTER OF LAW.

A. The Decision Of The Industrial Commission Is Based On Archaic And Obsolete Notions Rejected By Modern Day Authority In The United States.

Psychologists have provided information as expert witnesses in forensic settings since at least the early 1920's but it was not until 1940 that the issue of the admissibility of psychologists' testimony was formally addressed by a state supreme court. Three decisions, People v. Hawthorne, 293 Mich. 15, 291 N.W. 205 (1940)^{1/}, Hidden v. Mutual Life Ins. Co., 217 F.2d

^{1/} Accord, People v. Crawford, 66 Mich. App. 581, 239 N.W.2d 670 (1976) (extended Hawthorne to issue of competency to stand trial). In Hawthorne, a

jury to disregard the testimony of the three defense psychologists on the ground that they were not competent to give a medical opinion on whether the accused was suffering from a mental disease or defect when he committed the alleged crimes. Id. at 639, 642-43.

The majority (in a decision in which Judge, now Chief Justice, Burger concurred) sharply criticized the trial judge's per se exclusion of psychological expert testimony predicated on the witness' lack of medical training. Advocating a less dogmatic rule, the court emphasized that the standard of admissibility for such testimony must be evaluated in terms of its probative value to the trier of fact, observing:

We hold only that the lack of a medical degree, . . . [is] not automatic disqualification[.]. Where relevant, th[is] matter[] may be shown to affect the weight of their testimony, even though it be admitted in evidence. The critical factor in respect to admissibility is the actual experience of the witness and the probable probative value of his opinion.

Id. at 646 (emphasis added). Earlier in its opinion, the court noted:

The determination of a psychologist's competence to render an expert opinion based on his findings as to the presence or absence of mental disease or defect must depend upon the nature and extent of his knowledge. It does not depend upon his claim to the title "psychologist." . . . When completion of [graduate] training is followed by actual experience in the treatment and diagnosis of disease in association with psychiatrists or neurologists, the opinion of the psychologist may properly be received in evidence.

Id. at 645 (footnotes omitted). The Jenkins court rejected the rigid medical-nonmedical distinction applied by the trial judge in favor of a standard designed to ensure the probativeness of the testimony.

Noting that not every psychologist may possess the requisite degree of skill and training required to diagnose mental conditions and to relate

commentators^{10/} and by the American Bar Association.^{11/}

B. The Decision Of The Industrial Commission Is Not Only An Anomaly When Viewed From A National Perspective, But Is Contrary To North Carolina Law As Well.

The admissibility of testimony by experts and the rendering of their opinions is controlled by North Carolina's Rules of Evidence. N.C. Gen. Stat. § 8C-1. Unlike the Industrial Commission's pinched interpretation of the admissibility of expert testimony on the issue of brain injury, the Legislature of this State in adopting Rules of Evidence, in line with the federal rules of evidence, has not created any artificial and arbitrary restriction concerning such testimony. Contrary both to the purposes of the Workers' Compensation Act, N.C. Gen. Stat. § 97-1 et seq. which this State's supreme court has held should be liberally construed,^{12/} and the Rules of

^{10/} See Bonnie & Slobogin, The Role of Mental Health Professionals in the Criminal Process: The Case for Informed Speculation, Va. L. Rev. 427 (1980); Lassen, The Psychologist as an Expert Witness in Assessing Mental Disease or Defect, 50 A.B.A. J. 239 (1964); Levine, Psychologist as Expert Witness in "Psychiatric" Questions, 20 Clev. St. L. Rev. 235 (1955); Levitt, The Psychologist: A Neglected Legal Resource, 45 Ind. L. J. 82 (1969); Louisell, The Psychologist in Today's Legal World, 39 Minn. L. Rev. 235 (1955); Nash, Parameters and Distinctiveness of Psychological Testimony, 5 Prof. Psychology 239 (1974); Pacht, Kuehn, Bassett & Nash, The Current Status of the Psychologist as an Expert Witness, 4 Prof. Psychology 409 (1973); Perlin, The Legal Status of the Psychologist in the Courtroom, in The Role Of The Forensic Psychologist 26-36 (G. Cooke, ed. 1980); Rice, The Psychologist as Expert Witness, 16 Am. Psychologist 691 (1961); Note, Psychologist's Diagnosis Regarding Mental Disease or Defect Admissible on Issue of Insanity, 8 Vill. L. Rev. 119 (1962); Comment, The Psychologist as an Expert Witness, 15 Kan. L. Rev. 88 (1966); Cooke & Jackson, Competence to Stand Trial: Role of the Psychologist, 2 Prof. Psychology 373 (1971); Gaines, The Psychologist as an Expert Witness in a Personal Injury Case, 29 Marq. L. Rev. 239 (1956).

^{11/} See ABA, Standards for Criminal Justice, Standards 7-3.11; 7-3.12 (1984).

^{12/} See Cates v. Hunt Constr. Co., Inc., 267 N.C. 560, 148 S.E.2d 604 (1966).

is not contemplated by Rule 702. The lengthy voir dire by both the proponent and opponent of the testimony, Tpp. 28-34, demonstrate that Dr. Puente was highly qualified as an expert in brain injury by virtue of his "knowledge, skill, experience, training" and "education." See also, Parts IV and V, infra.

As this Court has stated, "[t]he determinative test for the admission of expert testimony is 'whether the opinion expressed is really one based on the special expertise of the expert, that is, whether the witness because of his [or her] expertise is in a better position to have an opinion on the subject than is the trier of fact'." Grant v. Burlington Industries, Inc., 77 N.C. App. 241, 245, 335 S.E.2d 327, 331 (1985), quoting State v. Wilkerson, 295 N.C. 559, 568-569, 247 S.E.2d 905, 911 (1978) (brackets in original). "An expert witness is one who through study or experience or both is better qualified than the [trier of fact] to form an opinion on a particular subject. See Brandis on N.C. Evidence, 2nd Rev. Ed. Sec. 133." Bryant v. Sampson Memorial Hospital, 72 N.C. App. 203, 204, 323 S.E.2d 478, 479 (1984), cert. denied, 313 N.C. 507, 329 S.E.2d 390 (1985). "An [expert] witness' testimony should not be excluded because there are other witnesses who are better qualified or more knowledgeable. . . . It is well settled that to qualify as an expert, a witness need not be a specialist, or have a license from an examining board, or have had experience with the exact subject matter involved, or be engaged in any particular profession. . . . It is enough that, through study or experience, the witness is better qualified than the [trier of fact] to form an opinion on the particular subject." Watts v. Cumberland County Hosp. System, 75 N.C. App. 1, 16, 330 S.E.2d 242, 252 (1985) (emphasis added; citations omitted).

System, 75 N.C. App. 1, 330 S.E.2d 242 (1985).^{14/} Finally, a unanimous decision of this Court in Maloney v. Hospital Systems, Inc., 45 N.C. App. 172, 262 S.E.2d 680 (1980) held that the trial judge had committed reversible error in excluding a nurse's testimony on the issue that plaintiff's injury was caused by an improperly administered intravenous injection. In the court's words, the issue before it was "whether an expert who is not a medical doctor may give expert opinion testimony as to the cause of a physical injury." Id. at 174, 262 S.E.2d at 681. The nurse was neither a physician nor licensed to diagnose illness or injury or to prescribe treatment. Nevertheless, this Court held that "the giving of expert testimony should not be limited to those witnesses who are licensed in some particular field of endeavor." Id. at 684, 262 S.E.2d at 684. The Court recognized that the nurse's "expertise is different from, but no less exalted than, that of the physician" and found "no basis or justification . . . for establishing a preferred or exclusive class among medical expert witnesses." Id.

^{14/} Even though this action was brought against a licensed marital and family therapist, the court characterized the action as one involving medical malpractice. "A medical malpractice action is any action for damages for personal injury or death arising out of the furnishing or the failure to furnish professional services by a health care provider as defined in G.S. 90-21.11." Id. at 9, 330 S.E.2d at 249. Under N.C. Gen. Stat. § 90-21.11, health care providers include physicians, psychiatrists, and psychologists. Thus, this Court has accorded the term "medical" broad construction not limited solely to the provision of health care services by a physician. The Commission's rigidly constricted definition of the term "medical" in the context of expert witness testimony on the issue of disability is discordant, therefore, with prior holdings of this Court.

tear of the workman, as well as the machinery, shall be charged to the industry." Id. at 563, 148 S.E.2d at 607. To accomplish this goal, the Act "should be liberally construed to the end that the benefits thereof shall not be denied upon technical, narrow, and strict interpretation." Id., quoting Guest v. Brenner Iron & Metal Co., 241 N.C. 448, 85 S.E.2d 596 (1955).

This Court should give little or no deference to the Commission when it seeks to impose strict, narrow, inappropriately constraining evidentiary interpretations that would deprive workers of their substantive rights under the Worker's Compensation Act. By foreclosing the testimony of a health care professional who the Commission itself admits is an expert and who has scientific, technical, and specialized knowledge that would help the Commission decide a fact in issue disservices the worker, undermines the purposes of the Worker's Compensation Act, is contrary to the explicit language of the Legislature's evidentiary rules, and is most probably an unconstitutional usurpation of power by the Commission.

III. PROFESSIONAL PSYCHOLOGISTS ARE QUALIFIED TO
PERFORM FORENSIC PSYCHOLOGICAL EVALUATIONS AND TO
TESTIFY AS EXPERTS IN WORKER'S COMPENSATION
HEARINGS AND OTHER JUDICIAL PROCEEDINGS.

Amici believe that the appellant in this case was entitled to present the testimony of a practicing and licensed psychologist concerning the presence or absence of brain injury and, if present, its etiology (causative factors) and disabling effects. Professional psychologists, by virtue of their education, training, and experience, the strict evaluation of their credentials by state licensing authorities, and their participation as independent providers of mental health services in federal, state, and private third-party reimbursement plans, are recognized as fully qualified to assess

- (4) individual behavior (e.g., personality theory, human development, individual differences, abnormal psychology).^{17/}

In contrast, physicians are required to have very little training specifically related to mental or emotional disorders or to central nervous system deficits to treat those disorders -- all they need is an M.D. degree. Moreover, basic medical education includes only very limited coursework or clinical experience with mentally disordered or brain injured persons.

2. Licensure and Certification

To offer services, including evaluations and diagnoses, to the public for a fee as an independent practitioner, all 51 jurisdictions, including North Carolina, N.C. Gen. Stat. § 90-270.1 et seq. (1985), require psychologists to be licensed or certified.^{18/} In North Carolina, as in most states, licensure requires successful completion of a doctoral program in psychology at an accredited university, "at least two years of acceptable and appropriate supervised experience germane to his area of practice as a psychologist," and satisfactory passage of an examination in psychology administered by the State Board of Examiners in Psychology. N.C. Gen. Stat. § 90-270.11. Few other health professions require of their practitioners as

^{17/} APA, Criteria for Accreditation of Doctoral Training Programs and Internships in Professional Psychology (January 1979).

^{18/} F. Lahman, Licensure Requirements for Psychologists: USA and Canada (1978); Stigall, Licensing and Certification in Professional Psychologist's Handbook 285 (B. Sales ed. 1983). Certification laws limit the use of the title "psychologist" while licensing laws, like North Carolina's, regulate the use of the title and also define the scope of those activities for which a license is required.

school psychology, adopted in 1980. These four areas constitute the principal fields of specialization in applied psychology. Neuropsychology is both a scientific research discipline in its own right and a subset of professional psychology.

B. Psychology Has Been Recognized As An Independent Profession Whose Practitioners Are Competent To Provide Expert Diagnostic And Assessment Services.

Given their intensive training, and the rigorous licensure, certification, and ethical standards which regulate their profession and ensure the quality of their work, it is not surprising that psychologists are viewed as leaders among health care professionals offering diagnostic and assessment services in the area of mental disability. Recognition of psychology as an independent profession providing mental health services on a coequal footing with physicians is expressed not only in public attitudes but also in federal and state statutory and regulatory law and in private sector practices. See Blue Shield v. McCreedy, 457 U.S. 465 (1982); Virginia Academy of Clinical Psychologists v. Blue Shield of Virginia, 624 F.2d 476 (4th Cir. 1980), cert. denied, 450 U.S. 916 (1981).

Most relevant federal statutes require direct recognition of clinical psychologists as independent health-care providers, i.e., as persons qualified to deliver services without mandatory referral or supervision by a physician.^{22/} Two notable examples of such statutes are the Federal

^{22/} E.g., Federal Employees Compensation Act, 5 U.S.C. § 8101(2) (1976); Vocational Rehabilitation Act, 29 U.S.C. § 723(a)(1) (1976); Health Maintenance Organization Act, 42 U.S.C. § 300e-1 (1976); 42 C.F.R. §§ 110.101, 110.104 (1980); Disaster Relief Act, 42 U.S.C. § 5183 (1976); 42 C.F.R. § 38.2(e) (1980); Veterans Health Care Expansion Act, 38 U.S.C. § 613(b) (1976); Comprehensive Employment and Training Act, 29 U.S.C. §§ 801 et seq. (1976); 29 C.F.R. § 94.4(bb) (1978).

approximately 80 percent of all health insurance contracts issued by United States companies, formally supports the introduction of such "freedom of choice" legislation in the remaining states and has endorsed a model statute.

Forty-five states, including North Carolina, reimburse psychologists for services provided under their workers compensation laws.^{27/} North Carolina, like the majority of states, recognizes the importance of confidentiality between psychologists and their patients, and protects those confidences from inappropriate disclosure under this State's privileged communication statute. N.C. Gen. Stat. § 8-53.3 (1983). In Internal Revenue Service's instructions to taxpayers for Standard Form 1040, the federal government since 1973 has permitted deductions for payments to psychologists under "Itemized Deductions for Medical and Dental Expenses." A number of other federal laws also recognize psychologists as valuable, independent practitioners in the provision of health care.^{28/}

C. Psychologists Are Respected Participants In
The Provision Of Health Care Delivery And
Collaborate Closely With Their Physician
Counterparts.

The qualifications and unique perspective of psychologists, make their contributions extremely valuable in a variety of health care and medical settings. The first Department of Medical Psychology was opened at the Oregon

^{27/} National Commission on Workers Compensation Laws, 2 Supplemental Studies (1972).

^{28/} E.g., Rehabilitation Act of 1973, 29 U.S.C. § 701 et seq. (1973); Civilian Health and Medical Program of the Veterans Administration, 28 U.S.C. § 601 et seq. (1973).

of access to highly trained health care professionals who would bring a unique and relevant perspective to the adjudication of worker's compensation and other personal injury claims.

A. Neuropsychology Is A Respected Scientific
And Professional Discipline.

Many health care professionals are involved in the assessment, diagnosis, and treatment of head injuries. These personnel include specialists in behavioral neurology, audiology and speech pathology, neurolinguistics, neurosurgery, neurology, psychiatry, pediatrics, and rehabilitation medicine. Neuropsychologists, however, bring a unique perspective to the assessment and evaluation of central nervous system (CNS) disorders generally and head injuries particularly. Clinical neuropsychology is a specialty within psychology that integrates the specific educational, scientific, and professional contributions of the discipline of psychology with relevant developments in the neurosciences.

Neuropsychologists are educated, trained, skilled and experienced in the science of brain-behavior relationships, including functional neuroanatomy (disorders of attention, sensation, perception, concept formation, language, memory, physical movement, and emotions); clinical diseases; psychophysiological principles underlying pathology; sociocultural influences on behavior; clinical and behavioral neurology; principles of assessment and interviewing; principles of test construction, administration, and validation; and specialized neurodiagnostic technologies.^{32/}

^{32/} See generally C. Golden & P. Vicente, Foundations of Clinical Neuropsychology (1983); S. Filskov & T. Boll, Handbook of Clinical Neuropsychology (1981); A. Luria, Higher Cortical Functions in Man (1980); K. Heilman & E. Valenstein, Clinical Neuropsychology (1979); R. Reitan & L. Davison, Clinical Neuropsychology: Current Status and Applications (1974).

B. Neuropsychologists Can Offer Unique Perspectives On The Presence Of Brain Injury And On The Disabling Effects Of Such Injury On Behavior.

1. The Most Serious Results of Brain Injury are Its Effects on Cognitive, Emotional, and Behavioral Functioning.

Injuries to the skull and brain can cause diverse disturbances of function.^{33/} Intensive study of numerous brain damaged patients -- including the victims of closed head injuries, penetrating wounds, and of brain viruses and other central nervous system diseases -- has yielded an impressive body of information about the mental, emotional and behavioral manifestations of brain injury.

The brain subserves all sensory functions (e.g., seeing, hearing) and all motor functions (e.g., walking), but the brain also does much more. The brain is the physical substrate of all human cognition or thought processes, and all human emotions. Hearing, seeing and walking are extremely elementary compared to the brain processes that are required for problem-solving, abstract thinking, and feeling. This is why the results of brain injury can be so far reaching.

When a moving head strikes a stationery object, or a stationery head is struck by a moving object, as in this case, the damage that results can be severe, extensive and irreversible, even where the skull is neither penetrated nor broken.^{34/} This is because brain damage results both from the immediate

^{33/} H. Levin, A. Benton & R. Grossman, Neurobehavioral Consequences of Closed Head Injury 3 (1982) [hereinafter Levin, et al.].

^{34/} B. Jennett & G. Teasdale, Management of Head Injuries 13 (1981) [hereinafter Jennett & Teasdale]. ("Recent experimental, clinical and

of the victim,^{40/} and incidents of prior head trauma.^{41/}

A vast amount of literature has described the cluster of symptoms suffered by persons who have sustained closed head injuries. These symptoms occur even in patients who never lost consciousness, but also characterize many of the patients who emerge from coma. They can be grouped into general categories:

somatic complaints: headache (which is the most frequent and persistent complaint), sensitivity to noise, restlessness, dizziness, fatigue and lessened "vitality of behavior";

cognitive or intellectual deficits: mental confusion or disorientation, memory impairment, depressed IQ or retardation, loss of ability to concentrate, decreased attention span, and impaired judgment;

psychological or psychiatric disorders: depression, anxiety, irritability, suspiciousness, hostility, emotional lability or instability (including reduced control over aggression and explosions of violence under minor provocation), affective blunting or emotional withdrawal, hallucinations, obsessional and hysterical illnesses, neuroses and schizophrenia;

social adjustment problems: unemployment, family disruption and marital problems, abandonment of former interests, social withdrawal and isolation.^{42/}

^{40/} Id. at 58; Lishman, supra note 37 at 307; T. Boll, Behavioral Sequelae of Head Injury in Head Injury 369 (P. Cooper ed. 1982) [hereinafter Boll].

^{41/} Rimel, Giordani, Barth, Boll & Jane, Disability Caused by Minor Head Injury, 9 Neurosurgery 221 (1981) [hereinafter Rimel, et al.].

^{42/} See Bond, supra note 39; Rimel, et al., supra note 41; Barth, et al., supra note 37; Lishman, supra note 37; Jane, Rimel, Pobereskin, Tyson, Steward & Gennarelli, Outcome and Pathology of Head Injury in Head Injury: Basic and Clinical Aspects 229 (R. Grossman and P. Gildenberg eds. 1982) [hereinafter Jane, et al.]; Dikmen & Reitan, Emotional Sequelae of Head Injury, 2 Ann. Neurol. 492-494, (1977) [hereinafter Dikmen & Reitan]; Levin & Grossman, Behavioral Sequelae of Closed Head Injury, 35 Arch. Neurol. 720-727 (1978) [hereinafter Levin & Grossman]; Levin, Grossman, Rose & Teasdale, Long-term Neuropsychological Outcome of Closed Head Injury, 50 J. Neurosurg. 412-422 (1979); Boll, supra note 40.

followed by brief periods of unconsciousness produce extensive organic or physical damage.^{44/}

3. Neurological Examinations and
Neuroradiological Tests Are Very Limited
in their Capacity to Detect Brain Damage.

In addition to a cursory 15 minute mental status examination, Dr. Wilfong testified that he also had administered to Mr. Horne an X-ray and a computerized tomography or CAT scan. Neither of these diagnostic devices are particularly accurate in detecting brain injury.

^{44/} See, e.g., Oppenheimer, Microscopic Lesions in the Brain Following Head Injury, 31 J. Neurol. Neurosurg. & Psychiatry 299, 306 (1968) (summarizing the results of microscopic examination of the brains of 59 humans who had sustained minor head injuries, but had died of other causes, the author states: "The point to be stressed in regard to these cases of 'concussion' is that permanent damage, in the form of microscopic destructive foci, can be inflicted on the brain by what are regarded as trivial head injuries."). Jane, Steward & Gennarelli, Axonal Degeneration Induced by Experimental Noninvasive Minor Head Injury, 62 J. Neurosurg. 96 (1985) (summarizing decades of research the authors conclude, "[a]ll these studies suggest that even minor head injury may result in structural damage to axons."); "[f]urther evidence from neuropsychological testing and brain-stem evoked potential measurements performed on patients with minor head injuries indicates that there may be an organic component to minor head injury. The experimental material presented here strongly supports this contention since, even with 'minor' injury, degeneration is seen in the brain stem." *Id.* at 99. Jane, et al., *supra* note 42 (after explaining the results of their research inducing minor injury in experimental animals, the researchers stated that "[t]hese findings support the contention that minor head injury can be associated with organic damage to the nervous system."). See also R. Restak, The Brain (1984); Jennett & Teasdale, *supra* note 34; Levin, et al., *supra* note 33 at 7-8. The neuropathology or brain injury caused by concussive brain injuries has also been described by Bakay, Lee & Lee, Experimental Cerebral Concussion. Part I: An Electron Microscopic Study, 47 J. Neurosurg 525-531 (1977); Brown, Yoshida & Canty, Experimental Concussion: Ultrastructural and Biochemical Correlates, 67 Am. J. Pathol. 41-68 (1972); Foltz, Jenkner & Ward, Experimental Cerebral Concussion, 10 J. Neurosurg. 342-352 (1953); Nevin, Neuropathological Changes in the White Matter Following Head Injury, J. Neuropathol. Experimental Neurology 77-84 (1967); Parsons, Skinner, Fitzgerald, Neurofiber Degeneration in the Brain of Rats Following a Single Cerebral Concussion, 6 Soc. Neurosci. Abstr. (1980 (Abstract)); Povlishock, Becker & Cheng, Axonal Change in Minor Head Injury, 42 J. Neuropathol. Experimental Neurology 225-242 (1983).

The time since head injury is only one limitation of the CAT scan. As wonderful a scientific advance as it represents, its fallibility in detecting known brain damage is simply very high. In fact, one of the most significant studies in establishing the value of computerized tomography showed that almost one-half of the patients who were in deep coma had normal CAT scans.^{47/} Numerous other researchers have similarly documented the limitations of the CAT scan.^{48/}

Evidence of the physical damage resulting from "minor" head trauma, and the frequent inability of CAT scans to detect these microscopic lesions, further delimit the capability of neuroradiologic techniques to define brain damage in the living brain injured patient. Of course, the greatest limitations are that X-rays and CAT scans can provide no information on changes in a patients' intellect, emotions or behavior.^{49/} This is why,

^{46/} Footnote continued:

minor abnormality may have resolved despite the continuing obtundation of the patient and the scan will be normal."); "[a]t some time in the resolution of subdural blood, estimated between two weeks and six weeks in our material, the fluid in the subdural space may have the same approximate density as brain tissue on the CAT scan." Id. at 174.

^{47/} French & Dublin, supra note 46.

^{48/} Jennett & Teasdale, supra note 34 at 115 (autopsy findings showed that a normal scan was compatible with severe hypoxic brain damage and with severe impact white matter damage); Levander, Stattin & Svendsen, Computer Tomography of Traumatic Intra- and Extracerebral Lesions, 346 Acta Radiology Scan. Suppl. 107-118 (1975) (29 of approximately 70 head injured patients [41%] had an abnormal CAT scan); Baker, Campbell, Houser, et al., Computer Assisted Tomography of the Head, 49 Mayo Clinic Proc. 17 (1974) (ten of 27 head injured patients [37%] had an abnormal CAT scan). See also Barth, et al., supra note 37; Snoek & Jennett, After Recent Severe Head Injury in Patients Without Acute Intracranial Hematoma, 42 Journal of Neurology, Neurosurgery and Psychiatry 215 (1979) [hereinafter Snoek & Jennett].

^{49/} Boll, supra note 40 at 372.

emotional and behavioral dysfunction often occurs in patients who have normal neurological examinations.^{54/}

4. Neuropsychological Testing for Cognitive, Emotional, and Behavioral Dysfunction is the Only Means of Diagnosing Some Forms of Brain Damage.

Because many brain dysfunctions occur in patients who have normal radiological findings and normal neurological examinations, any serious attempt to assess brain damage must include a battery of scientifically validated tests to assess the many complex and higher order processes.^{55/} This is the very definition of neuropsychological assessment. At a minimum, it will include specific tests or subtests to measure: Intelligence and academic achievement; motor skills; attention and concentration; perception; language; memory; information processing; and personality.^{56/} These areas were comprehensively covered by Dr. Puente in his neuropsychological assessment of Mr. Horne.^{57/}

^{54/} See, e.g., Levin & Grossman, supra note 42; Rimel, et al., supra note 41, Bolt, supra note 40; Jane, et al., supra note 42.

^{55/} Dikmen & Reitan, supra note 42; Dikmen & Reitan, Neuropsychological Performances in Posttraumatic Epilepsy, 19 Epilepsia 177 (1978); H. Teuber, Recovery of Function after Brain Injury in Man in Outcome of Severe Damage to the Central Nervous System (R. Porter, D. W. Fitzsimmons eds. 1975); Levin & Grossman, supra note 42; R. DeJong, The Neurological Examination (1967).

^{56/} Bolt, supra note 40 at 370.

^{57/} Among the tests used by Dr. Puente were the MMPI, the Bender Gestalt, and the Luria-Nebraska Neuropsychological Battery. The MMPI is the most researched and most frequently administered instrument for personality assessment. The Bender Gestalt is one of the most common instruments to assess overall brain function; it too has been thoroughly researched, and its validity repeatedly documented. O. Buros (ed.), 1 The Eighth Mental Measurements Yearbook 181-185 (1978). The Luria-Nebraska Neuropsychological Battery was originally devised by Aleksandr R. Luria, whose "conceptual

- V. THE NEUROPSYCHOLOGIST WHOSE TESTIMONY WAS EXCLUDED IN THIS CASE MEETS ALL THE CRITERIA FOR ADMISSION AS AN EXPERT WITNESS ON THE ISSUE OF DISABILITY RESULTING FROM BRAIN INJURY AND WOULD HAVE OFFERED A UNIQUE, COMPREHENSIVE, AND RELEVANT OPINION ON THAT ISSUE TO THE INDUSTRIAL COMMISSION.

As a result of his work-related accident in July 1980, during which a 900- to 1200-pound log fell approximately 14 1/2 feet and striking Mr. Horne on the head, he suffered a compression fracture of his twelfth thoracic vertebra and ruptured disc between the fifth lumbar and first sacral segments. He lost all of his remaining top teeth, one of which had to be surgically removed from where it had been embedded in the gum. Mr. Horne also required 83 stitches to close the lacerations in his face and head.

In addition to these injuries, Mr. Horne's wife reported severe changes in his personality and behavior. Although he used to be "a very outgoing person" with "a lot of friends," Tp. 129, he was reported now to suffer from sensitivity to noise, sleep disturbance, depression, auditory hallucinations, Tp. 130, and visual hallucinations, Tp. 132. In addition, Mrs. Horne reported that Mr. Horne could no longer stand large crowds, Tp. 132, could no longer control his temper, Tp. 130, and flared into rage attacks against their son, Tp. 133.

Because of severe and persistent headaches, Mr. Horne visited a neurologist, Dr. Robert Wilfong, in June of 1981. Dr. Wilfong diagnosed Mr. Horne as having a concussion and, although this was already almost a year after the accident, Dr. Wilfong suggested that Mr. Horne take aspirin and limit his activity for the "first four to six weeks." Tp. 174 (emphasis added). At the time of this diagnosis, Dr. Wilfong knew nothing about the nature of Mr. Horne's accident or the resulting injuries. He had no medical

publication. A significant number of those papers concern research on the assessment of brain injured adults.^{60/}

Dr. Puente is also a practicing psychologist in North Carolina licensed under N.C. Gen. Stat. § 270.1 et seq. As such, he is permitted to offer his services for a fee and to call himself a psychologist. Id. at §§ 90-270.2; 90-270.16. Among the services he is legally permitted to perform are "interviewing . . . and administering and interpreting instruments for the assessment and evaluation of mental abilities, . . . personality characteristics, emotions, and motivation; diagnosis" Id. at § 90-270.2. See Wesley v. Greyhound Lines, Inc., 47 N.C. App. 680, 687, 268 S.E.2d 855, 862, cert. denied, 301 N.C. 239, 283 S.E.2d 136 (1980) ("A psychologist in the rendering of professional psychological services may apply psychological principles and procedures for the purposes of understanding, predicting, or influencing the behavior of individuals" including the diagnosis of external occurrences that may have permanent psychological effects.)^{61/}

Beginning in October 1983, and continuing periodically until September 1984, Dr. Puente conducted an extensive neuropsychological examination of Mr. Horne. Dr. Puente wrote a 17 page, single-spaced report concerning Mr. Horne in which he listed the evaluation procedures used,

^{60/} Those articles include, e.g., Puente & Heidelberg-Sanders, The Use of the Luria-Nebraska Neuropsychological Battery in Detecting Brain Damage in Schizophrenics, 4 Clinical Neurology 182 (1982); Puente, The Role of Clinical Neuropsychology in Disability Determinations, 4 Social Security Forum 10 (1983); Puente, Neuropsychological Profiles of Mentally-Impaired, Brain-Damaged Individuals Who Have Successfully Appealed Social Security Disability Determinations, 6 Int'l J. of Clin. Neuropsychology 79 (1980).

^{61/} A full rendition of Dr. Puente's credentials appear at Tpp. 141-146.

A brief examination, especially one limited to a 15-minute mental status examination, fails to provide a sufficient basis for an accurate and reliable professional opinion and is devoid of any meaningful behavioral assessment. If such a brief examination on such an important and complex issue as the presence of brain injury were performed by a clinical psychologist, it would be considered in violation of professional standards and ethics.

Proper clinical evaluation also requires the establishment of a trusting relationship with the examiner, in a physical setting that is conducive to evoking the spontaneous and candid exchange with the patient that forms the principal basis for the evaluation and helps to evoke from the patient the essential facts which will serve eventually as the basis for the formation of an expert opinion. Thus, the continued contact Dr. Puente had with Mr. Horne over the course of a year and the frequent communications he had with his family, though not absolutely essential, helped ensure that he had established sufficient rapport and understanding of Mr. Horne, his environment, and his past and then current behavior to arrive at a valid and reliable conclusion and expert opinion to a reasonable certainty.

In addition to the clinical interview, for purposes of assessment and diagnosis, clinical psychologists generally, and neuropsychologists particularly, administer certain standard psychological test batteries before rendering an opinion on the presence of brain injury (or other mental disabilities and disorders) in an individual. See generally T. Blau, The Psychologist as Expert Witness (1984); D. Shapiro, Psychological Evaluation and Expert Testimony (1984); T. Grisso, Evaluating Competencies: Forensic Assessments and Instruments (1986).

in his deposition testimony he admitted its value. Tpp. 188-189. Dr. Wilfong testified that where there is a diagnostic question "in-depth psychological testing," Tp. 188, is helpful. In this connection, Dr. Wilfong, when asked what kind of testing would be done in those situations, replied:

Well, the M.M.P.I, the Gestalt-Bender, which is an I.Q. test.^{65/} They do certain association tests. We usually have a Ph.D. psychologist do our testing for us, and they give us a whole format; and they have developed certain tests that kind of look into how one part of the brain is working with another part. And here again, you might say this is part of the neuropsychological exam, but I don't do that. Again, my exam is basically, "Are you alert and oriented; do you know who the President is; remember three objects;" and I try to quiz you on those a minute or so later, and then you go from there, and it takes all of fifteen minutes. These detailed tests that I'm referring to last a day.

Tp. 189.

If Dr. Wilfong recognizes the expertise of neuropsychologists and the comprehensive nature of the evaluation and assessment techniques they use to diagnose brain disorders, it is all the more incomprehensible that the Industrial Commission did not view it as appropriate as well.

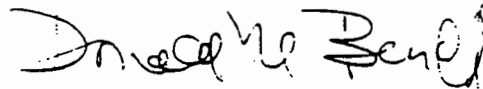
In sum, Dr. Puente's credentials, experience, training, skills, and education all fit within the requirements of North Carolina's rules on expert witnesses. His evaluation of Mr. Horne was of the highest caliber and fully met the standards of his profession. The value of Dr. Puente's work and that of his colleagues who specialize in neuropsychology were recognized by the

^{65/} Dr. Wilfong is a little confused here. The test he is apparently referring to is the Bender-Gestalt Visual-Motor Test. It was one of the tests administered by Dr. Puente. It is not an I.Q. test at all, but one of the many tests designed to measure brain dysfunction by assessing eye-hand coordination and other aspects of visual-motor functioning.

CONCLUSION

For the foregoing reasons, amici respectfully urge this Court to reverse the majority decision of the Industrial Commission on the issue of the admissibility of the expert witness testimony by neuropsychologists.

Respectfully submitted,



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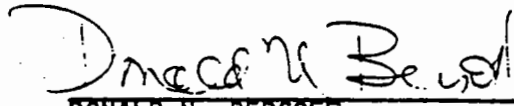
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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was served by Federal Express upon Plaintiff-Appellant's counsel, James B. Gillespie, Jr., 415 Chestnut Street, Wilmington, NC 28401 and upon Defendant-Appellee's Counsel Mel J. Garofalo, Hedrick, Eatman, Gardner, Kincheloe, 215 Executive Park, 831 Baxter Street, Charlotte, North Carolina 28230 on this 11th day of August, 1986.


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