As part of a special issue of *The Journal of Head Trauma Rehabilitation*, forensic neuropsychology is reviewed as it applies to traumatic brain injury (TBI) and other types of acquired brain injury in which clinical neuropsychologists and rehabilitation psychologists may be asked to render professional opinions about the neurobehavioral effects and outcome of a brain injury. The article introduces and overviews the topic focusing on the process of forensic neuropsychological consultation and practice as it applies to patients with TBI or other types of acquired brain injury. The emphasis is on the application of scientist-practitioner standards as they apply to legal questions about the status of a TBI patient and how best that may be achieved. This article introduces each topic area covered in this special edition. **Keywords:** forensic neuropsychology, practice standards, research standards, traumatic brain injury

**INTRODUCTION TO THE TOPICAL ISSUE ON FORENSIC NEUROPSYCHOLOGY**

Clinical neuropsychology is a key discipline in the field of traumatic brain injury (TBI) rehabilitation. Information from neuropsychological assessment and consultation is routinely used to evaluate the neurobehavioral effects of a TBI. As recovery proceeds, neuropsychological information can be used to initiate and guide therapies and make clinical judgments about patient care and management. Neuropsychological assessments provide baseline information about the neurobehavioral effects of a brain injury and a metric to track the effects of an injury. Because of the key role that neuropsychological assessments play in defining the cognitive and neurobehavioral deficits following a brain injury, neuropsychologists are often asked to render opinions that have legal implications for the individual who has sustained a TBI. The emergence of forensic neuropsychology corresponds to the increased use of neuropsychologists to address these legal issues.\(^1\)\(^,\)\(^2\)

This topical issue of *The Journal of Head Trauma Rehabilitation (JHTR)* provides an overview of the field of forensic neuropsychology as it applies to a patient with TBI, although what is discussed here has implications for any acquired brain injury about which legal questions are being asked. What follows will introduce this topical area and the specific articles that review the field of forensic neuropsychology. The field of clinical neuropsychology and the forensic implications that go with it are international in scope and that is also reflected in this issue. While the laws and judicial practices may be different between countries, the practice of clinical neuropsychology and the clinical decision-making process it entails are universally applicable. This topical issue of *JHTR* attempts to highlight the current practice of “forensic” neuropsychology as it pertains to the patient with TBI, irrespective of the country of origin or the judicial system that governs the laws of that country. This article introduces the topic and outlines the scope of the topical issue along with introducing its authors.

The latest Centers for Disease Control and Prevention (CDC) statistics on the prevalence and incidence of TBI in the United States indicate that more than 1.2 million reported TBIs have occurred annually for at least the last 2 decades.\(^3\)\(^,\)\(^4\) The incidence of mild TBI (mTBI) in patients, including individuals who do not seek medical care or follow-up but nonetheless meet criteria for mTBI, may be as high as 500 per 100 000 of the population.\(^5\) Recently, Powell et al\(^6\) have shown that more than 50% of emergency department patients who could have met criteria for mTBI never received that diagnosis, so the true TBI incidence is not precisely known. By including cases that are not seen in the emergency department immediately, medically examined, or diagnosed with mTBI but, nonetheless, sustained a head injury, the CDC acknowledges that the annual incidence in the United States may be as high as 3 million. On the basis of the recent review by Thurman et al,\(^7\) the most common cause of TBI is a transportation accident (48.9%), followed by falls (25.8%), firearms (9.7%), other assaults (7.5%), and other causes (about 8%).

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From a legal perspective, there are frequent scenarios within each of these etiologies in which liability exists (ie, another party is at fault for causing the accident or injury). The CDC estimates that there are approximately 125,000 individuals with TBI who enter the ranks of long-term disability each year. The enormity of these statistics underscores the need not only for accurate clinical assessment of neurobehavioral and cognitive effects of TBI but also for accurately and objectively addressing injury-related forensic issues that are within the scope of expertise of the clinical neuropsychologist. Neuropsychological test findings are often a major determinant for qualification or continuation of insurance benefits and may be used to determine whether persons with TBI meet service criteria for local, state, and federal government programs, including public school programs. Neuropsychological information derived from consultation and assessment can assist both private and public programs, providing services to persons with TBI, not only to ensure proper service delivery but also to protect against fraudulent cases whose incidence increases whenever secondary gain is possible.

It is clear from this brief introduction that neuropsychologists, routinely seeing patients with TBI, may have their assessments, diagnostic conclusions, and clinical work of any kind that come under legal or administrative review, and they may be asked to serve as expert witnesses. Certainly, many surveys of neuropsychological practice have indicated the primacy of forensic evaluations in the practice of clinical neuropsychology. Interestingly, there are no agreed-upon standards of practice for a neuropsychological assessment, and, in particular, for an assessment that is asked to address forensic issues. While the American Academy of Clinical Neuropsychology (AACN) has made very broad recommendations for the conduct of neuropsychological assessments, there is no universal standard prescribed by the profession and there is nothing specific to forensic-based assessments. The National Academy of Neuropsychology (NAN) has an official statement that pertains to “independent and court-ordered forensic neuropsychological examinations,” but this document provides no specific guidelines for initiating a referral, conducting a neuropsychological examination, administering appropriate tests, reporting findings, or giving recommendations or feedback. The American Academy of Neurology (AAN) does have practice guidelines for forensic neurological consultation specific to qualifications and guidelines for the physician as an expert witness. Yet, as of this writing, there is no similar document for neuropsychologists. To this end, the current issue of *JHTR* will hopefully offer some general principles that should assist the field in developing standards.

During the last 3 decades, scientific advances regarding mechanisms, nature, and neuropathological consequences of TBI have been considerable and are excellently reviewed in several large edited texts. As such, all facets of TBI, including its neuropsychological sequelae, are much more understood. *The Journal of Head Trauma Rehabilitation* has published several TBI outcome studies based on well-designed investigations that help the clinician understand the long-term consequences of a TBI. Considerable scientific and clinical information can now be brought into the discussion of forensic issues on behalf of a person with TBI whose case is in litigation. Nonetheless, the procedures, standards, and demands of the legal process are quite different from those of science or the clinical world.

The legal system is based on an adversarial process that will be the first area of review. Training to practice psychology is based on a scientist-practitioner model. This means that each clinician is in a position to bring the best scientifically based principles into the practice of clinical neuropsychology, whether it is for direct patient care or for a forensic setting. This concept, however, works only if the psychologist remains up-to-date in the field of TBI and follows a “best-practice” clinical and scientific approach. If she or he is just fulfilling the role of an “expert witness” with the focused objective of supporting the side of retention, then the role switches from scientist-practitioner to merely that of a consultant. This topical issue argues that if clinical neuropsychology is to remain a valued profession, utilized by the legal system to provide the most objective opinions possible about the neurobehavioral effects of a TBI, clinical neuropsychology needs to remain and maintain its scientist-practitioner orientation combined with scientifically grounded best practices within the field. This is essential to minimize the ethical trappings that may bias a neuropsychologist’s stated view on a given case. This area will be a focal point of the article by Wood.

While this topical issue focuses on the profession of clinical neuropsychology, similar arguments and conclusions might apply to clinical psychology, rehabilitation psychology, neurology, psychiatry, and other clinical disciplines that serve patients with TBI.

**THE ADVERSARIAL LEGAL PROCESS**

**Frontline clinician versus retained expert**

There are 2 sides with very different motives in every legal case. The common law system in the United States is designed to provide a forum for conveying appropriate information from each party to the “trier of fact,” sometimes referred to as the finder of fact, usually a jury but sometimes the judge, who is always the “trier of law”). Neuropsychological information assists the trier of fact in determining what neurobehavioral loss was sustained secondary to the defendant’s alleged acts. This process is comprehensively dealt with in other legal publications.
While a patient with TBI or family must initiate a case, the subsequent legal process is mostly controlled by the attorneys for both sides or by the court. From the moment a case is filed, legal maneuvering and positioning occur by attorneys on both sides.

Legal maneuvering has the potential to impact greatly how neuropsychological services and assessment conclusions are utilized, how treating neuropsychologists are examined and their findings utilized, and how nontreating neuropsychologists are retained in the role of expert witness, a role distinctly dissimilar from the frontline treating neuropsychologist. Given this circumstance, it should also be obvious that what happens in a legal case is not what happens in a scientific investigation in which hypotheses are tested by researchers who are independent of the outcome of their experiment(s). Attorneys are at the helm, guiding their case in the manner that they choose to best represent their client.

Neuropsychologists, because of special expertise, may also be retained as nondeclared consultants for one side or the other, their role being to assist the side that retains them to best understand the neuropsychological findings being addressed in the case. In such a circumstance, they will neither see the patient nor testify, their role being limited to consultant. Thus, first distinctions begin with the differing roles of the treating psychologist and the expert witness or consultant and the legal side that retains them. Clearly, the treating psychologist represents a direct care clinician who sees the patient as part of his or her regular duties and, as a “treater,” has a professional patient-psychologist relationship with the patient. In contrast, the expert witness is hired by one side of the legal battle or by the court. These different relationships have advocacy implications for what may be best for the patient clinically versus what may be best for the side that has retained the expert neuropsychologist.

**Clinical neuropsychology versus forensic neuropsychology**

The following motto is present at the entrance to the Mayo Clinic in Rochester, Minnesota: “The patient and only the patient’s well-being is the center of attention.” A general assumption in health-based professions is that all clinical disciplines adhere to this motto. Such a motto also becomes the focus of research that impacts a scientific investigation in which hypotheses are tested by researchers who are independent of the outcome of their experiment(s). Attorneys are at the helm, guiding their case in the manner that they choose to best represent their client.

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Once a neuropsychologist is retained as an expert witness, his or her role potentially changes, depending on the side of retention. A public demonstration of how expert opinions are used within judicial proceedings in a brain injury case was recently brought to the forefront in the case of Terri Schiavo, a woman who sustained severe anoxic brain injury. Issues regarding the clinical significance of her brain injury, her care, and right to live or die went all the way to the Supreme Court of the United States. The case demonstrated how diametrically opposite opinions could be rendered by expert witnesses in a brain injury case, depending on the side that retained them, although they had examined the same patient and viewed the same diagnostic tests and clinical information. There was no dispute over whether this individual had sustained severe and permanent brain damage. The issue was whether she had some level of intact volition and conscious perceptual abilities along with the potential to recover, or whether she was truly in a permanent vegetative state with no hope of any recovery.

Many healthcare professionals who had examined Ms Schiavo could have been selected by the attorneys, but the ones actually selected by the attorneys and whose testimony was used were those experts who were deemed...
to be the best proponents of their legal position and case presentation. In litigation, it is the attorney’s province and not the province and debates of scientists or clinicians. In the courtroom, the attorneys and the court decide who testifies and what clinical information and test results are offered. As the legal battle surrounding Ms Schiavo played itself out, it became clear that even after the best scientific practice was applied to answer questions regarding her consciousness, legitimate differences of opinion existed. When legal concerns have to be resolved, differing opinions provide justification for the court or jury, as trier of fact, to examine the reasonable arguments of both sides in order to make a decision. All sides in this case attempted to use an exemplary “best-evidence” approach grounded in science and medicine.

In healthcare, good clinical practice decisions are guided, when possible, by appropriately conducted, peer-reviewed scientific studies and by consensus opinions published within the field. Within the legal discipline, however, good legal practice is based on using all lawful means and client rights to help the client prevail—an outcome that differs from clinical and scientific objectives. As in the case of Ms Schiavo, only 1 side prevailed. Each side in the Terri Schiavo case selected prominent academic and clinical experts, but they were not individuals who did only forensic consultation. Because some neuropsychologists do only forensic work, this places a special burden on them regarding the objectivity and independence of their forensic work. As the AAN document specifies, it becomes imperative for those who do only forensic work to demonstrate why they are not biased in their opinions.

When examining individuals with TBI, there is an injury event that marks the definitive starting point of symptoms and problems related to the TBI. There is, therefore, a known date and origin. As such, there will be a time course of recovery and restoration or persistence of symptoms. Because there is a point of injury, there is no mystery about this timeline or about the medical and psychosocial history before and after the injury. Of course, injury assessment occurs against the backdrop of whatever physical and emotional health the individual had at the time of injury; premorbid factors have to be taken into consideration. If neurobehavioral symptoms are part of the clinical picture, the individual will likely be referred for neuropsychological evaluation. When a referral occurs, we think that neuropsychologists should perform the same core assessment no matter the referral source, be it clinician, attorney, insurance carrier, government program, or other entity. As a case progresses within the judicial system, a patient’s condition certainly may change or the patient may claim additional problems that require scrutiny from either side of the legal issue. Therefore, additional assessments and tests may be obtained by both sides, as necessary. When addressing forensic issues, the need to assess patient symptoms and complaints may be quite fluid. However, when a forensic neuropsychological assessment is conducted, we opine that the assessment process be similar or identical to the standard clinical assessment. This will be discussed further in the article by Schwar et al in this issue.

Regarding specific legal questions concerned with neuropsychological findings, the attorney or court should ask those questions separately, in our opinion, and the neuropsychologist should address them separately from the standard report. As an example, most neuropsychological evaluations will assess memory because memory deficits are commonplace in TBI and many other neurological and neuropsychiatric disorders. Therefore, the neuropsychological report should identify as objectively and succinctly as possible whether the patient’s memory performance was impaired during examination. Examiner discussion on the “legal” meaning of those impairments is best handled separately. Either the patient’s neuropsychological examination indicates impairment (or some change from premorbid status) or it does not, and such results should be stated as simply as that.

The potential “legal” issues regarding the neuropsychological findings or lengthy annotations about so-called forensic issues should be handled separately from the clinical report, in our opinion. This is in keeping not only with the ethics of professional psychology that prevents psychologists from practicing in areas outside of their competence but also with concerns regarding the prohibition against the expert witness offering conclusions that go to the “ultimate issue,” reflecting the legal determination of who is at fault for any harm that has occurred. While offering such conclusions is “not objectionable” in federal civil proceedings, there are restrictions against such conclusions in certain criminal proceedings, and courts apply restrictions against the “ultimate issue” in sometimes unpredictable ways. Using a “clinical” assessment approach for forensic neuropsychological evaluations helps prevent the “creep” of legal practice into clinical neuropsychological evaluations and reports, and it allows opinions regarding legal issues to be elicited by attorneys in the discovery or trial phases of a case, as they should be.

In an ideal legal system, the same clinical standards should apply to whatever forensic issues are to be the focus of the legal case. However, in reality, this often does not occur when a forensic neuropsychological assessment is performed, and the entire assessment becomes oriented to match the needs of the side that retained the neuropsychologist. In such cases, a forensic report is no longer a neuropsychological report but a running discourse of supportive statements for the side that has retained the neuropsychologist. We have seen such
Figure 1. (Left) Fluid attenuated inversion recovery magnetic resonance imaging showing extensive posttraumatic cystic changes in the left hemisphere (view as in radiological perspective) with extensive white-matter changes on the border of the cysts. (Right) Left hemisphere T1-weighted magnetic resonance imaging sagittal perspective demonstrating the depth of the left frontal cystic changes. This patient had sustained a severe traumatic brain injury and the case was in litigation. The defense expert was claiming that this patient could be competitively employed despite being aphasic and hemiplegic.

“reports” exceed 100 pages. Clearly, abuses have occurred on both sides of the bar on how neuropsychologists have been utilized. Plaintiff cases have gone forward on minimal or even absence of evidence of neurological injury when neuropsychological studies are overinterpreted to indicate some type of “brain damage” or impairment.

Malingering may also occur with attempts by patients, even those with legitimate TBI, to manipulate the system. Conversely, a defense-retained expert may ignore the obvious, as exemplified in the case presented in Figure 1. The defense expert (who did only defense work) was asked to comment on the vocational potential of a patient who had sustained a severe TBI, Glasgow Coma Scale score of 3, in a motorcycle-motor vehicle accident. He testified at deposition: “So I think that the patient can do more than, for example, stack books at the library. I don’t know how much more he can do exactly, but I think he can do more than that . . . . There are people working . . . with much worse damage than he has.” As shown in Figure 1, there was massive structural damage to the brain. The patient was aphasic and hemiplegic, and his level of neuropsychological impairment, permanency of deficit, and lack of competitive employability were obvious and indisputable with just the most cursory review of his imaging and neuropsychological studies (see Fig 1 caption). Given the objective findings, this defense expert was simply not credible. While these are extreme examples, they do occur and demonstrate the importance of neuropsychologists adhering to well-balanced, scientifically grounded principles of practice when performing a neuropsychological examination, including those done for forensic purposes.

The court’s definition of more probable than not versus scientific and statistical definitions

The language of jurisprudence may vary depending on the court and the nature of the case, but terms of more “likely” or more “probable than not” are commonly used as the criteria for opinions rendered by neuropsychologists in the courtroom by the attorneys asking the questions. In a courtroom setting, the “more likely than not” standard as a legal definition means something quite different to someone with scientist-practitioner training. In legal parlance, this statement (also referred to as the “preponderance of the evidence” standard, used in civil litigation) refers to what tilts the scales of justice in one direction or another. This legal terminology means that if the collected evidence is 50.1% in favor of one side, that side “wins.”

In the battle of what is more “probable,” this has inherent potential for misleading statements by a retained expert. Obviously, this is a very different standard than the basis for reporting scientific findings in which statistical probability is the metric for accepting or rejecting a hypothesis under investigation. This represents a challenge for neuropsychology whose practitioners should render opinions based on “best practice” conclusions of the field that represent the scientific standard, not the “more probable than not” standard. If one is simply making decisions based on the 50.1% threshold, a
lot of opinion could be rendered that would not meet the scientific standard of the day or acceptable practice standards of the profession.

What is the appropriate role for the neuropsychologist retained as an expert witness in an adversarial judicial system?

Regardless of the side of retention, the neuropsychologist should apply the best practice standards of the day to assessment, diagnostic conclusions, and decision making in any case where forensic questions are being asked. The NAN practice guidelines specifically state that neuropsychologists performing forensic evaluations should “…strive to maintain true independence and objectivity.”17(p1003) Regardless of the side that retains the neuropsychologist as an expert witness, the neuropsychologist should objectively assess deficits and, if none are identified, state that clearly as well. The kinds of questions attorneys ask will undoubtedly be crafted and asked in the context of what is best for their side. The half-full, half-empty glass analogy often applies to the different questions asked of 2 opposing neuropsychological experts in the same case. Using the half-empty approach in a typical case of brain injury, the plaintiff attorney’s questions will focus on how the injury has changed and impaired the individual’s life. Conversely, the defense attorney’s questions will focus on the recovery, restorative, and adaptive aspects of an injury (the half-full approach) by using examples of individuals with significant brain injury who have returned to productive lives, including those who demonstrate no apparent deficit following a TBI. Again, the attorneys for each side ask their oppositely motivated questions, whereas the neuropsychologist responds to each with answers that are grounded in sound neuropsychological practice based on the scientist-practitioner model.

What happens when a retained expert works exclusively for the plaintiff or the defense? As explicitly stated in the NAN policy: “Attempts to satisfy the examinee or align with the retaining third party have the potential to bias conclusions and recommendations… Care should be taken to consider potential biases and take action to guard against them.”17(p999) Some neuropsychologists believe that their role is strictly as a consultant for the side that retains them a belief that requires them to argue for or against any and all-known neuropsychological sequelae of TBI. In our opinion, such a position does not represent proper neuropsychological practice in a forensic setting. Contentiousness is probably no more evident than that seen in cases of mTBI, aspects to be discussed in several articles in this topical issue, especially those by Bailey et al19 and Ruff.40

Lastly, under this section heading, some neuropsychologists are retained merely to raise doubt about relationships relevant to key issues in the case, a tactic that can occur on both sides of the bar, but used more often by the defense. Because what occurs in the courtroom is not based on scientific standards, raising doubt about a key relationship within a case is the method of the legal system used to attempt to refute contentions of the other side.41 In our opinion, raising doubt for the sake of argument has little to do with genuine clinical neuropsychological issues of the case but originates rather in forensic consultation for the sake of point-counterpoint arguments, driven by the side of retention. Such a tactic should not have impact if clinical neuropsychologists adhere to the best-practice standards of the field and well-done TBI research.

The role of research in forensic neuropsychological opinions

Clinical neuropsychology is a very young field. The oldest organization with neuropsychology in its name is the International Neuropsychological Society, founded in 1967. No journal with “clinical neuropsychology” in its title is more than 30 years old. New clinical disciplines struggle in the beginning to define standards and universal acceptance of practice. Neuropsychology is no exception to this observation and it has had to deal with many challenges in terms of definition, training, and practice standards. As a profession, neuropsychology has worked hard to develop its niche in the broader fields of academic and applied psychology as well as medicine. However, training and practice standards for clinical neuropsychology are not universally agreed upon and are still being debated. Of the different organizations representing neuropsychology in North American, only the AACN has a general guideline for the practice of clinical neuropsychology,16 but even these guidelines do not address specific conditions or disorders that could be used as a standard in addressing forensic issues.

As a medical society, the AAN has agreed upon standards for the assessment, care, treatment, and outcome for most major neurological disorders, and the AAN has also recommended standards for forensic testimony.19 While some movement toward practice standards in clinical neuropsychology is finally coming about, there is still no unity among neuropsychological societies in attempting to deal uniformly with practice standards, especially forensic ones. There are no published standards, collectively agreed upon, in the field of clinical neuropsychology that can serve as the centerpiece of debate regarding forensic issues in TBI or any other disorder. This is one reason why forensic opinions for each side in a case can be so different, even in a seemingly straightforward case of brain injury with permanent deficits. Thus, each side may bring literature to support its opinion in the forensic debate, yet this raises another problem in forensics. In our opinion, a lack of standards also...
influences “research” that attempts to address forensic issues. As noted earlier, law, as commonly defined, is a system of rules typically enforced or imposed by a governing authority. The field of jurisprudence is commonly considered an aspect of logic and philosophy that explores legal decision making, its explanations, and its justifications. While the best of science should inform legal matters, the practice of law will never be equivalent to experimentation that forms the basis of science. Therefore, the potential for bias occurs when “research” is done to address a legal or forensic opinion. A critical issue in the proper implementation of science is always the independence of the investigators with regard to the funding source and the conclusions of a study.

Michaels’ recent exposé of how litigation-sponsored “research” finds its way into mainstream peer-reviewed journals, just to be used in the courtroom (see also references 42 to 44), represents a very timely review of this topic. Where can this be a problem? Uncritical studies that demonstrate deficits out of proportion to the level of injury may be embraced by the plaintiff side in an attempt to bolster their claim of impairment from a TBI. Likewise, studies that ascribe TBI-related symptoms to non-TBI factors may be based on samples of convenience not truly representative of the population of individuals with TBI. Also, some forensic opinions have to be backed up by peer-reviewed, published research to meet Daubert and other evidentiary standards, and this likely has spawned publications for a specific legal topic, apart from any scientific merit of the study. In addition, “publishing” something, regardless of the quality and independence of the research, provides additional face validity to an expert’s testimony, giving an incentive to ascribe symptoms and complaints to conditions other than TBI or to symptoms that are fully treatable and, purportedly, have nothing to do with TBI. The non-independence, exclusively defense-retained expert has an incentive to ascribe symptoms and complaints to conditions other than TBI or to symptoms that are fully treatable and, purportedly, have nothing to do with TBI. Conversely, the nonindependent plaintiff-retained expert has the opposite incentive and tries to relate everything to the injury. Without classes I to III research designs, bias may be present in class IV publications being used to support an expert’s opinion, especially if that publication comes from an author whose forensic practice is exclusively retained by one side. For example, the defense expert in civil litigation who is retained only by the defense side of the bar is unlikely to publish anything that could be construed as supportive of the plaintiff’s position on TBI sequelae. Competent neuropsychologists, despite the side that retains them, should have no difficulty substantiating their opinions with published literature that has as little potential for bias as possible.

### Third-party observers

The American Psychological Association, NAN, and AACN have position papers concerning third-party observers (TPO) and neuropsychological assessment, particularly in the forensic setting. None of the standardized tests used by neuropsychologists were standardized using TPO. In addition, having a potentially public document of actual test procedures violates...
the copyright protection for using psychological/neuropsychological tests. Presence of TPO raises legitimate issues that could invalidate the entire assessment process. In our opinion, forensic assessments should be done without TPO. However, this debate is not fully resolved because major issues regarding statements that a neuropsychologist makes concerning their observations might then become the basis of their opinions. Without video- or audiotaping such statements, the issue might come down to speculative statements made by an expert neuropsychologist who cannot otherwise substantiate them. Confirmation of such observations is impossible without TPO. Likewise, there is concern about a neuropsychologist’s interaction with a patient leading to plaintiff bias (eg, shortening test time or discontinuing a test too quickly, thereby artificially inflating the deficit) or defense bias (eg, maximizing a score for a marginal response, incompletely recorded). A middle ground position on TPO that does not jeopardize test security or administrative practices is to video- or audiotape the clinical interview. As outlined in the AACN practice guidelines, a clinical interview and examination typically occurs prior to formal assessment. Commonly, this is a semistructured interview that the clinician performs without using any proprietary methods that could be compromised by TPO.

Symptom validity and “effort” testing

As the new field of clinical neuropsychology emerged, the first systematic publications dealt with how to assess validity of performance. Thus, symptom validity testing (SVT) is not a new issue or even a paradigm shift as some have said but rather a standard element of all neuropsychological assessment. Over the last 2 decades, numerous SVT measures have been developed. As such, the article by Frederick and Bowden in this topical JHTR issue will focus on SVT tasks. Because most SVT measures in current use are relatively new, Frederick and Bowden will concentrate on how and when an SVT measure is ready for clinical application. In particular, the Word Memory Test (WMT) will be their focus because the WMT has been the centerpiece of a published report, involving patients with TBI in which the authors claim a WMT “failure 23 times higher in mild brain injury than in parents seeking custody: the power of external incentives.” With such claims, how should SVT be used in cases in which forensic questions are being asked? This issue will be addressed by Frederick and Bowden. Malingering is obviously a serious issue and needs to be addressed in every case in which there is potential for secondary gain that essentially applies to all forensic cases. Noncredible neuropsychological impairment should be readily identified by neuropsychologists on either side of a case, and the 2007 edited text by Boone offers useful guidelines. However, simply raising the term malingering is also used in the legal battle by the defense side as a tactic to minimize damage by implying that injury and/or deficits are not genuine, regardless of whether they are or not.

While playing the malingering card may be standard fare in relation to legal maneuvering of a case, neuropsychologists should be extremely judicious in how they interpret SVT measures and use malingering terminology because of the prejudicial nature of the term. Patient responses above chance but below recommended SVT cutpoints may suggest poor effort, but “poor effort” is not a sine qua non indicator of malingering. Some defense-oriented neuropsychologists will administer additional SVT measures until 1 or an aspect of 1 fails, allowing them to invoke the malingering moniker. Of course, this is not how SVT should be used, and in a previous JHTR article, Lynch noted (and we agree) that a minimum of 2 selected SVT measures are typically sufficient to opine concerning the validity of the test results (when combined with the internal consistency of the test profile along with the clinical acumen of the neuropsychologist). In cases in which poor effort or malingering is suspected, of course, administration of multiple SVT measures and their failure does provide incremental support for the contention of invalid, noncredible performance and even malingering. The neuropsychiatric sequelae of TBI are multifactorial, clearly meaning that the neuropsychologist who is to address these sequelae must be prepared to deal with a broad spectrum of behavioral change that may accompany TBI. Two university-based studies are informative on this topic. Dawson et al followed a group of patients with TBI, on average more than 4 years after injury, who were not in litigation. The presence of pain, poor emotional coping, and depression were major determinants of outcome. Similar findings were also observed by Ponsford et al and Draper et al in a 10-year follow-up study. The emotional and pain components of disability accompanying a brain injury may be just as important as any cognitive deficit. TBI of all severity levels is associated with a higher frequency of depression. The presence of disorders like depression is associated with a greater likelihood for associated medical conditions and, likewise, depression and related mood disorders have the potential to adversely impact cognition. All of this requires the neuropsychologist to take a holistic and integrative approach when addressing forensic issues in a TBI case—it is not just a cognitive impairment that accompanies the injury. Likewise, it is not just how the patient functions on a battery of cognitive tests but also his or her social and emotional response to injury and his or her behavior in ordinary circumstances, not just the clinic setting. An integrative explanatory approach to the neuropsychological sequelae www.headtraumarehab.com
from TBI is required which is the contemporary method for explaining neuropsychiatric sequelae.\(^68\)

**The clinical neuropsychology service, billing, and compensation for forensic neuropsychological services**

Surveys have been published on usual and customary times for neuropsychological services and their billing.\(^8\),\(^9\),\(^15\),\(^69\),\(^70\) Customary time for neuropsychological services is an important benchmark for insurance reimbursement because it is typically based on services performed per hour in which a predetermined hourly rate and upper limit of billable hours are established. Since forensic work is paid by the side that retains the expert, these same rules do not apply. This leads to potential abuse as demonstrated in the previously published article, showing charges of $27,750 just for the *initial* assessment in a forensic examination of a patient with well-documented TBI who underwent weeks of hospitalization and months of outpatient therapy.\(^71\) Because the financing of forensic work has the potential to bias how neuropsychological consultation is done and opinions are rendered, the article by Schwarz et al.\(^36\) provides a guideline for billing practices in a university-based clinical service. The Schwarz et al.\(^36\) article provides an excellent example of how a forensic consultation can be built into a general neuropsychology service, further reinforcing that what is done in a forensic context is but an extension of clinical practice. In our opinion, the credibility of any expert becomes questionable when his or her charges are out of proportion to what is customary in the straight clinical practice of billing for neuropsychological services. Acceptable fee schedules are readily obtained from insurance carriers and hospital and university-based neuropsychology services.

**The contentious field of mTBI and postconcussion syndrome**

As already mentioned, the mild range of TBI is at the center of controversy in neuropsychology and medicine, a major part of the debate being centered on the permanence of sequelae.\(^72\)–\(^75\) Within the forensic context, some have even labeled any lasting sequelae from mTBI as a “myth.” As such, it is no surprise that this area is probably the most contentious when it comes to clinical neuropsychology and forensic issues. In this topical issue of *JHTR*, the article by Bailey et al.\(^39\) uses sports concussion as a model for understanding mTBI, all while recognizing that the impact dynamics from motor vehicle accidents and assaults are often quite different from what occurs in sports concussion. However, some of the best-controlled and independent studies of mTBI have been done in sports concussion. In our opinion, the contemporary view of seeing all injuries on a continuum\(^66\) from mild to severe is the proper perspective, and it is not helpful to isolate the mild spectrum of injury as if it were something completely different. Likewise, as neuroimaging methods achieve finer resolution, particularly with methods like magnetic resonance diffusion tensor imaging, clearer evidence of abnormalities associated with mTBI does occur and can be related to neuropsychological sequelae.\(^77\)–\(^81\) There are studies, particularly sports concussion studies, that demonstrate good recovery and a return to baseline level of function. However, motor vehicle and assault injuries in unsuspecting nonathletes involve very different brain injury dynamics not comparable to sports concussion.\(^82\) Given the enormity of annual mTBI injuries by CDC standards, even if only a fraction of patients with mTBI remained symptomatic, it still means that there are a substantial number of cases deserving proper neuropsychological consultation, assessment, and decision making.

**Consensus observation**

Good class I clinical research is typically guided by consensus opinions. Especially in moderate-to-severe TBI in which the patient has been hospitalized and receives follow-up care, there will be a team of clinicians working with that patient. Such treatment teams typically function by means of consensus opinions and such opinions are typically part of the established medical record. We consider such documents critical to understanding and defining accurate neuropsychological sequelae of a brain injury.

**Examiner bias**

A recent article\(^83\) published in the *Journal of the American Medical Association* was titled “Everyone’s a Little Bit Biased (Even Physicians).” It is given that every clinical neuropsychologist will bring his or her own bias and experience to every setting. However, neuropsychologists following the NAN admonition of “independence” in their forensic opinion(s) should be able to demonstrate their independence and deal straightforwardly with such issues. This places a particular professional responsibility on the neuropsychologist who exclusively functions as an expert witness for just one side of the bar to demonstrate their opinions are not biased by the side of retention. Martelli and Zasler\(^84\) address these issues in their discussion of objectivity and ethical practice in medicolegal consultation, and the Zasler et al.\(^25\) textbook devotes several chapters to a thorough discussion of these important points.

**Fixed versus flexible neuropsychological test batteries**

The flexible assessment battery is the most common approach used by neuropsychologists in assessing the
cognitive and neurobehavioral affects of an injury or disorder. The flexible assessment battery represents an appropriate method to address forensic questions in a TBI case.

CONCLUSIONS

Because of the high annual incidence of brain injuries combined with the fact that they often occur in circumstances in which liability for injury exists, neuropsychologists are routinely going to be involved forensically, either for TBI patients they have seen clinically or in litigation for patients for whom they have been retained as an expert witness. On the basis of major advances in understanding brain injury, especially over the last decade, the science of neuropsychology and related disciplines in cognitive and clinical neuroscience should guide all aspects of what happens under the umbrella of forensic neuropsychology. This topical issue of JHTR addresses many issues of forensic neuropsychology and offers commentary on methods to be followed. By adhering to the highest standards of clinical practice and research, neuropsychologists and other clinicians who care for patients with TBI should have little difficulty providing the best, scientifically grounded opinions regarding anyone who has a history of sustaining a TBI. The article by Ruff provides a practical commentary and summary regarding a best-practices approach to forensic neuropsychology as the concluding article of this special topical issue of JHTR.

REFERENCES


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