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Forensic Neuropsychology: A Selective Introduction

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ABSTRACT: During the last decade, neuropsychology has emerged as one of the fastest growing disciplines within clinical psychology. One of the most important roles for neuropsychologists is their contribution to the forensic sciences. The present paper reviews how lawyers may best utilize the services of clinical neuropsychologists. Suggestions are also offered to neuropsychologists on how better to meet the needs of lawyers. The following forensic science issues are discussed: the legal framework in which neuropsychologists function; contributions psychologists may make towards answering basic medicolegal questions such as the elucidation of the nature, extent, and duration of head injury sequelae; criteria for acceptable neuropsychological reports; medicolegal aspects of severe head injury, minor head injury (posttraumatic syndrome), and pseudo-head injury (malingering). There are many causes of damage to the nervous system (for example, industrial toxins and medical malpractice) that are eligible for compensation. Examples will be confined to head injury since the basic forensic science principles remain the same, whatever the etiology of such brain damage.

KEYWORDS: jurisprudence, neuropsychology, injuries, head injuries

During the last 20 years the relationship between psychology and the law has become increasingly productive throughout the world. For example, the role of the forensic psychologist has been expanding since the U.S. Court of Appeals for the District of Columbia Circuit found, in 1962, that competent psychologists qualified as expert witnesses on mental disorders.

Interdisciplinary collaboration is exemplified by international journals, annual conferences, and the existence of accreditation boards in forensic psychology in certain countries. Winick's [1] review of literature on the emerging field of law and psychology reports that some major New York law firms publicize lawyer-psychologists on their staff.

During the last decade neuropsychology has emerged as one of the fastest growing areas within clinical psychology. Hecaen and Albert [2] state that the discipline is at the interface between the neurosciences (neurology, neuroanatomy, neurophysiology, and neurochemistry) and the behavioral sciences (physiological psychology, developmental psychology, psycholinguistics, and general personality assessment).

For the benefit of legal colleagues without any background in medicine or the behavioral sciences, neuropsychology may be broadly defined as being concerned with brain-behavior relationships. Its central focus is the development of a science of human behavior based upon brain function. Clinical neuropsychology attempts to relate brain dysfunction to observable empirically documented behavioral deficits.

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Neurology, as a branch of internal medicine which studies the anatomy, physiology, and pathology of the nervous system, is also interested in brain-behavior relationships. The neurologist is characterized by his search for structural nervous system pathology based upon clinical and laboratory evidence (for example, the physical neurological examination and such diagnostic methods as cerebrospinal fluid studies, the computerized axial tomography [CT] scan, and the [EEG] electroencephalogram).

Neuropsychology, as a system of psychology based upon neurology, is more concerned with monitoring the functional aspects of brain output via precisely scaled quantitative psychological tests (for example, the Wechsler Adult Intelligence Scale). It emphasizes the area of uniquely human higher intellectual processes and is less concerned with the more basic processes such as reflexes, which are more intensively studied in neurology. Structural and functional data, the higher and more basic functions, all interact; hence neurology and neuropsychology complement each other.

Clinical neuropsychologists may monitor a broad range of functions (for example, sensory-motor, tactile, visuospatial, language, memory, and intellectual processes) via comprehensive test batteries, yielding quantitative data. A small but influential number of clinical neuropsychologists prefer to use a more flexible set of tests chosen for their qualitative significance in assessing a patient.

One of the most important roles for clinical neuropsychologists is their contribution to the forensic sciences. Courts are increasingly dependent upon the testimony of neuropsychologists in cases in which traumatic events are alleged to have caused neuropsychological deficits. The significance of this field is dramatized by the World Safety Organization's [3] estimate that one of every ten hospital beds is occupied by a road accident victim. Industrial accidents are also responsible for a large number of head injuries which have medicolegal implications.

The collaboration of neuropsychology with the forensic sciences is not limited to the applied area but extends to basic research as well. For example, Yeudall et al [4] report that the significantly higher amount of neuropsychological deficits found in persistent criminals are not merely "concomitants of their criminal careers or unrelated ramifications of their psychosocial environment but in many instances are antecedents and contributory to the initiation and continuation of criminal activity."

This paper reviews how lawyers may best utilize the services of clinical neuropsychologists. Suggestions are also offered to neuropsychologists on how to better meet the needs of lawyers. The following "forensic science issues" are discussed: the legal framework in which neuropsychologists function; contributions neuropsychologists may make towards answering basic medicolegal questions such as the elucidation of the nature, extent, and duration of head injury sequelae; criteria for acceptable neuropsychological reports; medicolegal aspects of severe head injury, minor head injury (posttraumatic syndrome), and pseudo-head injury (malingering). Other causes of brain damage (for example, industrial toxins and medical malpractice) eligible for compensation will not be discussed for the sake of brevity.

The Legal Framework

McMahon and Satz [5] emphasize that with the exception of malpractice suits, neuropsychologists cannot assist the liability phase of proceedings (that is, whether or not a given event occurred and whether a certain individual was responsible for that event). Despite this, neuropsychologists may make significant contributions both in the criminal and civil spheres of law.

Criminal Law

Within criminal law neuropsychological assessments routinely deal with such issues as an individual's competency to stand trial and the state of his cerebral functions at the time of

the offense. In the authors' experience, lawyers are increasingly requesting evaluations of an individual's intellectual capacity to understand the legal implications of his record of interview, particularly for the migrant population.

Civil Law

McMahon and Satz [5] warn that courts are reluctant to accept evidence of brain damage as solely sufficient for a defense. Otherwise, virtually all chronic alcoholics would have some degree of legal incompetence. Cognitive deterioration must be proved to be profound before diminished responsibility occurs. Consequently, the most productive interaction between neuropsychology and the law occurs within the civil sphere.

A significant percentage of industrial and motor vehicle accidents are responsible for compensable head injuries and their consequent neuropsychological sequelae. Justice in the courts depends upon able advocacy. Lawyers are increasingly becoming aware of the fact that comprehensive assessment of a head injured individual should include a functional evaluation (for example, a neuropsychological assessment) as much as review of structural damage (for example, skull X-ray).

A related issue is that of consultation. Lawyers may profit by requesting second opinions from independent neuropsychologists if they are not satisfied with medicolegal reports that they may receive from allied professions (for example, psychiatrists, neurologists, or even other neuropsychologists).

Basic Medicolegal Questions

To the lawyer, the most valuable contents of the neuropsychological assessment deal with the following material:

- (1) the history obtained,
- (2) the patient's condition when examined by the clinician,
- (3) the relationship between the patient's injuries and his present condition,
- (4) are the patient's complaints genuine,
- (5) the diagnosis or the nature of the disability or both,
- (6) the extent of the disability,
- (7) the prognosis or the duration of disability or both, and
- (8) recommendations for further treatment.

The history the clinician obtains from the patient may be quite subjective. The phenomenological data are significant in that they inform the lawyer how his client experiences his situation. Individual differences are important since the law is interested in what is happening to a specific person rather than how a theoretical majority might react to a particular accident. Consequently, it is useful to document that patient's list of problems verbatim. It is also important to document whether the patient has had any previous or subsequent head injuries or psychiatric problems that may be unrelated to his compensation claim.

Essentially the courts are attempting to estimate the "before and after" picture to award a lump sum compensation payment. This requires careful estimates of the premorbid level of functioning followed by a convincing documentation of the current nature and extent of the patient's disabilities. When documenting a profile of neuropsychological deficits the courts demand an interpretation of the technical data in terms of what these deficits mean for everyday functioning. For example, if an architect has been found to have a mild visuospatial difficulty together with a moderate impairment of recent memory, examples should be given to the lawyer of how this influences the former's work efficiency.

The most difficult and vital question is to elucidate the relationship between the patient's injuries and his present condition. Etiology is often multifactorial and may be influenced by

an infinite number of elements. For example, an individual may be predisposed to cerebral disease which may then be precipitated by a head injury. If the patient's complaints are directly attributable to his accident then this causative link should be clearly documented. Indirectly related problems (for example, emotional response to the frustrations of a cognitive deficit) need also to be explained. It must be remembered that predisposing factors do not inherently excuse a defendant. Under tort law the defendant must "take his victim as he finds him" (that is, the "cracked vase" principle).

The validity of the patient's complaints can be a complex diagnostic issue and will be later discussed in the section on malingering.

An elucidation of the nature, extent, and duration of disability is the most important contribution a neuropsychologist can make to a lawyer and deserves separate treatment in detail.

Nature and Extent of Disability

A comparison of neurological and neuropsychological techniques exemplifies the unique contribution that the latter may make for elucidating the nature and extent of disability. Essentially, the two procedures supplement each other. Their relationship is best expressed by Luria's statement [6] that "neuropsychology is merely the most complex and newest chapter of neurology and without this chapter, modern clinical neurology will be unable to develop."

A recent exciting neurological contribution to the forensic sciences is the use of the CT scan. It must be remembered however, that the CT scan demonstrates the photon absorption coefficients of the tissues examined and does not document pathology per se. An abnormal CT scan does not show how severe a brain injury is, nor can it estimate the extent of a patient's recovery. Moreover a "normal" CT scan does not necessarily rule out brain damage. For example, some focal lesions by virtue of their location and small size may be undetected. Also, in some cases of dementia, alterations in brain function antedate brain atrophy by a significant amount of time.

Although radiological investigations may supply evidence of head injury they cannot give direct information about the severity of brain damage [7].

Neuropsychological reports have become increasingly important in litigation. Often, they are able to document the nature and extent of cognitive deterioration when the physical neurological examination and laboratory tests are negative. Broe et al [8] found that 43% of head injured patients who initially showed no significant neurological deficit on standardized neurological examination (including a CT scan), proved to have subtle incapacitating organic cognitive deficits on follow-up. A review of literature concerning base rate of accuracy for neurological and neuropsychological techniques shows that this is not an isolated finding [9]. Spreen and Benton [10] as long as 15 years ago documented that the percentage of accurate diagnoses of severity and laterality of brain damage ranged from 71 to 90% during neuropsychological testing and that these rates for accuracy compared favorably to those reported for other neurodiagnostic techniques. These results have been replicated and an accuracy rate of 89% for neuropsychological batteries, compared with 16% for skull X-rays and 80% for angiograms have been reported [11]. Consequently, legal colleagues may be assured that neuropsychological testing is strongly established as a valid and reliable diagnostic technique.

The examiner's diagnostic impression serves as a succinct statement of his final decision concerning the nature of the patient's disease/distress. The extent of disability in terms of the restrictions to be placed upon a person's future earning capacity requires detailed elaboration, however, since it is of consuming interest to all parties involved in litigation. This requires wide range testing in order to document a comprehensive profile of neuropsychological strengths and deficits. Such a profile of a client's current status may then be contrasted with estimates of his premorbid level of functioning. Loss is best assessed in terms of discrep-

ancies from previous abilities. School records, employment history, and the use of special neuropsychological tests that are relatively less affected by brain damage are routinely used as indicators of premorbid level. Individuals and their families also differ in how they adapt to similar injuries and stresses. This must also be estimated together with degree of motivation for rehabilitation.

Duration of Disability

After the nature, extent, and immediate effects of cerebral dysfunction have been determined, the probable long-term consequences of any neuropsychological deficits should be estimated. The prognosis for head injuries can never be formulated with finality. However, a knowledge of the research literature on recovery rates, together with how this may apply to the individual case assessed, is the basis for any qualified prognostic statement. Some statistics concerning recovery rates are provided in the section below dealing with the medicolegal aspects of head injury.

Any recommendations for further treatment may be included under the prognosis category. Such recommendations should detail the specific interventions that may facilitate the patient's rehabilitation, their probability of success, and the costs involved, if known.

When organizing their briefs, lawyers should be aware that in significant head injuries, most recovery occurs within six months of injury and then slowly reaches a maximum by 24 months. Consequently, it is ideal to arrange for neuropsychological assessment as soon as possible after an accident, followed by a re-evaluation just before attempted court settlement. Availability of such data at two different points in time provides a baseline against which to monitor the extent of the patient's recovery rate. Questions concerning long-term prognosis for head injury cannot be answered until the elapse of at least 18 months after such injury.

Medicolegal Reporting Style

The style expected of forensic neuropsychological reports does not differ essentially from routine psychological report writing. The legal system has as much respect for the scientific method as does clinical practice. Consequently, the same standards of objectivity, reproducibility, parsimoniousness, adequate documentation, and confining one's comments to within the level of one's competency apply.

It is the responsibility of every lawyer to be the best possible advocate for his client. The role of the neuropsychologist must not be confused with such advocacy since his aim is to develop a more detached perspective without investment in the outcome of any case. Thus, reporting style should be formal and as neutral as possible. Conclusions should directly derive from a careful evaluation and interpretation of the available data base. Objectivity and reproducibility are enhanced by documenting the types of instruments upon which an evaluation is based. It is customary to list the tests used on the title page of the report. An appendix at the conclusion of the report is helpful in revealing the quantitative test results from which clinical interpretations are derived.

The law of parsimony recommends that data should not be elaborated upon beyond that necessary to support one's conclusions. Lawyers appreciate a succinct report which avoids the discussion of extraneous theoretical issues that may do damage by provoking inconsistencies. Also, in order that neuropsychological reports can be better understood by the layman in court, psychological jargon should be kept to a minimum.

Acceptable medicolegal report writing style requires adequate documentation throughout. This emphasizes the importance of establishing a valid and comprehensive data base. Since justice depends so much upon the skilled presentation of available evidence, readers of reports should be led through a convincing process of reasoning that clarifies how test results

reflect a specific patient's condition. Opinions should be seen to derive logically from available data. It is an advantage to summarize the data supporting each opinion in a separate "conclusions" section of a report. Speculative clinical intuition is unacceptable and may be avoided by staying within the bounds of the data base. Opinions need to be stated clearly and one's doubts must also be documented as well. If an adequate data base cannot be obtained, this should be stated. Anything that compromises validity (for example, testing ethnic minorities, the use of an interpreter, and so forth) should be acknowledged.

Perhaps the most common source of legal objection in reports is when a neuropsychologist without medical qualifications is judged to have exceeded his area of competence. Competency is a difficult area to delimit since neuropsychology is at the interface between the neurosciences and the behavioral sciences. The psychologist needs to have a working ability to contrast medical testimony with neuropsychological testimony. Thus, it is more appropriate to express his findings in terms of the functional aspects of the brain's output rather than to elaborate upon gross structural/anatomical issues. For example, it is more acceptable to state that an acquired impairment of cognitive function exists as exemplified by a deficit in auditory perceptual functioning, rather than to say that brain damage has occurred and that the lesion is located in the superior portion of the right temporal lobe. Both statements may imply the same things but the former is more palatable from a psychologist, whereas the latter more closely fits the role of a neurologist.

It is fortunate for neuropsychology that litigation is more functionally than structurally oriented. Thus, it is preferable to focus upon elucidating the patient's level of functioning and quality of life than to hypothesize the location of a specific lesion.

Lawyers will encounter two current but differing approaches commonly used in neuropsychological assessment. One strategy employs a standardized test battery, whereas the other emphasizes an inductive approach in which hypotheses are formulated and tested. Luria and Majovsky [2] reviewed the advantages and disadvantages of both these paradigm by contrasting the quantitatively oriented Halstead-Reitan [13] and Luria's qualitative syndrome-analysis scheme. Both have established their usefulness in clinical neuropsychology, the latter orientation making significant contributions in rehabilitation settings whereas the standard battery approach has been traditionally more compatible within the medicolegal context.

Courts readily recognize the limitations that are inherent within the intuitive clinical method. Objectivity is compromised since the examiner is encouraged to adopt an intuitive, creative strategy. This has a viable purpose in purely clinical settings with corrective medical backup but such a lack of structure maximizes subjectivity making medicolegal documentation and replication difficult. According to Adams [14], solely qualitative methodology undermines "the very elements of reliability and objectivity that psychologists have contributed to neurobehavioral measurement." Consequently, lawyers should carefully note the reporting style of their neuropsychological consultants and ensure that it is compatible within the local forensic science context.

Head Injury: Medicolegal Aspects

Most head injuries that occur in peacetime are of the closed type and involve acceleration and deceleration of the brain within its bony compartments. Most closed head injuries of significance result in sudden loss of consciousness [15]. When unaccompanied by other neurological deficits and followed by complete recovery, the condition is called cerebral concussion. When followed by neurological/intellectual deficit, it is termed cerebral contusion. In the presence of focal deficits it is classified as cerebral laceration.

The following factors determine the consequence of head injuries:

1. The severity of the injury, obviously, the more severe the neurological picture revealed by the initial assessment, the worse the prognosis.
2. Changes that have occurred since the accident; generally, extent of recovery is related

to the time taken before objective evidence of improvement can be seen. Thus a quick early recovery is more likely to progress to complete recovery than one in which no improvement is seen for several days or more.

3. Characteristics of the victim: for example, Hayward [7] reports that children have the potential to recover from injuries that would be fatal to adults; in contrast, elderly patients are less able to survive moderate/severe head trauma as the complications associated with prolonged bed rest take their toll.

4. Association with other injuries: for example, chest injuries cause hypoxia which will aggravate cerebral oedema.

Wells and Duncan [15] recommend the duration of posttraumatic amnesia as a good measure of the severity of head injury. In persons whose periods of posttraumatic amnesia are 24 h or less, total intellectual reintegration may be expected in the majority of cases. In individuals whose posttraumatic amnesias are more than 24 h, residual intellectual deficits are far more common. It must also be remembered that the amount of recovery may be unpredictable in the individual case.

The medicolegal aspects of head injury may be conveniently reviewed under the following subheadings: severe head injury, mild head injury (the posttraumatic syndrome), and pseudo-head injury (malingering). Such a brief review of the neuropsychological literature may be useful to lawyers in better understanding the prognostic opinions of their consultants and in the overall planning of their suits.

Severe Head Injury

Knowledge of what types of changes to expect following severe head injury facilitates assessment. Firstly, there are intellectual changes. Miller [16] warns that despite the fact that Intelligence Quotient (IQ) scores may show significant improvement, it is probable that severe head injury inevitably results in some degree of permanent functional impairment. Secondly, most victims sustain some relatively stable and long-term memory impairments that may vary in degree. Incidence of memory impairment seems to be related to posttraumatic amnesia duration. Thirdly, a wide range of other functional disturbances are common (for example, epilepsy, aphasic disabilities, and motor and visuospatial impairments).

Awareness of the research literature on likely outcome for severe head injuries facilitates the formulation of a realistic prognosis. Unfortunately Miller's review [16] suggests that outcome is poor. Of those in a coma of at least 6-h duration (but excluding those who die within the first 6 h after injury), approximately 50% had died six months later. Of those left alive, one third to one half failed to reach a reasonable level of adjustment. Most recovery occurs within six months of injury and then slowly reaches a maximum at 24 months. There is some controversy in the literature on whether there is a tendency for head injury victims to be more susceptible to intellectual deterioration in later years. For example, it has been reported that progressive dementing disease has not been documented to result from head injury except in boxers who are exposed to repeated trauma [15]. It has been recommended that if progressive dementia appears following head injury, it should be assumed to have antedated the trauma but to have been undiagnosed.

Mild Head Injury (the Posttraumatic Syndrome)

Head injuries may be followed by a number of psychiatric sequelae. Some, particularly dementia and certain types of personality changes (for example, the frontal lobe syndrome), are unrelated to either the extent or severity of brain damage. In fact, the posttraumatic syndrome is unusual in patients with severe head injury but is present in 40% of traumatized patients who have never lost consciousness [17]. Moreover, Wells and Duncan [15] observed

that virtually identical symptoms (except for the location of pain) are seen after trauma not involving the head at all.

It is useful to remember for diagnostic purposes that the duration period of retrograde amnesia tends to resolve as recovery proceeds. Miler [17] claimed that a component of very prolonged retrograde amnesia suggests functional rather than organic etiology. The extent of posttraumatic amnesia, however, may or may not recede with recovery.

The posttraumatic syndrome has many synonyms (compensation, accident and litigation neurosis, functional overlay, and abnormal illness behavior). It is a popular, albeit a controversial diagnosis, in litigation and is a well-known complication of a relatively minor injury.

The patient with the posttraumatic syndrome can have a considerable number of varied and transient pseudo-neurological complaints for which there is no objective physical basis. Thus, Lloyd [18] defines compensation neurosis as characterized by severe subjective complaints that are intractable to treatment and occur within the context of the gain/blame oriented medicolegal process.

It occurs mainly in adult nonprofessional males, 80% of whom develop many of the following symptoms within two months of a relatively minor head injury: headache, anxiety, dizziness, excessive fatigue, intolerance to noise, sleep disturbance, marital/sexual dysfunction, mild intellectual deficits, and ingrained conviction of unfitnes for work.

A review of literature of the posttraumatic syndrome by Wells and Duncan [15] suggests that there are no neurological deficits in most of these cases and the acute symptoms above are thought to be nonspecific effects of the trauma. In most cases, the symptoms resolve. In a significant minority, however, such symptoms persist accompanied by added problems such as chronic depressions, anhedonia, insomnia, obsessions, and phobias. The longer the neurosis persists the worse the prognosis. Seventy-five percent of those affected return to work within one year. Repeated clinical assessments and legal delays reinforce symptomatology. Financial settlement does not necessarily lead to symptom resolution and up to 20% of cases remain disabled. Forty percent may retain some degree of symptomatology.

Such a clinical picture does not fit any of the recognized organic brain syndromes. Thus, the neurological examination, EEG, and CT scan are usually within normal limits. Mental status examination often reveals an uncooperative patient who is irritable, demanding, anxious, and depressed. Neuropsychological testing performance is often inconsistent. There appears to be a vague impairment that does not fit the recognized organic brain syndromes. Often there is also a discrepant presentation in terms of adequate interview behavior accompanied by inadequate performance on formal tests.

Some researchers believe that the syndrome has a physical basis with a gross superimposed psychogenic elaboration. Powerful psychosomatic forces may be impinging upon the patient and his reactions may be viewed as a coping mechanism as he adjusts to a stressful situation. However, they conclude that there is little evidence in favor of an organic etiology since the syndrome is grossly discrepant with the extent of neuropathological damage that might even generously be calculated [15].

Wells and Duncan [15] also admit that although the evidence is against an organic etiology, the data for a psychogenic basis is also equivocal. For example, there is no evidence that most individuals suffering from the posttraumatic syndrome were premorbidly neurotic. Consequently, a comprehensive understanding of the posttraumatic syndrome remains unavailable.

There is no evidence that psychiatric treatment is effective in the posttraumatic syndrome, even when the patient is cooperative and there is no secondary gain [15]. Lloyd [18] also acknowledges that the condition is treatment resistant. He recommends, however, that an early and clear communication be given about the extent of injury and that the patient should be encouraged to return to work as soon as possible. Supportive psychotherapy may also be applied.

Pseudo-Head Injury (Malingering)

This section focuses upon research concerning the exaggeration of neuropsychological deficits. However, the general conclusions about malingering below may also apply to cases feigning other types of injuries.

The very nature of the medicolegal process wherein disability is compensated and recovery penalized, ensures that malingering must exist. The available research literature does not give consistent statistics, however. Lloyd [18] reported that only a small percentage of compensation neurosis cases are thought to be malingering. In contrast, an Australian Medical Association survey [19] claimed that nearly half of all compensation cases involve persons who are either faking or grossly exaggerating their disability. Locke [20] claimed that only 5% of compensation cases are malingering but they are responsible for 50% of the costs in litigation. Most studies confirm that people who were on compensation took longer to get better.

Clinicians routinely attempt to make a distinction between malingering and hysterical neurosis. Lawyers are particularly interested in making this differentiation since it may decide the outcome of the case.

Malingering is an unpopular diagnosis and a heavy burden of proof falls upon the accuser. Ellard [21] admits that it is almost impossible to make an unequivocal diagnosis of malingering and advises caution. When an individual consciously feigns symptoms that are under voluntary control for financial gain, he may be classified as a malingerer. If a person's symptomatology is unconsciously generated in order to meet some emotional need then it may be viewed as a neurotic process (that is, neurotics tend unconsciously to deceive themselves for secondary emotional gain whilst malingerers tend consciously to deceive others for primary financial gain).

Differential diagnosis is rarely clear-cut, however. Symptom exaggeration also includes a conscious component despite the presence of objective disability. Thus, the patient's motivation for playing the sick role can operate at a variety of gradients of consciousness. Medical sociology also suggests that cultural differences exist in the perception of pain and the sick role may be an honorable and functional one within the context of an extended family. Finally, some clinicians believe that the persistent malingerer is inherently emotionally disturbed and may play the sick role so well that he becomes a captive of it. Such a self-fulfilling prophecy is succinctly illustrated in the *Torah*:

And if a man is lame, blind and halting, and he feigns one of these—He will become one of these.

Heaton et al's [22] research on malingering suggests that the prospects for faking believable deficits on neuropsychological testing can be quite good. Malingering is still difficult to detect but more guidelines are increasingly being formulated. For example, although malingerers may show significant abnormalities on testing, their neuropsychological profiles differ from those produced by genuine head injury cases [22]. Malingerers did especially poorly on sensory-motor tests and displayed a greater range and degree of apparent personality dysfunction on the Minnesota Multiphasic Personality Inventory.

Lezak [23] described a useful battery of tests of dissimulation. These tests ostensibly appear to be difficult but are rarely failed by anyone except the most profoundly brain damaged patient. Bash and Alpert [24] provided a promising set of objective tests for computing a malingering score. This is based upon a system of approximate answers.

Finally, the *Diagnostic and Statistical Manual III*, of the American Psychiatric Association [25] stresses the following features associated with malingering: medicolegal context of presentation; contradictions and inconsistencies in the patient's history and test results, especially when subtests are repeated; uncooperative and evasive attitude; symptomatology is inconsistent with known neuropsychological syndromes; severe disability after trivial injury;

delay between accident and onset symptoms (period of meditation); and presence of antisocial personality disorder or drug dependence or both.

Examiners must also be alert for paradoxical, yet not unusual, cases wherein individuals tend to underestimate their objective deficits. Such patients may tend to deny their disabilities because of difficulties in accepting their limitations. There are others who are so disoriented that they are not capable of being aware of their neuropsychological status.

In conclusion, it is better policy to create a testing environment wherein maximal performance is reinforced and malingering is minimized, rather than be faced with attempts to detect this difficult entity. Heaton and Heaton [26] advise that all litigating patients be routinely oriented in a supportive and friendly manner as follows: the tests are sensitive enough to detect even the mildest of their problems, thus exaggeration serves no purpose; it is also possible to identify the minority of persons who may not do their best since some of the tests are not influenced by brain damage; unfortunately if a patient does not do his best such an attitude must be documented for the court and his test results then cannot be used to his advantage; and the examiner hopes that he will be able to report to the court that the patient was totally cooperative and that his test results are valid.

Conclusion

Referring to the current U.S. experience, Winick [1] asserts that the relations between law and psychology have become productive enough for their recognition as a substantive discipline. The extent of knowledge in this subject has reached a critical mass as exemplified by the text on *The Role of The Forensic Psychologist* edited by Cooke [27]. It is hoped that this paper will help encourage more mutually productive relationships between lawyers and neuropsychologists. The latter's ability to elucidate the nature, extent, and duration of neuropsychological deficits can facilitate the former's attempt to gain optimum justice for their litigating clients.

References

- [1] Winick, C., "Emerging Field of Law and Psychology," *Contemporary Psychology: A Journal of Reviews*, Vol. 26, No. 5, May 1981, pp. 353-354.
- [2] Hecaen, H. and Albert, M., *Human Neuropsychology*, Wiley, New York, 1978.
- [3] *Road Accident Statistics. Proceedings of the 1981 Convention*, World Safety Organization, Singapore, Oct. 1981.
- [4] Yeudall, L., Fedora, O., Fedora, S., and Wardell, W., "Neurosocial Perspective on the Assessment and Etiology of Persistent Criminality," *The Australian Journal of Forensic Sciences*, Vol. 13, No. 4, June 1981, pp. 131-159.
- [5] McMahan, E. and Satz, P., "Clinical Neuropsychology: Some Forensic Applications," in *Handbook of Clinical Neuropsychology*, S. Filskov and T. Boll, Eds., Wiley, New York, 1981, pp. 686-701.
- [6] Luria, A., *The Working Brain: An Introduction to Neuropsychology*, Basic Books, New York, 1973.
- [7] Hayward, R., *Management of Acute Head Injuries*, Blackwell Scientific Publications, London, 1980.
- [8] Broe, G. A., Tate, R. L., Ross, G., Tregcagle, F., and Lulham, J. M., "The Nature and Effects of Brain Damage Following Severe Head Injury in Young Subjects," in *Proceedings of the Australian Neurological Foundation Conference on Head Injuries*, Sydney, 1979.
- [9] Crockett D., Clark, C., and Klonoff, H., "An Overview of Neuropsychology," in *Handbook of Clinical Neuropsychology*, S. Filskov and T. Boll, Eds., Wiley, New York, 1981, pp. 1-37.
- [10] Spreen, O. and Benton, A., "Comparative Studies of Some Psychological Tests for Cerebral Damage," *Journal of Nervous and Mental Diseases*, Vol. 140, No. 5, May 1965, pp. 323-333.
- [11] Filskov, S. and Goldstein, S., "Diagnostic Validity of the Halstead-Reitan Neuropsychological Battery," *Journal of Consulting and Clinical Psychology*, Vol. 42, No. 3, June 1974, pp. 382-388.
- [12] Luria, A. and Majovsky, L., "Basic Approaches Used in American and Soviet Clinical Neuropsychology," *American Psychologist*, Vol. 32, No. 11, Nov. 1977, pp. 957-968.

- [13] Reitan, R., *Manual for Administration of Neuropsychological Test Batteries for Adults and Children*, Author, Indianapolis, 1969.
- [14] Adams, K., "An End of Innocence for Behavioural Neurology? Adams Replies," *Journal of Consulting and Clinical Psychology*, Vol. 48, No. 4, Aug. 1980, pp. 422-524.
- [15] Wells, C. and Duncan, G., *Neurology for Psychiatrists*, F. A. Davis & Co., Philadelphia, 1980.
- [16] Miller, E., "The Long-Term Consequences of Head Injury: A Discussion of the Evidence with Special Reference to the Preparation of Legal Reports," *British Journal of Social and Clinical Psychology*, Vol. 18, No. 1, Feb. 1979, pp. 87-98.
- [17] Miller, H., "Mental Sequelae of Head Injury," *Proceedings of the Royal Society of Medicine*, Vol. 59, 1966, p. 257.
- [18] Lloyd, J., "Compensation Neurosis," *Australian Family Physician*, Vol. 9, No. 2, Feb. 1980, pp. 84-87.
- [19] "Submission to the Senate Standing Committee Inquiring into Compensation and Rehabilitation in Australia," Australian Medical Association, Sydney, 1981.
- [20] Locke, G., "Estimation of Disability," paper presented at Seminar of Disability for Medicolegal Purposes, Queen Elizabeth II Rehabilitation Centre, Camperdown, Sydney, Australia, 12 Aug. 1981.
- [21] Ellard, J., "Psychological Reactions to Compensable Injury," *Medical Journal of Australia*, Vol. 2, No. 8, 22 Aug. 1970, pp. 349-353.
- [22] Heaton, R. K., Smith, H. H., Lehman, R. A. W., and Vogt, A. T., "Prospects of Faking Believable Deficits on Neuropsychological Testing," *Journal of Consulting and Clinical Psychology*, Vol. 46, No. 5, Oct. 1978, pp. 892-900.
- [23] Lezak, M., *Neuropsychological Assessment*, Oxford University Press, New York, 1976.
- [24] Bash, I. and Alpert, M., "The Detection of Malingering," in *Forensic Psychology and Psychiatry*, F. Wright and C. Richer, Eds., The New York Academy of Sciences, New York, 1980.
- [25] *Diagnostic and Statistical Manual of Mental Disorders*, third ed., D.S.M. III, American Psychiatric Association, Washington, DC, 1980.
- [26] Heaton, S. and Heaton, R., "Testing the Impaired Patient," in *Handbook of Clinical Neuropsychology*, S. Filskov and T. Boll, Eds., Wiley, New York, 1981, pp. 526-544.
- [27] Cooke, G., Ed., *The Role of the Forensic Psychologist*, Charles C Thomas, Springfield, IL, 1980.

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