# A Practical Method for the Evaluation of Symptom Exaggeration in Minor Head Trauma Among Civil Litigants

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Forensic psychiatrists and psychologists are often called on to provide opinions and render testimony in which minor head trauma accompanied by persistent somatic, cognitive, and/or emotional symptoms is alleged. The frequency of persistent symptoms following such minor head injury is generally low. The forensic clinician therefore must differentiate between subtle brain dysfunction, symptom amplification, psychogenic-based causes for the presence of cognitive and other deficits, or frank malingering. The purpose of this article is twofold: first, to review critical issues related to the assessment of malingering and symptom exaggeration in mild head injury cases; and second, to offer a practical model for the assessment of amplified neuropsychological and psychiatric deficits in civil litigants in cases of minor head trauma.

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Forensic psychiatrists and psychologists are often called on to provide opinions and render testimony in minor head trauma cases in which the litigant complains of persistent somatic, cognitive, and/or emotional symptoms. Plaintiff and defense experts generally debate the severity of postconcussive symptoms following minor head injury, particularly when loss of consciousness is less than a few minutes in duration. The rate of persistent symptoms (18 months after injury) following minor head injury is generally low, varying between 5 and 15 percent.[1,2] The forensic clinician must differentiate between subtle brain dysfunction, symptom amplification, psychogenic or other causes of cognitive or other deficits, and frank malingering. Standard nonforensic clinical methods rely heavily on the client's self-report of symptoms, with the implicit assumption that the best effort was put forth during cognitive assessments. Forensic evaluations in civil litigation require a specific discussion of the nexus between symptoms and compensable damage that are corroborated by multiple data sources and not just client report. As such, nonforensic clinical approaches may not be adequate for the task of differentiating atypical from amplified or malingered presentations.[3,4] Therefore, another methodology or model applying forensic concepts to the assessment of cognitive and emotional deficits in minor head injury litigation is needed. In the first half of this article, an overview of critical issues related to the assessment of malingering and/or symptom exaggeration in cases of minor head trauma is presented. In the second half, these factors are incorporated into a practical method for the assessment of amplified neuropsychological and psychiatric deficits in civil litigants in cases of minor head trauma.

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## Minor Head Trauma, Persistent Postconcussive Syndrome, and Comorbid Psychiatric Disorders

There is no uniform agreement among clinicians and researchers regarding what constitutes "minor head injury," when head trauma reaches a level to

warrant a diagnosis of "postconcussive syndrome (PCS)" or even when the lowest threshold of "major head injury" is reached. The current diagnostic system—DSM-IV TR—has only preliminary research criteria for minor head trauma, leaving the matter open to further assessment.[5] Research criteria in the literature for minor head injury vary from any loss of consciousness or alteration in mental state, to loss of consciousness for less than an hour and without objective evidence of brain injury.[6–8]

The clinical outcomes of this spectrum of mild head injury severity is similarly variable. At one end of the spectrum tentative neurophysiologic/neuroanatomic explanations for disability have been identified. Zielinski[4] and others suggest that mild head injury can be followed by reduced cortical efficiency characterized by lowered attention and complex information processing. Others describe a triad of emotional, cognitive and somatic complaints as accompanying mild head injury, and caution against the diagnosis of malingering based on the lack of observed severity of the head trauma.[2,9,10]

The literature is similarly varied in criterion sets for the threshold diagnosis of PCS,[11] a diagnosis that is complicated by the difficulty of obtaining evidence of head injury and by the high base rates of rapid resolution in the normal population who have had a minor head trauma. At the other end of the spectrum, Mittenberg and Strauman[12] suggest that symptoms persisting beyond the three-month post-trauma period are attributable to the psychological consequence of the head trauma. Others argue that persistent symptoms in the context of a mild head injury and litigation are the consequence of financial incentives.[13,14]

In addition to these definitional problems, comorbid conditions, such as prior head injuries, substance abuse, somatization, and post-traumatic stress disorder (PTSD) can present with disabling cognitive dysfunction and can complicate the determination of symptoms that are otherwise attributable to the head trauma. Comorbid medical conditions may also worsen apparent cognitive dysfunction, such as pain, metabolic/endocrine dysfunction, cardiac and pulmonary insufficiency, and a range of other illnesses.

The group of psychiatric disorders that correspond with diagnosable neurological conditions in particular, may represent a preexisting or additive factor for the clinical presentation. For example, amnestic disorder or dementia caused by head trauma is the direct anatomic and pathophysiological consequence of brain injury. Preexisting head trauma and chronic substance abuse (particularly alcohol and stimulants) may worsen the outcome of any mild head injury. The extent of cognitive impairment and psychiatric morbidity, such as irritability, anxiety, and depression following brain injury usually depends on the location and severity of the head trauma. Although the cognitive deficits may persist or improve over time, they rarely worsen, unless there are subsequent brain insults or other contributing factors such as pain.

The DSM-IV TR[5] somatoform and dissociative disorders constitute two groups of conditions that may be associated with complaints of memory, attention, intellectual and decision-making difficulties. Pseudoneurological symptoms, including pain, paralysis, loss of consciousness, and cognitive disturbances, can be associated with conversion disorders.[5] As with all of the somatoform disorders, these symptoms can coexist with other neurological diatheses.

A number of psychiatric conditions with cognitive symptoms can arise after accidents and violent injuries that are not associated with identifiable neuronal injury. Depressive episodes are the most common psychiatric diagnosis in the aftermath of traumatic brain injury.[15] Diagnostic criteria of major depression include diminished ability to think, concentrate, and make decisions. In addition, severely depressed patients often have psychomotor retardation, which manifests as slowed thinking and decreased speech that mimic cognitive disturbance. Individuals who have faced a life-threatening situation may also exhibit symptoms of PTSD. A diagnostic criterion of PTSD[5] is the inability to recall important aspects of the trauma not resulting from retrograde amnesia. Factitious Disorder is another psychiatric disorder in which feigned symptoms of memory loss develop along with a desire to assume the sick role.

Pain disorders may also produce problems with attention and concentration. A recent study found that patients in chronic pain perceive themselves as having cognitive problems in addition to emotional distress.[16] Both the sick role and prospect of financial gain can serve to perpetuate and exacerbate symptoms.[17–19] In one study, patients receiving disability compensation worked fewer hours and were less involved in their rehabilitation than those without such benefits.[17] The identification of malingering and/or of symptom amplification, although they are not

psychiatric disorders, is a distinct and critical problem in litigated minor head trauma cases.

## Malingering and Symptom Amplification

The finding of malingering requires clear evidence that there is no injury-related basis for the symptoms produced. Clinicians may be reluctant to diagnose malingering for a number of reasons[18,19]: the pejorative context of the term, fear of lawsuits, and the possibility of mislabeling or error. One alternative to this term has been to frame the discussion of malingering as poor motivation or effort, particularly in reference to psychological test performance. Such a framework is not without controversy. Slick *et al.*, for example,[18] argue that redefining malingering in terms of poor motivation is inappropriate and euphemistic. They suggest the alternative of descriptors of definite, probable, and possible to summarize evidence of exaggeration or fabrication of cognitive dysfunction.

A clinician can address the avoidance of a pejorative term with a euphemistic alternative by requiring unequivocal data in support of any conclusion that fabrication of dysfunction is serving to maximize financial or other compensation. Such data can include *sub rosa* videotapes of the litigant's activities and occupational or educational functioning in conflict with the symptoms claimed, and medical test results that contradict injury. However, an atypical course (i.e., persistent symptoms) in minor head trauma may result in the absence of evidence for malingering. In such cases, while the data may not support a conclusion of malingering, symptom amplification could be suspected. Although malingering is the volitional production of symptoms to obtain a range of rewards, symptom amplification refers to a broader concept that encompasses the exaggeration of true deficits beyond that produced by that level of trauma. There are a number of reasons why a litigant may exaggerate complaints. Rogers[20] assumes that malingering represents an adaptive course of action designed to achieve a specific objective and further argues that the risk of classifying genuine patients as malingerers increases when inconsistency in self-reported history is a heavily weighted assessment factor. For example, individuals with genuine brain damage may be poor historians who give conflicting, confabulated, or exaggerated histories in repeated evaluations. Amplification may represent a "cry for help" in situations in which litigants think that they may not be believed, such as in an adversarial defense examination. Symptom exaggeration can also derive from personality-related reactions to injury, such as histrionic overreaction. Further, a familiarity with the symptoms of postconcussive syndrome or minor head trauma could lead to over-reporting. Mittenberg *et al.*[22] found a tendency among patients with mild head injury to reattribute benign emotional and other complaints to their head injury. The authors suggested that a "symptom expectancy bias," coupled with selective attention and symptom misattribution, may result in the persistence of postconcussive symptoms following mild head injury.

The evaluation of symptom amplification is a complex and necessary facet of forensic evaluation. One method of assessing symptom exaggeration and malingering has been through the use of psychological tests of motivation.

## Assessment of Neuropsychological Impairment Reliability in Minor Head Trauma

Formal neuropsychological tests can assess the individual's level of effort and provide cutoff scores for malingering. Assessing the validity of symptoms reported is a frequent method used in general psychological assessment to address feigning or exaggerating through an examination of the number of rare or unusual symptoms endorsed. The most common method in cognitive assessment is the forced-choice procedure that begins with exposure to the stimuli (pictures, digits) followed by a recognition trial of two choices. This method assumes that even if an individual has no memory for items presented, random choice predicts a 50 percent success level. Scores below this level (i.e., a worse than chance performance), would be suggestive of motivation to perform poorly. Several forced-choice tests based on this principle are readily available,[23] including the Portland Digit Recognition Test,[24] Test of Memory Malingering (TOMM)[25] the Validity Indicator Profile.[26] The Victoria Symptom Validity Test[27] uses a computerized test approach to address feigning or exaggeration of cognitive impairments again based on a forced-choice (two-alternative) model. Because normal subjects asked to simulate malingering frequently do not perform significantly worse than chance,[28] researchers have developed cutoff scores to detect malingered or feigned deficient performance.[29,30] Performance on motivational tests can

be used to infer performance on other neuropsychological measures applied at the same testing session, and guide the degree to which the other tests may be true reflections of actual neuropsychological function or dysfunction.[31–33]

## Importance of Base Rates of Impairment

The true prevalence of genuine persistent cognitive deficits in patients with minor head injury remains controversial. Some prospective investigations of patients with mild concussion versus control subjects have not supported the persistence of cognitive deficits.[14,22,29,34] However, other studies have found moderate to severe disability in cases of individuals with a mild head injury.[30] If the base rate of cognitive deficits after such head injury is low, then the correct identification of the small numbers of individuals with genuine persistent deficits is more difficult. Moreover, if the base rates for genuine symptoms after minor head trauma are low, the clinician's need to determine the possible presence of feigned symptoms in any individual case increases. The correlation coefficient ($r$) is the statistic frequently used to calculate the effect size or the strength of the association between a predictor variable and the criterion (or outcome) variable. The square of this value ($r^2$) can be used to estimate the percentage of common variance (i.e., how much the predictor variable explains the effect on the outcome variable). Therefore, it should be noted that large correlation coefficients account for a smaller percentage of the variance in the outcome variable (e.g., financial incentive on cognitive scores).

Binder and Rohling[14] in their meta-analytic review of 11 independent samples (eight published reports) noted that the usual effect of minor head trauma on neuropsychological performance is undetectable (effect size $r = .12$ for Wechsler Memory Scale-Revised General Memory and $r = .20$ for Attention/Concentration Index). As a comparison, the effect of hypertension on neuropsychological functioning was noted to be considerably larger ($r = .67$), as was the effect size of financial incentives on impairment after closed head injury ($r = .47$). Further, the prevalence of neuropsychological impairment following minor head trauma was small ($r = .06$), suggesting that such impairment was apparent in only a minority of the cases. Binder and Rohling suggested that a clinician using neuropsychological findings was more likely to be correct by diagnosing no brain injury than by diagnosing mild injury in a minor head trauma sample.

Binder and Rohling,[14] in a meta-analysis of the impact of financial incentives on recovery after closed-head injury, concluded that those patients with incentives had more abnormalities than those patients without financial incentives but more severe injuries. They noted a significant effect size, $r = .47$, indicating that there was an association between the presence of financial incentives and more severe symptoms after closed head injury. As the effect was particularly strong in studies of patients with mild head injury, Binder and Rohling concluded that financial incentives will have an effect on levels of symptoms and disability. Further analysis revealed that patients seeking compensation had briefer (1 hour) amnesia and were more likely to fail to work after 18 months. Patients with mild head trauma seeking compensation performed more poorly on forced choice memory tests than those with more severe trauma not receiving compensation. These authors concluded that when there is a financial incentive, motivational tests can help address the impact of non-neurologically based factors in symptom presentation.

By contrast, a recent study in Scotland, where adversarial litigation rarely occurs, found that moderate or severe disability was common (47%) after mild head injury.[30] These findings suggest that the incidence of persistent symptoms following head trauma may be greater than commonly assumed and not necessarily attributable to financial incentives alone. An alternative explanation of the Binder and Rohling findings may be that those with more severe symptoms file lawsuits.

In summary, the empirical data to date does not unequivocally support a conclusion that financial incentives alone can explain persistent symptoms following minor head trauma. Moreover, the ability to predict malingering accurately is contingent on the frequency or rate of malingering among those with minor head injury.

## Quantification of Base Rates of Malingering

Meehl and Rosen[35] first suggested that the accuracy of any prediction model varies by the base rate of the behavior or event in the defined sample. When the base rate of malingering is low, the ability of the clinician to differentiate a malingerer accurately from

a patient with atypical, but genuine symptoms is also low, and the risk of falsely labeling an individual as a malingerer is therefore greater. Rosenfeld and colleagues[36] opine that most research on malingering does not consider the influence of base rates in the predictive accuracy of any method to detect feigned performance. Most prediction studies have focused on four indices of predictive accuracy: sensitivity (percent of correct predictions of malingering divided by the total number of actual malingerers), specificity (percent of correct predictions of honest responding divided by the total number of honest responders), negative predictive accuracy (number of correctly predicted honest responders divided by the total of correctly predicted honest responders plus the number of honest responders inaccurately predicted to be malingerers), and positive predictive accuracy (PPA; number of correctly predicted malingerers divided by the total number of correctly predicted malingerers plus the number of honest responders incorrectly identified as malingerers in the sample). Rosenfeld and colleagues calculated the PPA as a function of base rate using data from a study of malingering with the base rate set at 50 percent (half the sample were malingerers, the other half control subjects). With this base rate, the PPA was 88 percent, indicating that 13 percent of honest responders would be inaccurately labeled as malingerers. Rosenfeld *et al.* suggest that the base rate for malingering on neuropsychological examinations in a clinical context is much lower than the artificial rate set by the Mittenberg *et al.*[31] study. Citing Rogers *et al.* (Ref. 36, Ref. 13 therein), Rosenfeld and colleagues approximated the base rate for malingering on neuropsychological examination in a clinical context at 15 percent. Rosenfeld *et al.* calculated the PPA (correct identification of malingerers) for a 15 percent base rate of malingering as 57 percent. At this PPA, 43 percent of those identified as malingering would have been honest responders.

A recent study calculated the PPA and negative predictive accuracy (NPA) for commonly used malingering tests and with different base rates. Vallabhajosula and van Gorp[37] found that using a 30 percent malingering base rate and PPA of 80 percent, one malingering test met the standard (TOMM), one did not (Rey 15-FIT), and one was viewed in guarded terms (VIP). Curtiss and Vanderploeg[38] examined malingering classification "hit" rates among three samples of active military personnel or military veterans with traumatic head injury: those with questionable injury, defined as a presentation without loss of consciousness or posttraumatic amnesia; those with mild injury who suffered loss of consciousness and post-traumatic amnesia under 24 hours; and those with moderate to severe brain trauma with loss of consciousness and post-traumatic amnesia greater than 24 hours. Curtiss and Vanderploeg sought to determine whether those with questionable trauma would have higher rates of being classified as malingering than those with more severe trauma. The classification indices used for malingering were based on a pattern of performance cited in the literature for commonly used neuropsychological tests.[31,39,40] Curtiss and Vanderploeg found an unreasonably high false positive rate (i.e., classifying those with documented brain trauma as malingering). For example, a California Verbal Learning Test[41] total score for five trials of under 48 lead to the classification of 78 percent of those with moderate to severe brain trauma as malingering: 60 percent of those with mild injury, and 57 percent of those with questionable injury. Only two of the indices (Wechsler Memory Scale-R and WCST patterns) had low malingering base rates for those with documented brain trauma (less than 10%). Examining cases of mild brain trauma identified as malingering by the WMS-R (two cases) and WCST (four cases) indices, the authors suggested a minimum false-positive rate of 33 percent, as available medical and observation data did not support a conclusion of malingering. Using more than one index prior to identification as malingerer did not reduce the false-positive rate, implying that there remains a significant risk of falsely labeling an individual as a malingerer on the basis of the neuropsychological test pattern alone.

The true base rate for malingering in a forensic context is difficult to estimate, as individuals who may have prevailed in litigation are not apt to admit any malingered symptoms. Studies have suggested that the base rate can vary anywhere from 7.5 percent to 33 percent.[32,33,42,43] There is, therefore, a tendency to misclassify individuals as malingerers at the lower level base rates (i.e., 7.5%). Even with the highest estimate of malingering (i.e., over 30%), there would be a 24 percent rate of inaccurate classifications (i.e., a PPA of 76%). A determination of malingering on the basis of motivational tests alone may be problematic. One solution to minimize incorrect results has been to use multiple tests. Rosen-

feld *et al.*[36] argue that the assumption that multiple tests will reduce the likelihood of false-positive finding may not be accurate. They argue that separate tests may not be truly independent measures of malingering and may be measuring the same elements. If so, an honest responder may be incorrectly classified as a malingerer when his testing protocol tests redundantly measures the same trait or behavior. Rosenfeld *et al.* argue that empirical research on the overlap among malingering tests is unknown, and without this information the addition of multiple tests may add little benefit in reducing the incidence of false positives.

## Forensic Hypothesis Testing: A Practical and Comprehensive Model

As the above review illustrates, the evaluation of minor head trauma litigants is a complex endeavor that requires an awareness of the limitations of any one method. Decision-making about whether the observed symptom pattern comports with injury site, course, and severity requires an assessment of multiple factors. The domains of clinical observations, neuropsychological tests results, and medical test findings can be conceptually combined to guide the forensic clinician in producing a thorough and reasoned opinion concerning the presence of malingered or amplified deficits. This process may reduce false labeling of malingering, lower the possibility of diagnostic error, and permit the clinician to render an opinion to a reasonable degree of certainty. This conceptual model does not weigh or suggest that any single item incrementally increases the accuracy of decision-making. Rather, the model we propose addresses two critical questions: What data support a hypothesis of malingering or symptom amplification? What data argue against malingering or symptom amplification? The assessment model is based on a thorough discussion of the environmental, psychological, and medical factors that were extant at the time of the event, contribute to current functioning, and help distinguish genuine versus exaggerated presentation of deficits. This method relies on a comprehensive list of issues pertaining to consistency of the litigant's symptoms. Table 1 is the assessment guide for amplified or malingered symptoms in head injury. After the data are addressed through the factors listed in Table 1, the following four categories will summarize the conclusion.

1. Genuine disorder—no amplification: a genuine disorder that is explained by the medical/neurological condition and lacks evidence of exaggerated or falsely produced impairments (e.g., Dementia owing to Head Trauma, Cognitive Disorder not otherwise specified [NOS]).

2. Genuine disorder with atypical symptoms related to non-neurological or other factors: deficits/symptoms are explained by a true medical/neurological condition (*e.g.* neck/back injury), but the severity of impairment is not consistent with a minor head trauma (*e.g.* complicated by Mood Disorder, Anxiety Disorder, Personality Disorders or chronic pain).

3. Atypical presentation—amplification: deficits and symptoms are not explained by medical/neurological condition and the severity does not comport with the trauma; however the primary incentive does not appear to be financial (e.g., Conversion Disorder, Somatoform Disorder, Factitious Disorders, Personality Disorder)

4. Atypical presentation—malingering: Deficits are intentionally produced. The severity and range of symptoms are clearly fabricated for a discernible external incentive.

## Using the Assessment Guide for Amplification/Malingering In Head Injury

The following represents an elaboration of the assessment guide (Table 1), supplemented with a case vignette to illustrate the model.

### *Neuropsychological Testing Issues*

1. How does the profile presented fit what is known about the diagnosis?

2. How does the profile fit with what is known about the base rate of this level of disability for this disorder?

3. Is the clinical presentation of symptom and deficits consistent with diagnostic criteria?

#### *Case Vignette*

Mr. X, a 46-year-old executive with a small company, lost his footing on wet pavement and landed on his back, shoulder, and head, thereby sustaining a slip-and-fall injury. There was no loss of consciousness associated with the injury, and an evaluation in the emergency room revealed no abnormalities on radiologic studies, including head computed tomographic scan. Neuropsychological data obtained nine months after injury suggested severe immediate

**Table 1** Assessment Guide for Amplification/Malingering in Head Injury

| | Supports Genuine Injury | Supports Symptom Amplification |
|---|---|---|
| I. Neuropsychological testing issues | | |
| a. Base rates of brain damage | ☐ | ☐ |
| b. Testing comports with severity of injury | ☐ | ☐ |
| c. Motivational tests abnormally positive | ☐ | ☐ |
| II. Congruence of testing and behavior | | |
| a. Data consistent with observed behavior in testing session | ☐ | ☐ |
| b. Serial testing consistent with CNS process | ☐ | ☐ |
| c. Testing data comports with medical reports | ☐ | ☐ |
| d. Testing data comports with occupational or school functioning | ☐ | ☐ |
| III. Congruence of symptoms or signs with clinical data | | |
| a. Symptoms/signs comport with clinical interview | ☐ | ☐ |
| b. Symptoms/signs consistent with clinical course | ☐ | ☐ |
| c. Symptoms/signs consistent with past records | ☐ | ☐ |
| d. Symptoms/signs consistent with physical exam | ☐ | ☐ |
| e. Symptoms/signs consistent with objective labs | ☐ | ☐ |
| f. Symptoms/signs consistent with collateral or surveillance data | ☐ | ☐ |
| g. Medication response consistent with natural history of CNS disease | ☐ | ☐ |
| h. Symptoms/signs consistent with social, occupational, or school functioning | ☐ | ☐ |
| IV. Nonclinical factors | | |
| a. No decline in income/business pre-injury | ☐ | ☐ |
| b. No pending lawsuits pre-injury | ☐ | ☐ |
| c. No burn-out, job actions, conflicts with co-workers, skills problems pre-injury | ☐ | ☐ |
| d. Compensation less than pre-injury income | ☐ | ☐ |
| e. Evaluated several times with same tests | ☐ | ☐ |
| f. Context of evaluation impacting presentation | ☐ | ☐ |
| g. Expectations for recovery reasonable | ☐ | ☐ |
| | Presence of Condition | |
| | No | Yes |
| V. Presence of psychiatric and other conditions that may contribute to amplified or atypical symptoms | | |
| a. Depression/anxiety | ☐ | ☐ |
| b. Personality disorder | ☐ | ☐ |
| c. Conversion/somatization | ☐ | ☐ |
| d. Substance abuse | ☐ | ☐ |
| e. Cumulative concussion | ☐ | ☐ |
| f. Impact of chronic pain | ☐ | ☐ |
| g. Impact of medications | ☐ | ☐ |
| h. Impact of medical comorbidities | ☐ | ☐ |
| VI. Miscellaneous | | |
| a. Prior history of litigation | ☐ | ☐ |
| b. Prior history of lying, malingering | ☐ | ☐ |
| c. Prior criminal activity | ☐ | ☐ |
| d. Prior job track record | ☐ | ☐ |
| e. Prior responses to injury | ☐ | ☐ |

memory and auditory attentional deficits (at the first percentile range), and his performance on motivational tests was in a nonmalingered range (see Appendix A, Section I).

There is an absence of abnormal findings on physical, neurological, and radiographic examinations in the local hospital emergency room. While the absence of radiological findings is common in minor head trauma, the relatively minor nature of the head injury and the severity of memory problems are inconsistencies that raise a question of symptom amplification or malingering. The motivational test scores, however, do not support this conclusion. As noted earlier, the base rate for malingering symptoms varies between a low of 7.5 percent to more than 33 percent,.[32,33,42,43] The base rate estimated by some

studies in a forensic context is closer to a 15 to 30 percent range.[43] Further, most postconcussive symptoms are mild and recede after 18 months, suggesting that the base rate for continued symptoms should be low (15% by one study[2]). The presence of severe cognitive problems remaining at nine months after injury is atypical and raises a question about whether there may be symptom amplification.

### *Congruence of Testing and Behavior*

To what extent are the neuropsychological data congruent with observed behavior? This includes the patient's description and subjective rating of the condition and impairment of function.

Are subjective quantitative rating scales relatively stable? Look for extreme ratings that have minor operational dysfunction to support the subjective rating.

*Case Vignette, Continued*

Mr. X reported no recent medical, psychiatric or substance use problems. However, during the course of several months, Mr. X complained of severe back pain, confusion, poor memory, and irritability. He described being unable to sustain his usual level of function at work for more than a few hours a day; arguments with his wife, children, and friends; and depression. He rated his symptoms as severe. A surveillance study confirmed Mr. X's claim of leaving work early on a frequent basis. Mr. X's recent work evaluation by his superiors indicated excessive absenteeism and difficulty completing projects. Neuropsychological testing ordered by Mr. X's attorney one year after injury revealed inconsistencies in test performance across time. Mr. X appeared to be performing better at testing conducted at the 9-month assessment than the 12-month assessment. During the assessment requested by the defense attorney, Mr. X's scores were even lower, indicating profound visuospatial, reasoning, and memory deficits. Mr. X, however, was observed on videotape successfully navigating city streets despite heavy traffic, and finding his way to an area he described as unfamiliar. On clinical examination, he appeared articulate and able to sequence the events of his injury and treatment accurately (Appendix A, Section II).

In addressing symptom congruence two variables may contribute to inconsistency and should be addressed: the fluctuating course of the disorder and the accuracy of the individual's past reporting of symptoms. In this instance, serial test data appear inconsistent with a central nervous system (CNS) process, as his symptoms were worsening rather than improving over time. The medical records do not support the severity of injury as noted by Mr. X's complaints. However, there is congruence between Mr. X's complaints and that of his occupational collateral reports, suggesting that a conclusion of frank malingering may not be warranted, and data that are supportive of cognitive symptom amplification.

### *Congruence of Symptoms or Signs with Clinical Data*

To what extent are the symptoms consistent with the psychiatric examination?

*Case Vignette, Continued*

Mr. X presented with a depressed affect and complaints of severe neck pain that did not respond to pain medication. His affect was blunted and remained so during the course of the three-hour examination. He complained of irritability and losing his temper at home and work, noting that he had recently exploded in a meeting with a corporate planner over downsizing issues. He described low energy and a lack of pleasure in prior hobbies because of chronic pain. He also complained of loss of libido and of fatigue and insomnia and described himself as feeling hopeless about the chances of recovery. Magnetic resonance imaging (MRI) of the cervical spine taken three months prior to the clinical evaluation revealed a small central disk herniation at C5–6, with mild disk bulging. Mr. X complained of numbness in the face and right arm. A neurological examination conducted two months earlier revealed tenderness of the cervical paraspinal muscles. A brain MRI revealed a single area of hyperintensity in the deep white matter in the left frontoparietal region, which was not considered clinically significant. An electroencephalogram (EEG) was normal. An orthopedic examination conducted by plaintiff's experts noted degenerative cervical spine changes exacerbated by the slip-and-fall injury. A cervical myelogram with CT scan revealed degenerative spondylosis of the cervical spine. An independent psychiatric examination for a disability insurance policy conducted one month earlier described Mr. X as exhibiting signs of depression and anxiety related to difficulty coping with chronic pain (Appendix A, Section III).

The consistency of the reported clinical symptoms with observed behavior supports a genuine injury.

There is congruence between Mr. X's complaints and that of the medical test reports for chronic pain as a complicating factor. These data suggest that a conclusion of frank malingering is not warranted.

### *Nonclinical Factors*

What are the nonclinical factors that could influence the evaluation findings?

Financial issues, context of the evaluation, knowledge of the test procedures and disorder, and expectations for recovery are all factors to be considered in judging the reliability of the clinical and behavioral data. Repeated evaluations and assessments can affect the accuracy of test results and clinical presentation. The context of the evaluation (i.e., whether the litigant is being evaluated by the defense or plaintiff expert) may distort the symptom presentation. Knowledge about psychological tests derived from the Internet may also affect the accuracy of the assessment of malingering.[44] Plaintiffs may amplify symptoms to convince the defense expert of the legitimacy of deficits, or may be angry in an examination that is perceived as adversarial. Evaluations should clearly address the litigant's expectations regarding recovery of function or prolonged disability. For example, is there an emotional investment in remaining disabled or dependent, apart from financial incentive? What does the individual want (e.g., settlement, embarrassment of responsible party, day in court, recognition of victimization), and how likely is it to happen?

#### *Case Vignette, Continued*

Financial data reveal that Mr. X had an income of $150,000 for the last tax period. His previous five-year tax record revealed no decline in income compared with the preinjury level. His company was facing a takeover by a larger corporation, and, given Mr. X's middle management status, it was likely that he would be forced to resign. However, Mr. X had anticipated this prior to his injury and had been in the process of soliciting other management positions. Since his injury, he has not been able to resume this search. Although Mr. X's original training was as a systems analyst, he had worked exclusively in management for the past 10 years. He had remarried four years earlier and had two young children to support, in addition to a son from his first marriage who was about to begin college. His present wife is a homemaker. Mr. X contends that his level of impairment precludes return to work as a manager. He seeks earnings compensation projected at a managerial level. Mr. X remains profoundly hopeless about recovery and does not believe he will ever live pain free. Mr. X has been clinically assessed several times: by both defense and plaintiff experts as well as by an examiner for his disability claim. There have been inconsistencies found in the serial cognitive testing; most notably that Mr. X exhibits deteriorating performance across time. He has been enrolled in pain management programs, but states these efforts have not diminished his chronic pain (Appendix A, Section IV).

There are some nonclinical factors that support the presence of a genuine injury. However, preinjury factors, such as his company's downsizing and possible skills deficits suggest a motivation for amplifying or even feigning symptoms. That is, although prior to the injury there was no evidence for burnout or job conflicts, there was evidence that Mr. X was no longer competitive for employment at his current level of compensation. He had an extremely low expectation for recovery that may be influenced by the context of the evaluation (i.e., to determine compensable damages). Overall, there are some critical financial and occupational factors that could be argued to support symptom amplification.

### *Presence of Psychiatric and Other Conditions That May Contribute to Amplified or Atypical Symptoms*

To what extent do additional psychiatric conditions exist that may contribute to amplified or atypical symptoms?

#### *Case Vignette, Continued*

The psychiatric examination and prior reports suggest the presence of depression associated with chronic neck and back pain and not relieved by analgesics. Mr. X complained of a constant headache that interfered with his ability to concentrate (Appendix A, Section V).

The objective findings revealed a cervical disk bulge and complaints of chronic pain that had been consistent across evaluations. The records and examination suggested depression secondary to chronic pain and headache related to pain, that contributed to his loss of efficiency at work. Pain and depression are likely to have resulted in impaired cognitive test results. The cognitive testing findings and their variability are most likely related to the pain syndrome as

opposed to the persistent impact of the minor head trauma.

### *Miscellaneous*

While this brief case does not involve the histories listed, the presence of previous evidence of lying, malingering, or symptom amplification increases the likelihood that similar behaviors are involved in the current symptom presentation (Appendix A, Section VI). There may be other case-specific characteristics that the clinician might also consider, such as lack of cooperation with diagnostic evaluations, professional knowledge of the litigation or medical process, or other idiosyncratic elements.

#### *Case Vignette, Conclusion*

Mr. X presented with atypical symptoms of worsening cognitive deficits following a mild head injury without loss of consciousness. As a result of a fall on wet pavement, Mr. X sustained several injuries, of which cervical disk herniation was documented by medical studies. Neuropsychologic and medical studies did not provide unequivocal support of acute or chronic brain injury. Further, the level of behavioral deficits that Mr. X reported was inconsistent, particularly with worsening severity and no subsequent head trauma. Moreover, his observed functional abilities (i.e., articulate in interview and driving in heavy traffic) did not support the severity of cognitive test results. Although a persistent PCS cannot be ruled out, there are insufficient findings to corroborate this diagnosis. While the cognitive symptoms are inconsistent, the data do not support exaggeration or frank malingering. This litigant's enduring concentration and attention difficulties are ascribed to chronic pain and associated depression. The conclusion, of a "genuine disorder with atypical symptoms related to non-neurological or other factor," is warranted by the data reviewed.

## Conclusion

This practical model allows the clinician to weigh multiple factors before formulating a conclusion that can be supported by an evidence-based rationale. Nonetheless, there are neuropsychiatric syndromes that arise from minor head trauma which confound efforts to satisfactorily explain inconsistent or puzzling features. Some patients often are found to have complex conditions that combine elements of a subtle brain insult, somatization, depression, and secondary gain. As Epstein *et al.*[45] have noted, "Conflict between patients' experiences of illness and physicians' diagnostic categories, and fear of blaming the patient, complicate naming and characterizing the illness." Ultimately, the forensic expert must decide whether a relatively minor head injury has caused legitimate severe and persistent neuropsychological symptoms. Adherence to this model will assist in that effort.

**Appendix A: Sample Checklist for the Assessment Guide for Amplification/Malingering in Head Injury**

| | Supports Genuine Injury | Supports Symptom Amplification |
|---|---|---|
| I. Neuropsychological testing issues | | |
| a. Base rates of brain damage | ☐ | ☒ |
| b. Testing comports with severity of injury | ☐ | ☒ |
| c. Motivational tests abnormally positive | ☒ | ☐ |
| II. Congruence of testing and behavior | | |
| a. Data consistent with observed behavior in testing session | ☐ | ☒ |
| b. Serial testing consistent with CNS process | ☐ | ☒ |
| c. Testing data comports with medical reports | ☐ | ☒ |
| d. Testing data comports with occupational or school functioning | ☒ | ☐ |
| III. Congruence of symptoms or signs with clinical data | | |
| a. Symptoms/signs comport with clinical interview | ☒ | ☐ |
| b. Symptoms/signs consistent with clinical course | ☒ | ☐ |
| c. Symptoms/signs consistent with past records | ☒ | ☐ |
| d. Symptoms/signs consistent with physical exam | ☒ | ☐ |
| e. Symptoms/signs consistent with objective labs | ☒ | ☐ |
| f. Symptoms/signs consistent with collateral or surveillance data | ☒ | ☐ |
| g. Medication response consistent with natural history of CNS disease* | ☐ | ☐ |
| h. Symptoms/signs consistent with social, occupational, or school functioning | ☒ | ☐ |

**Appendix A:** Sample Checklist for the Assessment Guide for Amplification/Malingering in Head Injury (continued)

| | Supports Genuine Injury | Supports Symptom Amplification |
|---|---|---|
| IV. Nonclinical factors | | |
| a. No decline in income/business pre-injury | ☒ | ☐ |
| b. No pending lawsuits pre-injury | ☒ | ☐ |
| c. No burn-out, job actions, conflicts with co-workers, skills problems pre-injury | ☐ | ☒ |
| d. Compensation less than pre-injury income | ☒ | ☐ |
| e. Evaluated several times with same tests | ☐ | ☒ |
| f. Context of evaluation impacting presentation | ☐ | ☒ |
| g. Expectations for recovery reasonable | ☐ | ☒ |
| | Presence of Condition | |
| | No | Yes |
| V. Presence of psychiatric and other conditions that may contribute to amplified or atypical symptoms | | |
| a. Depression/anxiety | ☐ | ☒ |
| b. Personality disorder | ☒ | ☐ |
| c. Conversion/somatization | ☒ | ☐ |
| d. Substance abuse | ☒ | ☐ |
| e. Cumulative concussion | ☒ | ☐ |
| f. Impact of chronic pain | ☐ | ☒ |
| g. Impact of medications | ☒ | ☐ |
| h. Impact of medical comorbidities | ☐ | ☒ |
| VI. Miscellaneous | | |
| a. Prior history of litigation | ☒ | ☐ |
| b. Prior history of lying, malingering | ☒ | ☐ |
| c. Prior criminal activity | ☒ | ☐ |
| d. Prior job track record | ☒ | ☐ |
| e. Prior responses to injury | ☒ | ☐ |

* Not applicable.

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