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The Impact of Secondary Gain on Employment for Persons with Mild Traumatic Brain Injury

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Overview

Assessing a traumatic brain injury (TBI) is not an exact definitively diagnosed science such as that of a broken bone, and in instances where some type of secondary gain is available based on one's circumstances, it may be difficult to assess. The Traumatic Brain Injury Model Systems database (TBIMS, 2017a) indicates the prevalence of acquired traumatic brain injury (TBI) fluctuates somewhere around 2.8 million cases per year in the United States, with 30% showing no lingering signs of TBI after one year, and 15% showing mild TBI symptoms (TBIMS, 2017b). In addition, while 54% are admitted to a TBIMS Center with a moderate TBI, after one year when the most recovery typically occurs, only 23% remain at the moderate TBI level. Chan, Parmenter, and Stancliffe (2009) suggest that many survivors' experience long-term cognitive, emotional, and behavioral symptoms long after the injury depending on the type and severity of injury. The TBIMS statistics for the most recent sample of approximately 11,000 former patients notes after one-year post-injury, 63% live independently, 5% require overnight supervision, 18% require part-time supervision, and 8% require full-time direct supervision.

Persons with TBI accepted to a TBIMS rehabilitation hospital are typically considered the more moderate to severe level TBI patients, as those with mild TBI generally are not referred or taken to a Model Systems Hospital. The criteria for inclusion in the database require a Glasgow Coma Scale (GCS) score of 12 or less, loss of consciousness greater than 30 minutes, and posttraumatic amnesia (PTA) of greater than 24 hours noted in the emergency room. Noting this, the TBIMS (2017b) database regarding employment shows the latest statistics indicate 61% are employed at the time of injury, and this drops to 28% at first year follow-up and 32% at two-year follow-up. Across the same three-time spans, approximately 6% are students and remain that way. Finally, at time of injury 29% report being unemployed or retired, and this number increases at the first-year follow-up to 62%, while at the second-year follow-up decreases to 48%.

Although moderate and severe TBI tend to be more distinctly classified by GCS and PTA, mild TBI often goes undiagnosed and is difficult to detect through imaging. Neuropsychologists who try to assess TBI using a battery of neuropsychological tests show results are not always definitive and can be feigned to a degree based on performance and overreliance on subjective complaints (Fee & Rutherford, 1998; Miller, 2001). Consequently, a major aspect of assessing mild TBI largely comes down to relying upon an injured party's subjective symptoms. Researchers have demonstrated that where secondary gain is involved such as litigation versus those who are not litigating their injuries, plaintiff's often report greater maladjustment and loss of physical and/or mental abilities (Binder & Rohling, 1996; Dawson, Levine, Schwartz, & Stuss, 2004; Green, Iverson, & Allen, 1999; McCrea et al., 2009). Modlin (1983) noted over three decades ago that personal injury cases involving mild TBI were second only to divorce and civil cases.

The purpose of this paper is to explore the decades old debate and increasingly more frequent lawsuits and/or Workers' Compensation complaints regarding mild TBI and future employment potential. Topics to be discussed include mild TBI and recovery, TBI assessment and symptoms, malingering, exploring who may or may not be exaggerating symptoms for financial gain, and implications for Social Security vocational experts (SSVE) and forensic vocational experts (FVE) (Miller, 2001; Modlin, 1983).

Mild Traumatic Brain Injury

As noted earlier, there are an estimated 2.8 million head injury emergency room visits each year in the United States (TBIMS, 2017b). Taylor, Bell, Breiding, and Xu (2017) statistics indicate that 282,000 of these are hospitalized signifying a moderate to severe TBI, and 50,000 more die from their injuries. Individuals with suspected mild TBI often do not remain hospitalized and are discharged the same day. Schwartz (2002) estimated about 76% of all suspected head injury cases are mild in nature and sometimes referred to as concussions. Most mild cases go undetected by imaging or are ignored by medical staff if more serious injuries are involved at time of admission. Although an estimated 75% of individuals with mild TBI (otherwise known as post-concussion syndrome or PCS) fully recover within 3-12 months, the remaining cases report lingering cognitive, emotional, and behavioral sequelae after that time (Levin et al., 1987).

Larrabee and Rohling (2013) conducted a meta-analysis of mild TBI based on neuropsychological outcome, noting full recovery of patients with a single uncomplicated injury is often less than 90 days. They indicated that multiple PCS events often are indicative of a somatoform presentation that often co-occur with injuries that are not related to the head (headaches, depression, anxiety, fatigue, concentration problems). Complicating a definitive diagnosis of mild TBI are overlapping symptoms of diagnosed anxiety and depression which in and of themselves can lead to fatigue, attention and concentration difficulties, and memory problems (Whelan-Goodinson, Ponsford, Johnston, & Grant, 2009; Schwartz, 2002). Whelan-Goodinson et al. indicate the prevalence of anxiety and depression within the first five years to be 23% – 38% post-injury.

The symptomatology often expressed in somatic complaints following mild TBI overlap with the same symptoms expressed by those with moderate and severe TBI. These include extreme fatigue, dizziness, short and/or long-term memory problems, attention and concentration deficits, depression, anxiety, lability of mood, irritability, inappropriate behavior, headaches, light insensitivity, personality changes, and lack of motivation (Schwartz, 2002). Of interest from the first author's experience over two decades with mild TBI litigated cases is the inconsistency with the fact that the greatest amount of healing and recovery occurs in the first six – 12 months, however in litigated cases, most injured litigants report more significant cognitive and emotional difficulties as time goes on rather than fewer symptoms (Evans, 1992; Larrabee & Rohling, 2013; Levin et al., 1987; Miller, 2001).

Traumatic Brain Injury Assessment and Symptoms

Traumatic brain injury is typically assessed by emergency medical technicians or at the emergency room often using the GCS which comprises ratings of consciousness across three areas; motor response, eye response, and verbal response ranging in scores from 3-15. A mild TBI score is 13 – 15, moderate is nine through 12, and severe is diagnosed with a score of eight or less. The other assessment factor is that of PTA, with loss or altered consciousness for less than 60 minutes diagnosed as mild, 1-24 hours diagnosed as moderate, one to seven days severe, and eight days or longer a very severe TBI (Ashley & Hovda, 2017).

Traumatic head injuries are also classified as open or closed, essentially pertaining to whether there is an open laceration to the skull or not. Open head injuries tend to have localized damage to the area of impact generally from a blunt force such as a bat, whereas closed head injuries resulting in internal bleeding on the brain such as a subdural hematoma will have diffuse axonal damage in different regions of the brain the blood penetrates (Ashley & Hovda, 2017; Berg et al., 1987). If the internal bleeding pressure is not immediately treated by performing a craniotomy or burring holes into the skull, the brain damage generally becomes worse and can result in death. In a closed head injury such as the brain hitting a steering wheel after an accident, the individual may suffer a coup and/or contra-coup injury whereby the brain thrusts forward into the skull frequently damaging the frontal lobe, then thrusting toward the back of the brain often impacting the occipital region (Schwarz, 2002).

The most common behavioral symptoms cited by persons with TBI include social withdrawal, irritability, fatigue, sexual disinhibition, childlike behavior, and attention seeking. Cognitively, symptoms

may include headaches, short or long-term memory problems, poor judgement, poor problem-solving ability, dizziness, and easily distracted making concentration difficult. The emotional sequelae often reported is depression, anxiety, dysthymia, fear, and generalized anger (Miller, 2001). Deb, Lyons, Koutzoukis, and McCarthy (1999) further indicate the incidence of depression is diagnosed somewhere between 14% – 61% sometime in the first eight years post TBI.

Malingering

Malingering is defined as intentionally reporting symptoms for personal gain (i.e., money or time off work) (American Psychiatric Association, 2013). The DSM-5 defines it as deceptive behavior rather than a mental disorder. Lipman (1962) postulated four categories to explicitly describe malingering which include *exaggeration, fabrication, extension* and *misattribution*. *Exaggeration* presents as a client reporting increased austerity of symptoms to be much worse than he or she is experiencing. *Fabrication* involves the client falsifying the presence of symptoms. *Extension* involves reporting the prevalence of symptoms that have been completely resolved for personal gain. Lastly, *misattribution* is when the injured party blames symptoms unrelated to the litigated date of injury to the actual date of injury.

Exaggeration is noted as the most common form of malingering (Green, Rohling, Lee-Haley & Allen, 2001). Green et al. (2001) cited malingering after they administered the Word Memory test to 904 individuals. Within this sample, 376 participants had pending worker's compensation claims, 317 had pending medical disability claims, and 196 had pending personal injury litigation. Over half the sample (470) reported having sustained a head injury. Test results suggested between 23% - 35% of the 904 participants with ongoing claims were exaggerating their symptoms.

Mittenberg, Patton, Canyock, and Condit (2002) reported somewhat similar rates of malingering and symptom exaggeration. They surveyed 131 American Board of Clinical Neuropsychologist members who in combination cited over 33,500 personal injury, disability, criminal, and medical cases. Of this population, the neuropsychologist's estimated that 29% of the personal injury, 30% of the disability, 19% of the criminal, and 8% of the medical cases were suspected of symptom exaggeration (p. 1094). Cases involving mild TBI were suspected of symptom exaggeration and malingering in an estimated 39% of these cases.

Similarly, Greiffenstein, Baker, and Gola (1994) found an approximate 37% base rate of malingering in persons with mild TBI seeking compensation. Researchers found self-reported subjective complaints that were inconsistent with documented severity of cognitive impairment medical records, observed behavior, and testing results.

Exploring Who May/May Not Be Exaggerating for Financial Gain

Many neurologist and neuropsychologist studies indicate that individuals with TBI will see maximum recovery as the brain attempts to heal itself somewhere between 6 to 12 months post-injury (Berg et al., 1987; Schwartz, 2002). McCrea et al. (2009) conducted a thorough review of the literature to enhance clinical management of individuals with mild TBI. They reported that individuals with mild TBI exhibit little to no neuropsychological symptomology 90 days post injury. Cognitive irregularities and other functional deficits are most severe directly after a mild TBI is sustained and engaging in physical activities following an injury may lead to a slower recovery process.

Tsanadis et al. (2008) also studied brain injury severity, litigation status and self-reported postconcussive symptoms with the Postconcussive Symptom Questionnaire testing two groups. The first involved 133 individuals diagnosed with moderate or severe TBI, and the second group involved 44 persons with mild TBI involved in litigation. Results indicated that the second group were observed to intentionally perform poorly on the questionnaire and reported more symptoms and greater severity than the moderate and severe TBI groups. Unlike the mild TBI group, there was no statistically significant differences in reported symptoms from the moderate and severe TBI group between

those litigating and those not litigating. Wood and Rutterford (2006) similarly found that the litigation effect did not generalize in more severe TBI cases.

Similarly, Larrabee, Millis and Meyers (2009) found 40-50% of probable malingering was apparent when external incentives like a financial settlement was pending. The authors note that mild TBI related symptoms are not readily detected by objective testing such as imaging studies with Computed Tomography (CT) scans and Magnetic Resonance Imaging (MRI).

Convoluting the attempt to obtain objective confirmation of a head injury is the observation by Miller (2001) a neuropsychologist, who describes the equivalent of the fast food industry where attorneys want fast and less expensive reports from their retained experts. He argues what he observed was cookie-cutter cut-and-paste neuropsychological reports administered by lesser skilled individuals who plug the numbers into test interpretation software and the neuropsychologist tweaks the report and signs off on it, often without enough information to definitively diagnose the severity of a TBI.

Vagnini, Berry, Clark, and Jiang (2008) reported that malingering detection as it relates to testing is entirely based on the client's effort in order to obtain reliable results. Vagnini et al. (2008) examined 47 participants in two areas related to detecting malingering; reaction time, and event related potential in comparison to the results from administering the Test of Memory Malingering (TOMM). Of the 47 participants, 16 were volunteers with no prior head injury who were instructed to perform honestly on the test, an additional 16 participants with no prior head injury were instructed to malinger inadequacies, and the last group of 15 participants consisted of individuals with a previous head injury resulting in a median GCS score of 8.7 (Vagnini et al., 2008). An electrocephalogram was used as a measurement tool to record brain activity in each participant. Results revealed that those without a brain injury who were instructed to respond honestly displayed more frontal lobe activity than those who were instructed to malinger (Vagnini et al., 2008). Individuals with a documented traumatic brain injury showed reduced activity in the frontal lobe suggesting that a combination using the TOMM and an electroencephalogram can provide a valuable basis for detecting malingering in this population.

Finally, Denning and Shura (2017) investigated malingering and mild TBI in veteran's benefits during pension evaluations. They conducted a retrospective review of 74 veterans who had been tested with the Medical Symptom Validity Test and the Test of Memory Malingering. Overall, an estimated 33% – 52% of veterans with mild TBI reported symptoms were found to be malingering their cognitive deficits. The authors cited the cost of compensation and pension benefits nationwide for this population was estimated to be between $136 million and $235 million per year.

Factors Associated with Return to Work (RTW) for Persons with Mild TBI

Regarding employment outcomes for persons with mild TBI, research findings suggest somewhat consistently that successful outcomes are found in those who are younger, demonstrate fewer psychiatric symptoms, had shorter length of hospital stays, and demonstrated higher scores on the GCS (Berg et al., 1987; Grauwmeijer et al., 2012; Ruffolo, Friedland, Dawson, Colantonio, & Lindsay, 1999). Conversely, persons with mild TBI who are over 40 have negative RTW predictors. They had lower cognitive functioning, anxiety and depression, and psychiatric symptoms (Grauwmeijer et al., 2012). The researchers found that anxiety and depression were the most commonly reported symptoms in individuals with TBI. Given these limiting functional problems, researchers have found moderate support for some service components in aiding RTW. Findings suggest that adequate treatment of psychiatric symptoms and cognitive rehabilitation programs offered to individuals not able to work more than 6-12 months can be effective. Providing vocational rehabilitation services early in the rehabilitation process, creating a supportive work environment, providing cognitive skills training, supplying assistive technology and training in its use were all positive return to work strategies (Libeson, Downing, Ross, and Ponsford (2018). Notably, the researchers did not study the impact of pending litigation for secondary gain, but rather factors that were more successful in RTW efforts.

Ruffolo et al. (1999) solicited sixty-three individuals with mild traumatic brain to examine return to work factors and/or barriers. Of the 63 solicited, fifty continued for the duration of the study. The criteria for this study included: (1) admission to hospital after a motor vehicle accident; (2) age 19-65; (3) engaged in employment pre-injury; (4) no previous head injury; (5) no co-morbid neurological disease; (6) no hospitalization psychiatric history; (7) no severe disfigurement; and, (8) English speaking. The results revealed a 42% return to work rate, with 12% returning to the same type of work pre-injury and 30% returning to modified work.

Chronicling the acute predictors of return to work rates after TBI is essential in developing an effective plan for employment. Cifu et al. (1997) conducted a study of 132 individuals with traumatic brain injury, 83 identifying as unemployed and 49 as employed. Four areas of assessment included injury severity, functional status, cognition, and behavior were examined to determine differences in those employed and unemployed post TBI. Severity was measured using the Glasgow Coma scale, length of Post Traumatic Amnesia (PTA), presence of associated injuries and intracranial hematomas. Functional status testing included instruments (i.e. Functional Independence Measurement scale and the Disability Rating Scale. Cognition was evaluated using neuropsychological tests (i.e., Grooved pegboard test for dexterity; Trail making A and B for attention and concentration and the Logical memory subtest of the Wechsler Memory Scale for learning and memory). Lastly, behavior was assessed by the Rancho Los Amigos scale and specific portions of the Neurobehavioral rating scale (Cifu et al., 1997). Additionally, length of stay in rehabilitation settings or acute care hospitalization were explored as a predictors' of RTW. The results revealed that individuals who were employed post TBI averaged 18 days of acute hospitalization, whereas those unemployed averaged 30 days. As it relates to injury severity, those who were employed had higher GCS scores and PTA was shorter. Thirty-five percent of this sample were not diagnosed comatose in the acute hospitalization. Functional status analysis showed the employed participants to be functioning at a more advanced level than those unemployed during admission and at discharge. Significant differences were found in behavioral status with the unemployed group scoring lower on the Neurobehavioral scale excitement factors than those in the employed group. Finally, cognitive status indicated significantly lower scores on the neuropsychological test than those in the employed group (Cifu et al., 1997).

Cancelliere et al. (2014) conducted a systematic review of the literature regarding RTW post mild traumatic brain injury. The criteria for inclusion were studies with at least 30 mild TBI cases, examining RTW or employment outcomes, and the definition had to follow the criteria set-forth by the World Health Organization Collaborating Centre Task Force on mild TBI (von Holst & Cassidy, 2004). There was a total of 1,309 individuals followed over the course of four studies that met the inclusion criteria. Results indicated an RTW timeframe between 3-6 months post injury for most workers. Predictors for delayed RTW included: lower levels of education; nausea or vomiting at time of hospital admission; intracranial injuries; pain directly after injury occurred; limited job independence and decision-making latitude.

Conversely, lower levels of education coupled with the type of work these individuals engage can be a determinant in RTW rates or timeframe of return. Walker, Marwitz, Kreutzer, Hart and Novack (2006) found professional, skilled, and manual laborers have different RTW outcomes after a TBI. A total of 1,341 participants were assessed, noting 192 professional or managerial workers, 751 skilled workers, and 398 manual laborers. Of this total, there was a 39% RTW rate at one-year post injury. Within this 39% group, individuals who held professional or managerial jobs at time of injury showed the largest RTW rate at 56%. Skilled workers which accounted for 56% of the sample had an RTW rate of 38% and those who engaged in manual labor had an RTW rate of 31%. Minorities, particularly males made up a large percentage of the manual labor workers. It may be that workers who did not choose their career may have been less motivated to return to manual labor.

Implications for Social Security Vocational Expert's and Personal Injury Forensic Vocational Rehabilitation Consultants

The findings from this extensive literature review regarding return to work factors related to those with mild TBI has several implications for practicing vocational rehabilitation counselors specializing in Social Security VE work as well as those involved as forensic vocational experts in cases being litigated. Although both areas of specialization require the same knowledge base regarding TBI, the information available regarding the claimant/injured party and testifying in each venue is remotely different.

Social Security Vocational Expert Testimony

Testifying as a Social Security VE is very different in terms of the available information to review prior to obtaining the VE's testimony. The VE does not receive any medical records regarding the extent of the alleged TBI and must rely on the Administrative Law Judge's (ALJ) interpretation of the records in the form of a hypothetical when there is no psychologist expert on the call to render an opinion. However, when the VE can hear a psychologist's opined cognitive limitations in the form of a mental functional capacity evaluation (see Marini, 2016), this information is useful only if the ALJs hypothetical is consistent with the psychologist's opinion. In any case, the ALJs hypothetical is what the VE needs to respond to only.

For the most part, the first author's experience having testified as a VE in over 8,000 Social Security hearings has observed that if the ALJ follows a psychologist expert's opinion and it is deemed that the TBI is not severe enough to preclude all work in the US economy, many psychologists typically will provide a very similar opinion. Psychologist David Peterson and others often opine the following: (1) the individual must work in a routine work setting with their objects rather than people; (2) the work must be repetitive but not fast pace such as assembly work with a production quota; and, (3) the work setting must be low stress (D. Peterson, personal communication, October 27, 2018).

Forensic Vocational Expert Testimony

In providing vocational expert testimony in personal injury litigation, if the VE is retained by the plaintiff, he or she has access and will interview the injured individual and/or her or his caregiver as well as provide any relevant testing that the VE is qualified to administer. The VE will also have access to available medical records outlining the extent of injuries sustained by the individual. The VE should be particularly diligent regarding the timeline from the scene of the accident and note whether an ambulance arrived and triaged the individual, whether there was a loss of consciousness noted and a Glasgow Coma Scale (GCS) score, or whether the injured party did not report any problems and went home. When retained by the defendant, the VE will generally have to rely upon the available medical records and deposition transcript without being able to interview the injured party.

If the individual was taken to emergency, those initial hours or days following the accident also requires diligence in reviewing the medical records regarding GCS and reported posttraumatic amnesia (PTA) (Ashley & Hovda, 2017; Berg et al., 1987; Miller, 2001). Consciousness is assessed every several hours which can help determine the severity of the head injury if hospitalized and the level of consciousness noted in GCS follow-ups. In many mild TBI cases as noted earlier, no objective diagnostic testing such as a brain MRI is often able to detect any abnormalities, and only subjective complaints are recorded.

As discussed earlier, opposing neuropsychologist expert reports as well as physician expert reports are often diametrically opposed to one another regarding cognitive deficit functional limitation opinions (Pinon, Marini, Cantu, & Escandon, 2018). Forensic vocational expert's in complying with their Standards of Practice (International Association of Rehabilitation Professionals, 2007) must according to forensic standard B2b -use appropriate methods and techniques, carefully research and analyze the evidence in the case, and render opinions or conclusions that are demonstrably objective and reasonable (p. 5); and, B2g – obligated to maintain current knowledge, of scientific, professional… obligated to use that knowledge consistent with accepted clinical and scientific standards, in selected

data collection methods and procedures for an evaluation, treatment, consultation, conclusion, finding, opinion and/or scholarly/empirical investigation. In other words, it behooves the forensic VE not to just rely upon opposing expert's reports, but to review the available medical evidence themselves to render one's own objective opinions (p. 6). Forensic VE's will also seek out consultation with treaters when possible or related specialists.

Conclusions

The incidence of mild TBI occurs in hundreds of thousands of Americans each year and comprises approximately 76% of all TBI related injuries (Schwartz, 2002). The vocational probability of persons diagnosed with mild TBI in returning to work is statistically a vocational certainty in the majority of cases within the first six months (Levin et al., 1987; Waljas et al., 2014). Waljas et al. (2014) found of 109 persons diagnosed with mild TBI, over 90% had returned to work after two months and 97.2% had returned after one-year post injury.

Conversely, from a statistically vocational degree of certainty, many persons with moderate and severely diagnosed TBI will not be able to consistently maintain gainful employment throughout their work life if they are able to return (Cattelani, Tanzi, Lombardi, & Mazzacchi, 2002). Kreutzer et al. (2003) in working with the TBI model systems database of moderate and severely injured TBI cases, found that of 186 adults assessed at one, two, three, and four-year follow-up; 34% were stably employed, 27% were in/out of the workforce, and 39% were unemployed at all three follow ups. There was a higher unemployment rate noted for persons of minority and those with less than a high school education who were single.

There are also a number of nuances reported in the present literature review that correlate with the probability of an injured individual returning to work. The presence of malingering or exaggerating complaints for secondary gain in litigation appears fairly consistent across studies (Miller, 2001; Mittenberg et al., 2002; Greiffenstein, Baker, & Gola, 1994; Tsandadis et al., 2008). Mittenberg et al. (2002) found that in reviewing over 33,500 personal injury cases, 39% of mild TBI claims were diagnosed as probable malingerers. Similar findings when litigation is involved has been found by other researchers as well (Shames, Treger, Ring, & Giaquinto, 2007).

Finally, other factors exploring the complexity of returning to work after a mild TBI have also been explored. These factors include education level, type of occupation previously employed in (professional versus blue-collar physical labor work), perceived employer support, individual's motivation to return to work, comorbid factors such as pre-existing psychiatric illness, minority status, and marital status have had an influence in RTW in some studies but not others (Binder & Willis, 1991; Cifu et al., 1997; Felmingham et al., 2001; Kreutzer et al., 2003; Walker et al., 2006). In In Shames, Treger, Ring and Giaquinto's (2007) extensive review of the literature regarding RTW following TBI, the authors conclude that there is evidence that although many persons with TBI may be able to return to some form of employment within 3 to 5 years post injury, maintaining employment is often unstable. Kreutzer et al. (2003) statistically found this to be true with a four-year follow-up of moderate to severe TBI cases.

Overall, forensic VE's need to be aware of all factors, detailed medical record review, and updated empirical literature related to alleged mild TBI personal injury cases in order to provide an impartial and objective opinion in return to work probability for this population. The information cited here will hopefully be helpful for forensic vocational experts in being able to cite empirically based evidence regarding return to work in mild TBI when all factors are considered.

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