

Neuropsychologist's Role in Evaluation & Treatment of Traumatic Brain Injury – II. Setting the State for Success & Honoring the Sacred Role

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Abstract

Traumatic brain injury (TBI) is a major public health concern, affecting approximately 70 million people worldwide. Individuals with TBI frequently experience impairments in executive function, memory, attention, and self-awareness, which can disrupt daily functioning and complicate psychiatric diagnoses. Additionally, they face an elevated risk of mood, anxiety, and substance use disorders, with symptoms often mimicking primary psychiatric conditions, leading to misdiagnosis and ineffective treatment. Given the cognitive and emotional complexities of TBI, personalized therapeutic strategies are essential for improving outcomes. Evidence-based interventions such as cognitive rehabilitation, cognitive-behavioral therapy, and emotion-regulation techniques have demonstrated efficacy in enhancing recovery. Modifying session structures—incorporating shorter durations, frequent breaks, and multi-modal communication—can improve patient engagement and participation. Furthermore, addressing environmental factors and fostering a sense of control during assessments can optimize therapeutic experiences. By integrating these adaptive approaches, clinicians can enhance patient engagement, facilitate neurorehabilitation, and improve long-term functional outcomes for individuals with TBI.

Introduction

Traumatic brain injury (TBI) is a significant public health concern, affecting approximately 70 million people worldwide annually [1]. It can lead to a range of physical, cognitive, and emotional impairments, with symptoms varying widely depending on factors, such as injury severity, the immediacy and quality of medical care, available social and financial resources, and pre-existing health conditions. The consequences of TBI include both primary injuries, such as direct tissue damage, and secondary injuries, including metabolic dysfunction, ischemia, and neuroinflammation, which can contribute to long-term deficits. Over time, these processes may lead to neuronal loss, neurodegeneration, and neuropsychiatric impairment, which can significantly impact an individual's quality of life [2]. TBI is known to accelerate cognitive decline and increase the risk of developing dementia [3,4]. A possible explanation for this is TBI's effect on neuronal metabolism, specifically iron homeostasis [5-7]. It is well-accepted that TBI increases reactive oxygen species (ROS) production while depleting the

brain's antioxidant defense systems, leading to oxidative stress, protein misfolding, and DNA damage. These cellular disruptions contribute to progressive neurodegeneration [8]. Targeting these pathological processes therapeutically could mitigate the heightened risk of neurodegeneration and inform potential neuroprotective treatments.

Beyond its neurological consequences, TBI is associated with significant cognitive impairments that range in duration and severity. Individuals with TBI often experience deficits in executive function, memory, attention, and self-awareness. These impairments can disrupt daily functioning by reducing the ability to evaluate oneself and others accurately, anticipate consequences, and regulate behavior [9]. Understanding these cognitive challenges is crucial to developing effective interventions in improving quality of life for individuals affected by TBI. People with TBI often experience a variety of psychiatric disorders at a higher rate than the general population. Common diagnoses include mood disorders (such as major depressive, dysthymia), anxiety disorders (including generalized anxiety, post-traumatic stress,



obsessive-compulsive, panic, acute stress disorders, agoraphobia, and social phobia), and substance use disorders. Individuals with TBI may experience personality changes (apathy, affective lability, aggression, behavioral disinhibition), impaired self-awareness, and socially inappropriate behavior. Individuals with TBI may seek mental health services without disclosing their TBI status to the provider or without checking if the provider is familiar with TBI's clinical profile. This can lead to inaccurate diagnoses, which are crucial for effective treatment [10]. Misdiagnosis can happen when psychiatric symptoms are not considered in the context of TBI but are diagnosed with isolation. For instance, emotional lability and behavioral dysregulation due to disrupted executive functions in TBI patients may resemble bipolar disorder. If misdiagnosed with bipolar disorder, the patient might receive inappropriate and ineffective treatment, negatively impacting the provider's prognosis and the patient's experience with the mental health system. The emotional and behavioral symptoms in individuals with TBI can stem from either neurological or psychogenic origins. Neurological causes may include direct impacts on brain function, such as lesions, axonal damage, infections, neurochemical disruptions, or cerebrovascular changes. On the other hand, psychogenic causes might involve emotional reactions to the broader losses experienced after the injury, such as loss of autonomy, employment, income, or social connections [11]. It is not always easy to ascertain the cause of emotional or behavioral disturbances; however, it is essential that both be addressed. Similarly, focusing on solely the neurological or psychological will also be an ineffective approach. This would be akin to ignoring the developmental aspects when working with a child or a geriatric patient. Ignoring such factors would interfere with diagnoses or treatment decisions.

Diagnostic methods and procedures do not differ for those with TBI and others. The Beck anxiety inventory, the Beck depression inventory, and the personality assessment inventory are common assessment tools; however, one should be aware of their limitations in TBI populations. The metrics are 21 item tasks, except personality assessment inventory, which is over 300 items! Reduced attention, short- or long-term memory, word finding capacity, reading comprehension, may influence an individual's ability to complete a clinical interview or to complete metrics used for assessment. Typically, individuals who are experiencing noticeable changes in their cognition and some brief screening assessment, such as The Mini Mental Status Exam (MMSE) or the Montreal Cognitive Assessment (MoCA) will be referred for neuropsychological testing. In our clinic, once referrals and insurance are verified, clients are scheduled with a caretaker for a two-hour health behavior interview. This enables us to capture background information from the individual and the person with them about the client's reason for coming, their health history, all medications, surgeries, hospitalizations and major health concerns. We also get the major health status of primary family relatives. The social status, living situation, educational history and work history of the individual is ascertained. We try to figure out what hobbies the person has or had and how things may have changed with recent life events, such as their TBI. Some may find it unusual, but assessing sexual function is critical, particularly in men, as sexual dysfunction can be a biomarker of TBI. In women, it is a little more complex, but we also garner this information, as it is highly relevant to TBI. Not only having this information but having acquired this information gives us a very good indication of the capacity of the patient and how they will be able to perform in neuropsychological testing.

In addition to getting this information, we can also send the resulting health behavior report to insurance companies to get pre-approval for neuropsychological testing for the appropriate units of testing, based upon the tests that we have ascertained are appropriate for the individual. In this interview, we are also garnering key symptomatology that has bearing to TBI outcomes. The number of prior

TBIs, the numbers of symptoms that they currently have, and for how long these symptoms have persisted. This information is key to the prognostic outcomes regarding TBI [12]. This interview also gives potential clients an opportunity to get to know our practice and our policies and procedures. We want to be as clear as possible about what our boundaries and expectations are up front because in general when people have a clear understanding of expectations, they are more likely to be satisfied with outcomes when they are told what to expect in the beginning. For example, we must clearly explain that individuals undergoing testing are not patients: they are clients. As such, they cannot have the expectation of doctor patient privilege or the expectation that there will be an immediate intervention based upon something that they share. We also have policies regarding communications, attendance, a late policy, and acceptable or unacceptable behavior in our clinic. In general, we will not begin testing clients until it has been three months since their injury. Then we typically see clients for three testing sessions. These are scheduled once a week, at weekly intervals. We will meet on a fourth occasion, after their report is written, to review the result and recommendations. After this point, their report is sent out to their referral source and other providers who they wish to have it.

Our clinic is somewhat unique in that we do not put individuals through a battery of testing in one to two days. In general, we have found this overwhelming for the majority of individuals with of TBI and this approach is only taken under special circumstances, where a client specifically requests such an expedited process. However, we find that individuals often decompensate or become easily overwhelmed in this accelerated modality. Indeed, even in the truncated testing that we do, for two to three hours sessions on three occasions, we remind our clients that they can ask for a break in between any sections. They can get up and walk around in the testing room during a session that does not require them to be seated. They are offered water or beverages and can have snacks as needed. They are requested to tell us if we need to make alterations to the lighting or temperature in the room so that they are comfortable during the testing. Their symptoms before or after testing sessions are recorded and put into the daily observations for each test session. Although people are reminded that they can discontinue testing at any time for any reason, we've never had a patient choose to discontinue testing, although patients commonly do choose to take a break for air and/or use the restroom, particularly during the three-hour test sessions.

To mitigate the cognitive challenges faced by individuals with TBI, various strategies can be employed to enhance focus, comprehension, and decision-making during both evaluation and therapeutic sessions. To address difficulties in sustaining attention, practitioners can shorten session durations, incorporate breaks, and regularly check in with clients to maintain engagement. Minimizing environmental distractions by selecting less visually stimulating settings and reducing ambient noise can further aid concentration. For clients experiencing slower comprehension and response times, employing slower, more deliberate communication, utilizing multiple modalities to present information, and allowing ample time for responses without pressure can be beneficial. To assist with decision-making difficulties, therapists can help clients clarify decisions, facilitate pros and cons analyses, and engage them in evidence-based problem-solving approaches to generate viable options. Implementing these tailored interventions can significantly improve the evaluative and therapeutic experience and outcomes for individuals with TBI [11].

Addressing the diverse challenges faced by individuals with TBI necessitates tailored strategies to enhance evaluative and therapeutic outcomes. For instance, to assist clients who struggle with initiating behavior, structuring sessions with a question-and-answer format, encouraging notetaking throughout the week, and establishing motivators can promote engagement and task completion. When clients feel



easily overwhelmed, focusing on a limited number of topics during sessions, advocating the use of to-do lists, discouraging multitasking, and teaching relaxation and mindfulness techniques can help manage cognitive overload. Adjusting environmental factors, such as modifying room lighting or suggesting the use of photoprotective gear like sunglasses, can alleviate photosensitivity issues. To combat fatigue, scheduling shorter sessions with breaks, assisting clients in managing their activity levels, and planning manageable treatment-related activities between sessions can prevent debilitating exhaustion. Finally, when addressing alexithymia, it's important to avoid misinterpreting a lack of emotional awareness as a psychiatric symptom or denial, inquire about the client's emotional state without expecting precise labeling, and, if feasible, focus treatment on enhancing emotional awareness [11].

In our practice, we strive to meet patients and clients where they're at in their TBI journey and to help guide them along the process of evaluation and/or recovery. For patients, we have found that one approach that is effective is predictability and consistency. People with TBI value this highly, because their disorder is inherently unpredictable, which is one of the factors that makes it so difficult and unwieldy to individuals, whose lives have been changed so greatly often from one day to the next. The format of our sessions is always consistent. Patients begin by completing metrics, such as the Beck anxiety and depression inventories, a metric that is an indicator of post-traumatic stress disorder, a metric that is an indicator of internal and external loneliness or the profile of mood state. Their responses are reviewed while they are asked to recall the time since their last visit and key events or pits and peaks. This gives us an index of what has been salient to the patient and what they can remember. Any doctor's appointments or changes in medications are reviewed. Homework is also reviewed from the last session. This will take up about half of the session time. The remainder of the session time is spent on new material, which patients are given an indication of the week prior. Here a new or related topic, which is a logical incremental progression from what they have been experiencing or going through, is covered. Their homework is based on this topic to reinforce the material, which they will have to demonstrate in their next session. The last few minutes of the session are spent summarizing the session. A draft of their notes is typically provided later that day. Having a consistent structure reduces the patients' anxiety about what to expect.

Patients also enjoy coming to our office. It is not just the mango-flavored, green tea offered or the ginger drops. This place is an unassuming but an old stately home, build around the 1900's, that has been a doctor's office for at least the past half century. For the past 40+ years our neuropsychology practice has been here. The prior occupants were a pediatric practice that left murals of Snoopy and his gang on the basement partition walls. We have restored this grand dame to show off her good bone structure, and clean lines. Heavy drapes, busy wall-coverings, upholstered furniture, and carpeting have been removed in favor of light shades on windows and paint to the restored horsehair plaster walls. The furniture is (p)leather sofa, chairs, or recliners that are comfortable, functional for quick naps, as needed, and hygienic. The floors are the original wood inlay of fine craftsman from the 19th century. The style and simplicity is appealing and calming to the TBI brain. The practice is divided to the business side on the left and the practice side on the right, which are all handicapped accessible. It is all nice, warm, like the people here and it has good qi for healing. Patient's experience is also meant to be pleasant but business-like. Patients are typically seen within 5 minutes of their appointment time. If there is ever a wait, it is usually because of an urgent matter, such as a patient in crisis, or a medical emergency. People are typically informed of delays, prior to their appointment, so their times are adjusted. In the few situations that is not possible, people are very understanding for having to wait 20-30 minutes, lest they at one point be the person in need. New magazines in cellophane packages are available for those waiting.

There is also a refrigerator with bottled water s available in the waiting area, snacks, crayons, puzzle books for children are available as needed. Because of our location, which is highly accessible, between all 3 hospitals in Albany, and to the downtown areas by all bus routes, and easy access from highways and parking, we attract a diverse clientele, which is akin to that of the population.

In addition to brain-based psychotherapeutic interventions, we also engage patients in cognitive rehabilitation for persons with TBI. These are typically 30-minute sessions that come after a psychotherapy session. Activities in these sessions would focus on a pre-determined goal, such as working on word fluency, reading and comprehension, short-term memory, or attention. Our perspective and goal for patients with TBI is to get the TBI brain back "on-line" and working in a favorable manner, such that the shift in balance of function has gone from hypofunction to re-engaging in neuroplasticity [13]. For this to occur, the individual must have adequate symptom remission so that the balance of free radicals produced in the brain is lowered to the point that neurogenesis is reinstated in the hippocampus and olfactory bulbs and neuronal connections can be made in other brain regions through synaptogenesis and dendritic sprouting. This requires adequate sleep, nutrition, social and cognitive engagement, exercise and blood flow to the brain and body. Recovery of function has been observed up to two decades following TBI, given the conditions have been met. This is not unique to our practice, but other practices that keep up with evidence-based practice also see brain recovery among people with TBI for multiple decades.

Conclusions

These individualized interventions can significantly improve the evaluative and therapeutic experiences and outcomes for individuals with TBI. At our practice, a simple yet effective strategy is allowing individuals with TBI the option to opt out at any time during assessments if they become overwhelmed. While most patients choose to complete the assessment, knowing they have control over the process provides a sense of autonomy, which is particularly important when many aspects of their condition, especially neurological changes, may feel unpredictable or beyond their control. We also feel that our practice, clients and patients have benefited considerably by our cutting-edge knowledge of the brain, our application of it to their current situation, and the honor that we hold in being the ones to accurately convey their story when they are unable to. It is also a sacred trust to guide individuals through their TBI healing journey. It is a great challenge and honor to create the optimal care team for an individual that will result in the best outcome possible for their achieving maximal recovery and function from their TBI and overall One's Health.

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