

Protecting Clients with Brain Injury: New Science, New Methods for Assessing Disability

Dr. Valerie E. Stone, Ph.D.
Answers About Competency, LLC
www.assesscompetency.com

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Not the same old rap

- Traumatic brain injury (TBI)*
 - Complexity
 - Variability
- Past methods of assessment were incomplete
 - New science
 - New methods
- A case example
 - The Receptionist Who Was Not Employable

* throughout slides, jargon terms are in blue – these are in your “Jargon-English” handout

All areas of disability need to be measured for people with TBI

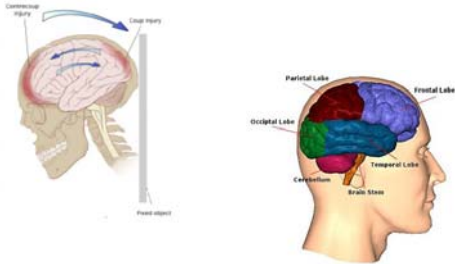
- Consequences of TBI
 - Cognitive problems (e.g., attention, memory)
 - Problems with social behaviour & controlling emotions
- Objective assessment of people with TBI includes
 - measuring cognitive problems. Period.
 - What's wrong with this picture?
 - Objective assessment of social judgment problems is needed.
- Psychologists & laypeople tend to believe that
 - Cognitive problems have a basis in damaged brain tissue,
 - ...but social & emotional problems are not brain-based.

In fact, those beliefs are wrong

- Research in the past 30 years shows that
 - Damage to the brain can impair social understanding
 - Damage to the brain can impair emotional processing
- “Social neuroscience” is one of the fastest growing areas of neuroscience research.
- The social judgment problems experienced by people with TBI can be measured objectively. We can & should assess ability to:
 - recognize emotions in others
 - detect deception, resist exploitation
 - judge appropriate or inappropriate social behaviour
 - use conversation appropriately

Basics about TBI

TBI = a blow or jolt to the head that disrupts the function of the brain



Images adapted from http://en.wikipedia.org/wiki/Main_Page

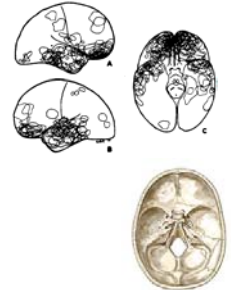
Where does damage occur after TBI?

Short answer: potentially anywhere

focal lesions
axons
diffuse axonal injury (DAI)



STRETCHED TO THE LIMIT: Shock waves can damage healthy brain cells. [a] Sometimes just lightly bumping the skull is enough to do the job.
THE DOWNWARD SPIRAL: The shearing not only causes physical damage to cells but can also unleash a biochemical cascade that eventually causes cells to self-destruct [b].



Images from Milson & Levin (1990) & from <http://www.popsci.com/military-evolution-102326-space/article/008-08/brain-system?page=1>

Basics about TBI

- TBI is a process, not an event – a biochemical process
 - the brain damage from this event can go on for up to a month afterwards.
- Categorized as mild, moderate, severe
 - based on what happens at the accident & immediately afterwards
 - Glasgow Coma Scale, post-traumatic amnesia, loss of consciousness
- “...the search for simplicity must not be the excuse for seeking absolute distinctions where none exist.” *
 - Mild, moderate, & severe consequences do not always map onto mild, moderate, & severe TBI

* Teasdale & Jennett, 1974, *The Lancet*, Vol. 304, Issue 7872

Assessment following TBI

- M.D.'s & psychologists usually do the assessments
- Brain scans – usually a CT scan to see if there's bleeding
- Psychological testing
 - Cognitive
 - Social/emotional
 - Life skills
 - Tests of effort during testing session

“No objective findings”

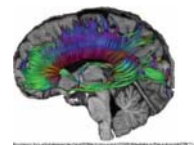


- Often, the only brain imaging done is a **CT scan** taken on the day of the injury.
- Medically necessary, but diagnostically incomplete.
- Limitations of day-of-injury CT scans
 - small areas of damage or small structures don't show up
 - TBI causes damage to “white matter”, which doesn't show on CT scans
 - damage to brain tissue from injury may continue for up to a month

Image from <http://www.thecni.org/stroke/surgery.htm>

“No objective findings” – options

- Traditional MRI scans have limits too
- “Diffusion tensor imaging” (DTI) appears most sensitive
- Expense - only “medically necessary” scans will be done
- Things to say about “objective findings” in a hearing



Psychological assessment: Not all cognitive measures are created equal

- Many commonly-used cognitive tests are *not* scientifically proven to be sensitive to TBI.
 - Not all tests are relevant to patient's long-term outcome
 - “Executive functioning” refers to many different abilities
 - Which tests work in chronic phase (chronic=18+ months after injury)
 - Digit Symbol Coding, Trail-Making Test B, Design Fluency
 - Which tests are either not sensitive to TBI or not related to outcome?

Trail-making test, Part B

Patient's task: 1 – A – 2 – B – 3 – C – 4 – D – 5 – E ...

12	D	G	J	
5		H		
9		C	3	
2	K		G	11
		7	E	
		1	A	
B	L	4	6	8
		F		
I			10	

Psychological assessment: Not all cognitive measures are created equal

- Many commonly-used cognitive tests are not scientifically proven to be sensitive to TBI.
 - Not all tests are relevant to patient's long-term outcome
 - Which tests are sensitive to TBI and related to outcome
 - Digit Symbol Coding, Trail-Making Test B, Design Fluency
 - Hayling Sentence Completion Test, Rey Auditory Verbal Learning Test, Sustained Attention to Response Test
 - Which are either not sensitive to TBI or not related to outcome
 - Wisconsin Card Sorting Test, Stroop Test, Tower of London Test (or Tower of Hanoi), Halstead Impairment Index on Halstead-Reitan Battery
 - Cognitive Estimates tests, most subtests of the Delis-Kaplan Executive Functioning System (D-KEFS).

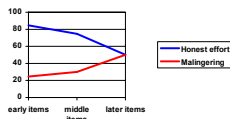
Psychological assessment: Social measures are necessary

- We now know brain damage can cause social judgment problems
 - How to assess social judgment deficits
 - Qualitative reports
 - Questionnaires (filled out by TBI patient or caregiver)
 - Performance measures
 - TASIT, PFIC, FCS, Faux pas detection (see references at end)

Psychological assessment: is the client really disabled or just trying to appear that way?

• “Malingering” tests

- Test could seem hard, but is easy even for severely impaired people
- Less than chance performance
- Easy vs. hard items
- In testimony, use tests known to be sensitive – not the Rey or Warrington



• Issues with assessing malingering in minorities

- If English is not native language, client's score may be below "malingering" cutoff even if they are not malingering.

Where to get more information

- This Powerpoint presentation, with references to books and scientific journal articles, and an audio podcast of a practice talk are available at my web site www.assesscompetency.com/attyresources.html
- Free conference call Tuesday, June 16, 2009, 10am-11am. Email me at vestone@assesscompetency.com to get details.
- See your handouts in the conference booklet for the "Jargon Dictionary", more online resources, links to the Brain Injury Association, and psychological organizations that can refer neuropsychologists. (I do not do assessments – I'm just an educator and researcher.)
- Future CLE workshops on brain injury:
 - March 19, 2010, Denver, CO; Sept. 24, Oakland, CA; Oct. 8, Denver, CO.

Attorney survey about disability & TBI

- I will hand out paper versions now.
- You can also get a survey online later at www.assesscompetency.com/survey.html
- If you participate in the survey and are interested in the results, I will email you or mail you a summary of the results.
- Preliminary results have been interesting so far.
- Thank you!

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Additional jargon terms defined

Edema: swelling. The brain swells after a traumatic brain injury, putting increased pressure on brain tissue.

Subdural hematoma: the brain has an outer protective covering called the *dura*, and after a trauma to the head, tearing of blood vessels can cause blood to gather beneath the *dura*. It puts pressure on the brain tissue underneath, causing damage, and could bleed into brain tissue, which floods and kills brain cells.

Prefrontal cortex: The backmost part of the frontal lobes is called the motor area, an area of the frontal lobes that sends movement commands to different body parts. Everything in front of the motor area is called "pre-frontal" cortex.

Post-concussion syndrome: Same as mild traumatic brain injury, but this term is used more in sports medicine. Medical definitions of the two conditions overlap completely.

TASIT = The Awareness of Social Inference Test: a video-based test developed by Skye McDonald in Australia that has 3 subtests, one testing recognition of emotional facial expressions, one easy test of understanding of sarcasm, irony, and deception, and one harder test of understanding sarcasm, irony, and deception. This test has been normed, mostly on Caucasian Australians, and validated for TBI patients.

PFIC = Profile of Functional Impairment in Communication: A rating scale developed by Linscott, Knight, & Godfrey in New Zealand, in which trained clinicians observe conversations that patients have and rate each person for how effective his or her communication is, including not only the content of communication, but also the social aspects of communication. It has been well-validated for use with TBI patients, and normed, mostly on Caucasians.

FCS = Functional Communication Scale: A rating scale developed by Drummond & Boss, in which trained clinicians observe conversations that patients have and rate each person for how effective his or her verbal communication is. Validation of the scale is partial - scores on the scale are correlated with other measures of language impairment, but comparison of brain-damaged individuals to healthy individuals has not yet been published, and collection of norms is not completed.

WAIS = Wechsler Adult Intelligence Scale: A standard IQ test consisting of many subtests, testing both verbal and spatial intelligence. The WAIS-III is still sometimes used; the WAIS-IV is the latest version.