

Mood and affective problems after traumatic brain injury

Introduction

Survivors of traumatic brain injury (TBI) are vulnerable to a range of psychosocial difficulties. The impact of unrecognised and untreated emotional sequelae of TBI upon psychosocial outcome has been highlighted. Psychosocial problems present the greatest challenge to rehabilitation services¹. Despite some shifts towards recognition of such problems², increased understanding of the emotional and psychosocial aspects of brain injury and the provision of services for treatment is required to meet the high level of unmet need within this client group.

What are the common difficulties?

High rates of psychiatric disorder have been identified amongst survivors of traumatic brain injury using established diagnostic criteria^{3,4}. Depression, anxiety disorders (such as Post Traumatic Stress Disorder, Obsessive Compulsive Disorder and Panic Disorder), and irritability or anger problems would appear to be the most common diagnoses, and premorbid psychopathology may predict substance abuse disorders post-trauma. Typically, studies show that about a third of TBI survivors experience emotional problems between 6 months and a year post injury^{5,6}, others place levels even higher⁷. The presence of emotional or behavioural problems post injury which impact on the individual's family have been reported at 84%⁸. Clinically significant levels of hopelessness (35%) suicidal ideation (23%), and suicide attempts (18%) post-injury have been identified⁹.

Approximately 50-80% of TBI survivors admitted to hospital following closed head injury report symptoms of post concussive syndrome (PCS)¹⁰. PCS symptoms include headache, fatigue, sensory sensitivity (to noise or light), memory and attentional problems, low mood, anxiety and irritability. Whilst symptoms generally improve within 3-6 months, for about 15% of survivors such symptoms may persist beyond three years¹¹.

Disorders of motivation are another commonly occurring neurobehavioural consequence, characterised by apathy, indifference or lack of concern, and lowered initiation, verbal output and libido¹².

Identification of disorders

Clarity of diagnosis and aetiology may be compromised by complexity of the problem¹³, the limitations of measures which may reflect a different set of aetiological assumptions to those used within a purely psychiatric setting¹⁴, and the use of terminology for experienced and expressed emotional states which poorly represents the subjective experiences of clients¹⁵.

Neurologically based apathy has been shown to share negative, but not somatic or affective, symptom features of depression¹². The affective and cognitive symptoms of post concussive syndrome, depression, anxiety, irritability⁹, and post traumatic stress disorder¹⁶ share features, but may have differing aetiology. Symptoms consistent with dysexecutive syndrome such as perseveration, impulsivity, and irritability can be mistaken for behavioural indicators of OCD, although affective and cognitive indicators (in terms of beliefs about obsessive-compulsive thoughts and behaviours) differ.

How can mood and affective problems be understood?

Biopsychosocial frameworks

Frameworks for considering sources of emotional sequelae¹⁷ and for identifying areas for assessment and intervention in neuropsychological rehabilitation^{17,18} have been proposed. These 'biopsychosocial'¹⁹ models argue for parallel consideration and

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application of a range of factors and models.

Gainotti¹⁴ proposed three categories of factors in considering emotional consequences of brain injury: neurological, psychological, and psychosocial.

Neurological factors

Neurological factors are fundamental to the experience and processing of emotions. Frontotemporal-limbic circuitry appears to be particularly implicated in a range of emotional disturbances. Ventro-medial frontal areas are thought to play an important role in motivation and anticipation²⁰. Right hemisphere and subcortical lesions have been associated with disorders of motivation²¹. Impairments of emotion recognition create difficulties responding appropriately in interpersonal situations. Sensory changes such as intolerance of light or noise, in addition to the secondary psychological impact of other physical and cognitive impairments are also relevant. Distinctions between neurological impairment of self-awareness, and psychological denial of disability have been made²².

Psychological factors

Gainotti draws on psychodynamic theories of denial in issues of emotional adjustment following brain injury. Other papers have highlighted the important roles of pre and post-morbid coping style^{21,23}, personality¹³, client's own causal explanations for their difficulties²⁴, and pre-injury psychopathology as factors influencing emotional outcome.

Work focusing on the TBI survivor's adjustment to their injury in terms of their subjective experience of themselves^{27,25} has demonstrated how survivors may experience distressing threats to their sense of identity. These are summarised below.

repeated failure and associated frustration
others not believing reports of cognitive difficulties
loss of memories
comparison of self pre and post injury
loss of identity through labelling and fear of stigma
discrepant information from medical services (i.e. being told that there's nothing wrong, or being given a very poor prognosis)
discrepancy between being 'normal' (but not receiving services) and being diagnosed (but being labelled or stigmatised by society)

Table 1: subjective complaints of survivors of TBI.

The important aspect of the individual's readiness or motivation to change socially problematic behaviour²⁶, and the application of behavioural models focusing on environmental contingencies influencing behaviour have been discussed^{26,27}.

Psychosocial Factors

Gainotti recognises the twofold impact of the consequences of the brain injury upon both the individual's system of social activities and relationships, and upon others within their social system. Reduction in size of social system, nature of relationships (e.g. changes in intimacy and sexual relationships), changes in roles, and increased financial burden are highlighted as imposing a significant burden on both the individual and their family. Gainotti notes that family members cope with the physical consequences better than the emotional or behavioural difficulties. Caregivers do not shift towards more adaptive, problem-focused styles of coping over time post injury, and use of an emotion focused (rather than

Locus of damage, system damaged	Cognitive impairment	Environmental Trigger	Hypothesised subjective experience or thoughts	Behavioural expression of emotion	Outcome
Fronto-temporo- limbic circuitry	Problems with emotional and behavioural control	Relatively minor interpersonal stressor	Having a 'short fuse', 'exploding' "I can't bear this"	Verbal aggression	Guilt, sadness. Anger at self: "why am I like this?"
Diffuse axonal damage	Slowed speed of processing	Conversation with group of friends in the pub	Frustration, feeling left out, feeling inferior "I'm useless now - no-one wants to know me"	Social withdrawal	Friends stop contact - Increased depression and further social withdrawal "what's the point in carrying on"
Frontal damage	Memory problems secondary to attentional impairment, and impulsivity	Leaving the house to attend rehabilitation	Doubt and anxiety "I've forgotten something" "If I forget it the others will think I'm stupid"	Checking and re-checking before leaving	Late arriving for rehabilitation, anxious, ashamed, withdraws socially
None identified	Sensitivity to noise or light	Noisy and bright work environment	'overload', irritation, distractability, distress	Irritability or verbal aggression to others present, poor productivity	Loss of job - anger at others "they don't understand my problems" further withdrawal and depression

Table 2: Hypothetical scenarios demonstrating links between neurological, cognitive, environmental, behavioural and interpersonal factors.

problem focused) style of coping is related to degree of caregiver emotional distress²⁸.

Environment

Features of the environment also influence the expression or maintenance of affective problems through the interaction of demands, vulnerabilities, and reinforcement. In this sense the literature presents mood and affective problems not only within a biopsychosocial framework, but also in terms of a stress-vulnerability model. Table 2 above demonstrates some hypothetical affective scenarios, based on a selection of potential factors within a cognitive-behavioural framework.

How should mood and affective problems be approached?

Gainotti refers to Prigatano's arguments for the principles of holistic rehabilitation, targeting affective problems, self-awareness and acceptance, and return to a productive lifestyle through integrated group based rehabilitation. However, such services are not widely available, so what can be done within existing services?

The framework for cognitive rehabilitation proposed by Wilson¹⁸ highlights the need for integrating a range of models. The starting point for this framework is the individual and their family. Given the interdependence and overlap between vulnerability factors, treatment of mood and affective problems should not be viewed as separate from other rehabilitative efforts. The utility of an intervention is not necessarily dependent on the causal factor so much as the nature of the problem being faced by the individual. For example, if an individual is frustrated by their failure to arrive at appointments on time due to a memory impairment, then this 'mood issue' can be treated through compensatory memory strategies. Nevertheless, appropriate prescription of medication for disorders with a significant treatable neurological component should of course be considered.

Focusing specifically on the treatment of mood and affective problems, cognitive-behavioural therapy (CBT)²⁹ is being increasingly applied. Recent articles describe some of the alterations to traditional cognitive therapy techniques when working with those who have cognitive impairments^{6,24,30}.

Adaptation of CBT can be considered on the basis of increased understanding of relationships between cognition and emotion^{31,32,33,34}. Approaches which target adjustment³⁰ or development of new beliefs and assumptions, rather than changing pathologically 'irrational' beliefs³⁵, could also be of benefit.

Some of the core aspects of CBT (see Table 3) offer great potential for addressing cognitive impairments within therapy. Findings from case studies describing the treatment of irritability⁶

Core feature of CBT	Area of cognitive impairment or difficulty which may be compensated for
collaboration	Confidence, acceptance, stigma
emphasis on monitoring problems and successes	Awareness, confidence, improved encoding and specificity of autobiographical recall
emphasis on 'stop, think, reflect' approaches and development of 'internal dialogue'	Awareness, impulsivity
provision of written information to client and family (as appropriate)	Memory, understanding
use of practical tasks as points of learning (behavioural experiments)	Abstract thinking, comprehension, new learning
use of audiotapes of sessions or techniques for the client to refer to between sessions	Memory
ongoing summarising by the therapist	Memory, attention
the development of a visual conceptualisation or formulation with the client	Attention, abstract thinking, comprehension
development of an independent problem solving approach to everyday difficulties as experienced by the client	Executive impairments of problem solving

Table 3: Features of CBT in relation to areas of difficulty post brain injury.

and PTSD³¹, are promising, although important caveats for certain techniques have been identified. For example, 'perseveration of emotional response' during exposure work (an evidence based CBT intervention for PTSD) has been noted as a consequence of emotional activation in the context of executive functioning problems³⁷.

Conclusion

The importance of careful psychological and neuropsychiatric assessment for identifying causal, contributory, or maintaining factors of affective problems following TBI has been highlighted. The need to consider the subjective understanding and experience of the TBI survivor and their family or caregiver has also been emphasised. Increasingly, the need for a biopsychosocial approach to understanding the consequences of brain injury, and in particular emotional consequences, is being highlighted. The amelioration of mood and affective problems may require reference to a broad range of models. These should consider physical and cognitive impairments, functional difficulties, and social and cultural factors. Sharing of the clinical conceptualisation, in an appropriate form, with the client and their family is advised to maximise collaboration and engagement. Functional rehabilitative efforts are likely to have a positive impact on emotional well being through improved quality of life. Modified cognitive behavioural therapy may provide both a system and a set of interventions that are particularly appropriate for mood and affective problems.

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References

- Kersel, DA, Marsh, NV, Havill, JH, and Sleigh, JW (2001). *Psychosocial functioning during the year following severe traumatic brain injury*. Brain Injury; 15:683-696.
- Nochi, M (1998). "Loss of self" in the narratives of people with traumatic brain injuries: a qualitative analysis. Social Science and Medicine; 46:869-878.
- Hibbard, MR, Uysal, S, Kepler, K, Bogdany, J, and Silver, J (1998). *Axis I psychopathology in individuals with traumatic brain injury*. Journal of Head Trauma Rehabilitation; 13:24-39.
- Deb, S, Lyons, I, Koutzoukis, C, Ali, I and McCarthy, G (1999). *Rate of Psychiatric Illness 1 Year After Traumatic Brain Injury*. American Journal of Psychiatry; 156:374-378.
- Bowen, A, Chamberlain, M, Tennant, A, Neumann, V, and Conner, M (1999). *The persistence of mood disorders following traumatic brain injury: A 1 year follow-up*. Brain Injury; 13:547-553.
- Alderman, N (in press). *Irritability and Aggression*. In Wilson, BA (Ed) *Neuropsychological Rehabilitation Theory and Practice*. Swets and Zeitlinger.
- Tyerman, A and Humphrey, M (1984). *Changes in self-concept following severe head injury*. International Journal of Rehabilitation Research, 7(1), 11-23.
- Thomsen, IV, (1974). *The patient with severe blunt head injury and his family. A follow-up of 50 patients*. Scandinavian Journal of Rehabilitation Medicine; 6:180-183.
- Simpson, G, and Tate, R (2002) *Suicidality after traumatic brain injury: demographic, injury and clinical correlates*. Psychological Medicine. 32(4):687-697.
- Kim, SH, Manes, F, Kosier, T, Baruah, S and Robinson, (1999). *Irritability following traumatic brain injury*. Journal of Nervous and Mental Disease; 187: 327-335.
- Schoenhuber, R and Gentilini, M (1988). *Anxiety and Depression after mild head injury: a case control study*. Journal of Neurology, Neurosurgery, and Psychiatry; 51:722-724.
- Andersson, S, Krogstad, JM and Finset, A (1999). *Apathy and depressed mood in acquired brain damage: relationship to lesion localization and psychophysiological reactivity*. Psychological Medicine; 29:447-456.
- Reitan, RM, and Wolfson, D (1997). *Emotional disturbances and their interaction with neuropsychological deficits*. Neuropsychology Review; 7:3-19.
- Gainotti, G (1993). *Emotional and psychosocial problems after brain injury*. Neuropsychological Rehabilitation; 3:259-277.
- Arciniegas, DB and Topkoff, J (2000). *The neuropsychiatry of pathologic affect: An approach to evaluation and treatment*. Seminars in Clinical Neuropsychiatry; 5:290-306.
- McGrath, J (1997). *Cognitive impairment associated with post-traumatic stress disorder and minor head injury: a case report*. Neuropsychological Rehabilitation; 7:231-239.
- Faby, S (1998). *A model for diagnostics in neurological rehabilitation: an answer to "the biopsychosocial disease-consequence model in rehabilitation" of Talo et al*. The International Journal of Rehabilitation Research; 21:113-126.
- Wilson, BA (2002). *Towards a comprehensive model of cognitive rehabilitation*. Neuropsychological Rehabilitation; 12:97-110.
- Engel GI (1980). *The clinical application of the biopsychosocial model*. American Journal of Psychiatry; 137:535-44.
- Bechara, A, Tranel, D, Damasio, H, and Damasio, AR (1996). *Failure to respond autonomically to anticipated future outcomes following damage to prefrontal cortex*. Cerebral Cortex; 6:215-225.
- Finsett, A and Anderson, S (2000). *Coping strategies in patients with acquired brain injury: relationships between coping, apathy, depression, and lesion location*. Brain Injury; 14:887-905.
- Prigatano, GP and Klonoff, PS (1998). *A clinician's rating scale for evaluating impaired self-awareness and denial of disability after brain injury*. The Clinical Neuropsychologist; 12:56-67.
- Curran, CA, Ponsford, JL, and Crowe, S (2000). *Coping strategies and emotional outcome following traumatic brain injury: a comparison with orthopaedic patients*. Journal of Head Trauma Rehabilitation; 15:1256-1274.
- Williams, WH, Evans, JJ, and Wilson, BA (in press). *Neurorehabilitation for two cases of post traumatic stress disorder following traumatic brain injury*. Cognitive Neuropsychiatry.
- Nochi, M (2000). *Reconstructing self-narratives in coping with traumatic brain injury*. Social Science and Medicine; 51:1795-1804.
- Wood, RLI, (1987). *Brain Injury Rehabilitation: A Neurobehavioural Approach*. London: Croom Helm.
- Wilson, BA, (1991). *Theory, assessment and treatment in neuropsychological rehabilitation*. Neuropsychology; 5:281-291.
- Sander, AM, High, WM, Hannay, HJ, and Sherer, M (1997). *Predictors of psychological health in care givers of patients with closed head injury*. Brain Injury; 11:235-249.
- Beck, AT, Rush, AJ, Shaw, BF, Emery, G (1979) *Cognitive Therapy of Depression*. New York: Guilford.
- Kinney, A. (2001). *Cognitive therapy and brain injury: Theoretical and clinical issues*. Journal of Contemporary Psychotherapy; 31:89-102.
- King, NS (1997). *Post-traumatic stress disorder and head injury as a dual diagnosis: "islands" of memory as a mechanism*. Journal of Neurology, Neurosurgery & Psychiatry; 62:82-84.
- Williams, WH, Williams, JMG, and Ghadiali, EJ (1998). *Autobiographical memory in traumatic brain injury: neuropsychological and mood predictors of recall*. Neuropsychological Rehabilitation; 8:43-60.
- Beck, AT (1996). *Beyond belief: A theory of modes, personality, and psychopathology*. In: PM Salkovskis (Ed) *Frontiers of Cognitive Therapy*. New York: Guilford Press.
- Teasdale, J, and Barnard, P (1993). *Affect, Cognition, and Change: re-modelling depressive thought*. Hove, UK: Erlbaum.
- Mooney, KA, and Padesky, CA (2000). *Applying client creativity to recurrent problems: Constructing possibilities and tolerating doubt*. Journal of Cognitive Psychotherapy: An International Quarterly; 14:149-161.
- Moorey, S (1996). *When bad things happen to rational people: Cognitive therapy in adverse life circumstances*. In P. Salkovskis (Ed) *Frontiers of Cognitive Therapy*. New York: Guilford Press.
- King, NS (2002). *Perseveration of traumatic reexperiencing in PTSD: a cautionary note regarding exposure based psychological treatments for PTSD when head injury and dysexecutive impairment are also present*. Brain Injury; 16: 65-74.

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