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THE Oliver Zangwill CENTRE FOR NEUROPSYCHOLOGICAL REHABILITATION

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Holistic neuropsychological rehabilitation after mild head injury

Abstract
An individuals' distress after mild brain injury can be viewed from a wide range of perspectives, for example, cognitive, family, physiological and ethical. For this reason rehabilitation requires planning within a framework geared to understand mild brain injury from multiple perspectives. We argue that it is appropriate to pay attention to the significance of a person's expressed uncertainty, appraisals of their symptoms, narratives about their identity and adjustment in addition to support to overcome activity limitations. This presentation will illustrate elements of our holistic milieu-oriented rehabilitation programme with reference to individuals where a 'mild head injury' has resulted in significant dysfunction and appearing to require our intensive programme. Taking part in functional activity, training in compensatory strategies, family involvement, psychological therapy and a safe community are core components of our programme that we propose enable an individual to re-appraise their difficulties and discover solutions.

Commentary

The Oliver Zangwill Centre is sometimes asked for opinion and rehabilitation in case of mild head injury. Where the bulk of our work is with people who have made "good" recovery from severe/moderate head injury, there is a significant proportion of work with people who have experienced a mild head injury.

In preparing this presentation, I wrote for permission to discuss the details of a case we had worked with. Ian's reply seemed to me worth sharing with this conference. I have copied it here more or less *verbatim:*

Dear Andrew

Hope you and the rest of the team are well and please pass on my best wishes to everyone.

As far as your request contained in your recent letter is concerned my answer is an unreserved yes. From a personal point of view anything I can do to "give something back" to OZ is a pleasure even if it involves me not actually doing anything! From a more general view point I think as a patient there is an obligation to contribute whatever one can to help with medical training/education/research, after all, to state the obvious, one has oneself benefited directly from other's willingness to so contribute. Without patients doing this my guess is that things would move forward at a much slower pace. I suppose I might also add to these two points that I feel very strongly that MTBI is very real and many people will benefit from it being recognised. If there is any further information you need access to, e.g. Dr. xxxxx's reports (I'm not sure you have the last one he did) then please ask and I will send you copies. I would add that I have some questionnaires to return to you which I will do this week.

Is there anything that I would like you to say? I guess something along the lines of: my brain injury/accident did have and continues to have a profound effect on my life and that of my family and I and they are different people as a result. Having this recognised by others after my accident and accepting it myself were important steps in themselves in my rehabilitation. If I hadn't attended OZ there is a very real chance that I would still be muddling through life in a low paid unfulfilling job or unemployed. The Oliver Zangwill Centre (with help from the people at Southampton City Council) is directly and

primarily responsible for me being in a much better position than that i.e. back in work, back at university and with every chance of qualifying as a solicitor. As a result of this I am a more confident, more self-reliant person with a much more positive outlook on life. My children's lives are now stable, they are settled in school and have the prospect of enjoying a comfortable lifestyle as a result of which, hopefully, they will achieve their full potential. Society in general must benefit from this, not only by the fact that I won't be receiving benefits and will be paying taxes, but also from the fact that happy and stable people make much more of a contribution to the general well being of those around them. I always felt one of the great things about OZ was its emphasis on treating a person with reference to the whole context of his life, past present and future. The damage that flows from even a small injury within the brain can be huge when placed in the context of family life. Please feel free to quote me or not quote me as you see fit, it may well be irrelevant rubbish.

I am of course no stranger to the suggestion that MTBI doesn't exist, having read articles supplied at OZ and read reports on me by the insurance company's doctors. From a simple non-medical point of view this seems absurd. It's like asking someone to describe the severity of their condition on a scale of 0 to 10 but saying they're not allowed to use numbers 1 to 3. Logically you either lie and say you are a 4 or lie and say you're a 0! I guess most people would say 0. Neither is accurate, there has to be a 1,2 and 3. The brain is such a complicated control system that it seems to me that even on a 1 the results are potentially profound in the same way as, to use a terrible analogy, the results of a simple error in an aircraft's control system can be disastrous.

And to head off the obvious counter-argument that I'm in some way bias, I think it fair to say that I was initially perhaps as big a sceptic as anyone as to the severity of my condition and as to the value of attending OZ, and I certainly have nothing to gain now in suggesting that OZ is responsible for my current positive position. However I reiterate my view that in recognising I had problems and in addressing those problems, OZ has changed my life immeasurably for the better.

Just for the record my LPC is going well. I have averaged 78% for my graded exams (distinction) and passed 5 out of 6 of the non-graded exams one of which I scored 100% in and was top student out of 80. Kind regards, Ian

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My recommendations & reflections on mTBI are thefore

a) We still haven't got definitive biological markers being routinely identified, mTBI is more than PTA and GCS scores!
b) Prevention of consequences where possible, obviously appropriate, some evidence
c) If months/years later symptoms are still troubling Kay's (1993) first recommendation still make good clinical sense – validate
d) Individuals are often confused why they are experiencing symptoms (especially if they have been/are going through a medicolegal process)
e) No one model will suffice (Wilson 2002)
f) Where there are entrenched difficulties it can be slow to make progress! However the outcomes are to be found in activity and participation (rather than impairment level) measures. (Hence the target of rehabilitation should be on these domains). Motivational Int. & CBT models seem particularly relevant especially behav. experiments
g) It's not always appropriate to offer neuropsychological rehabilitation: rather pain clinic, etc is needed, or no intervention in the first instance, at least. However ethical perspectives lead to conclusion that help should be provided where needed (e.g long term)
h) (more research needed).

Andrew Bateman November 2007

an holistic rehabilitation perspective on mild traumatic brain injury

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Ian
see email in handout

- "I always felt one of the great things about OZ was its emphasis on treating a person with reference to the whole context of his life, past present and future".

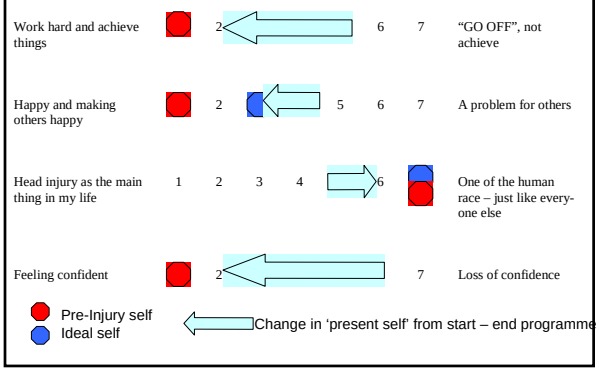
Ian background information

- Post grad in law studies. Very calm person
- Bike v car accident leading to only brief LoC, no retrograde amnesia, very short PTA (?minutes). 2 years later still experiences significant symptoms, especially irritability impacting on family
- Goals – to calm down, improve memory and confidence, get a career, be more positive

Ian intervention information

- Clin psych : irritability,worry, confidence, meaning, control, mindfulness skills, understanding his emotions
- Education: reading papers about PCS, developed a portfolio. He recalled that during stay in hospital he was strapped down, due to suspected vertebral fracture – linked to symptoms experienced at time of rehab.
- OT: CV, vocational options, leisure, memory and planning
- Goal management & attention training

Ian 'personal construct' outcomes



My starting point (& conclusions)

- long term morbidities can follow mild TBI – (Vanderploeg et al, 2007;) therefore merit careful assessment
- Treatment can be effective (evidence: range from case histories to some strong studies for individual treatments)
- (Emotion and cognition intertwined)
- (That the clinician needs to examine a wide range of factors)
- Prevention of PCS is not systematically organised in UK NHS facilities(?) although there are NICE guidelines. These also do not discuss what to do in the few cases of persisting problems.

outline

- About OZC
- Who do we see?
- Why do we see them?
- What happens?
- Discussion

THE Oliver Zangwill CENTRE FOR NEUROPSYCHOLOGICAL REHABILITATION

OZC

- Assessment
- Rehabilitation
- Research
- Neuropage
- Education

The Oliver Zangwill Centre

- Established 1996
- The team
  - Clinical Service Manager (PT/neuropsychology)
  - 3 Occupational Therapists
  - 3 Clinical Psychologists
  - 1.5 Speech and Language Therapists
  - 3 Rehabilitation Psychology Assistants
  - 0.1-0.2 Neuropsychiatrist.
  - Admin staff (target: 3.5wte)

Stages of the Rehabilitation Programme

- Preliminary Assessment:
  - 1 day
  - 2-3 clinicians
  - Screening assessments
  - Future action
- Detailed Assessment:
  - 2 weeks
  - Formal assessments
  - Experience the programme
  - Future action
  - IPC allocation, goal setting

Stages of the Rehabilitation programme Contd.....

- Full Rehabilitation programme:
  - 24 weeks total; cohorts of 4 individuals
  - Intensive & integration phases
  - 1:1 & group sessions
    - Cognitive group
    - Understanding Brain Injury group
    - Mood Management group
    - Communication group
    - Psychological Support group
    - Other groups: leisure, 'strategy application'/life skills
  - Client-centred goal planning
- Reviews 3, 6 & 12 months post-programme

Referrals

- Private: Self referral, relative, solicitor, insurance company.
- NHS: G.P, NHS clinician, Consultant
- Weekly preliminary assessments
- Fortnightly detailed assessments
- 4 intakes per year for full programmes
- Referrals to Andrew Bateman, Clinical Service Manager.

Living arrangements

- Local B&B accommodation/self catering
- Ward accommodation
- Travel reimbursement for benefits
- Care support available
- Own evening meal

What is Rehabilitation?

- "Rehabilitation is a process whereby people who are disabled by injury or disease work together with professional staff, relatives and members of the wider community to *achieve their optimum physical, psychological, social and vocational well-being*" (McLellan 1991)

Prigatano, 1999

- Conflict and pain are present before and after brain injury. After brain injury, however, individuals have fewer cognitive and personality resources for dealing with the conflict and pain. The entire scope of neuropsychological rehabilitation is intended to help these persons grasp this reality.

Holistic approach

- need to consider cognitive, social, emotional and vocational aspects together
- proponents
  - Ben Yishay, 1977
  - Prigatano, 1986
  - Christensen & Teasdale, 1995
- group and individual therapy:
  - increasing awareness
  - acceptance and understanding
  - cognitive remediation
  - development of compensatory skills
  - vocational counselling

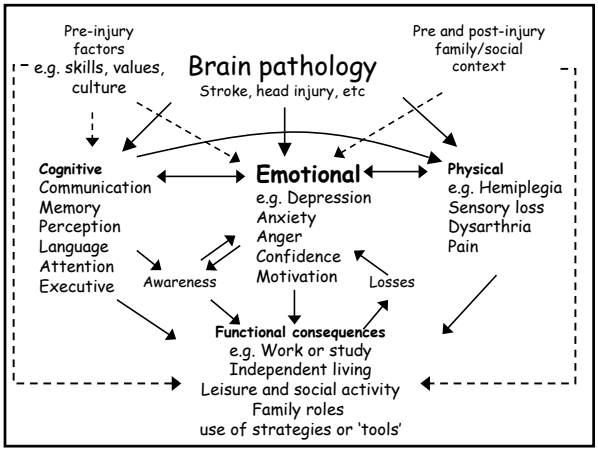
OZC six 'core components' to rehabilitation

- Therapeutic milieu
- Cognitive therapy
- Psychological therapy
- Family involvement
- Functional activity
- Shared understanding

ORGANISING OUR WORK AT OZC

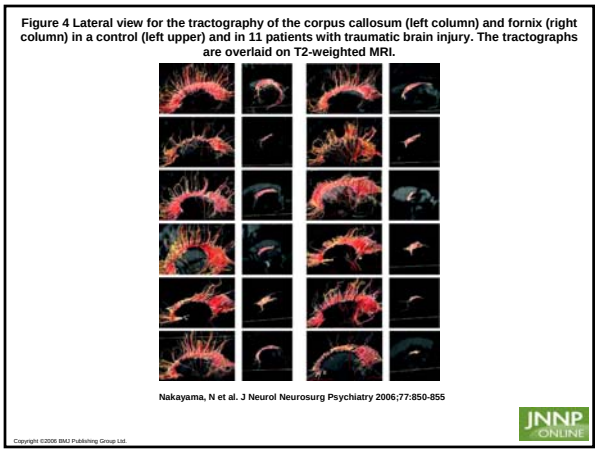
Integrated interventions

- Clinical assessment and formulation should lead to appropriate interventions
- It is likely that a range of interventions are required
- Those interventions are most likely to be effective if they are done at the same time, by people who are aware of what else is going on
- The effectiveness of intervention helps test the formulation and hypotheses



Understanding brain injury

- is about us hearing what client is saying – understanding them and their needs,
- is about helping clients understand their situation
- is about seeing the patient as part of their community and family – systems that are all strained as a consequence of the brain injury.



Understanding Brain Injury

- Clients will be supported to create a portfolio of their injury for their own reference.
- Clients encouraged to present learned information to family/friends/employer etc at appropriate level

Cognitive Group - memory

- To allow clients the opportunity to develop ways of coping with memory problems.
- Taught different types of memory and how it works,
- Discuss and practice different internal and external strategies that they may be able to adopt.

Attention and Goal management

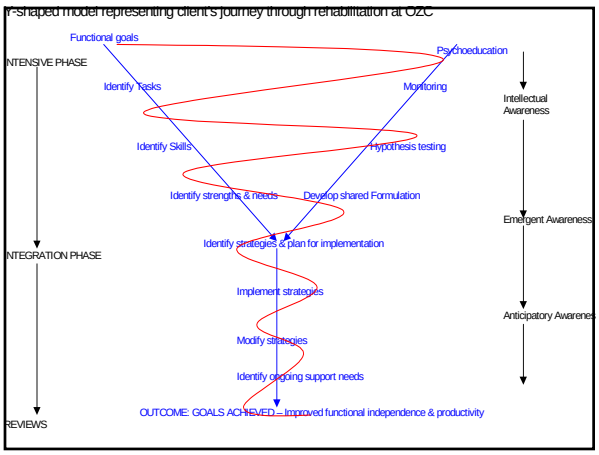
- Aims to educate clients on what attention is, and strategies for managing attentional difficulties.
- In conjunction with this clients learn about the process of setting goals and how to manage these through to completion.

Psychological Support Group

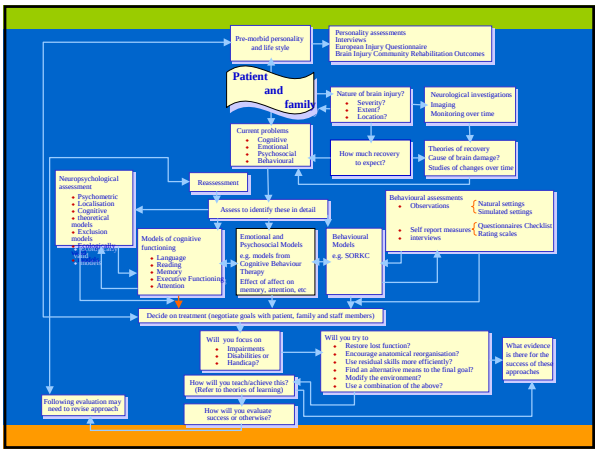
- Group is held weekly and provides clients with an opportunity to discuss emotional issues.
- Allows individuals to give and receive support from each other.
- The topics covered by the group are determined by its members (stress management, mood and anger issues, and interpersonal relationships)

Relatives Group & Family therapy

- Provides both an educational and a support role for relatives and carers.
- Aim is to provide objective information about brain injury and its consequences.
- Group members have a chance to share and discuss personal reactions to supporting someone who has a brain injury in order to be be better equipped in their roles.



MULTIPLE PERSPECTIVES NEEDED



Rehabilitation includes but is different from *treatment*

- There is a systematic review of treatments for mTBI (Comper 2004), it illustrates many problems researching this area. Not least the studies that measured improvement on neuropsychological measures. (? What are the Appropriate outcome measures).
- However it highlights some 'strong studies' (Paniak, Bryant, Mittenberg)

McGrath 2007 – Ethics – the person at the Centre of Rehabilitation

- "If ethics is about doing the right thing with respect to other persons, it is important to understand how ABI has the potential to rob the individual of recognizable human personal characteristics, so that he may seem to fall outside the scope of ethics altogether. We can slip into unethical practice when dealing with people recovering from ABI simply because we do not perceive them as fully human persons".
- mTBI commentary: we might quickly perceive clients as 'malingerer' or other labels

McGrath cont'd

- "Therefore good practice in the health care of people with ABI begins with affirming their humanity and involves supporting their individuality and autonomy. Good ABI rehabilitation practice builds on this, and is devoted to their personal reconstruction".
- "intrinsic to the rehabilitation process is the establishment and maintenance of hope". …(attn to values & goals)
- "When working well the interdisciplinary team facilitates the integration of the person who has been fragmented by brain injury"

- "The activity limitation and participation restriction that arises from these impairments constitutes a sudden major interruption to and thwarting of GOAL DIRECTED ACTIVITY. This is experienced as UNPLEASANT AFFECT" (Collicutt McGrath 2005)
- (e.g. "I'm not as fast as I was"…"who am I?" types of narratives)

Ethics conclusion

- The adversarial process can be very challenging – the individual can feel threatened (in addition to the threat to their identity that happened in the incident)

EBIQ (European Brain Injury Questionnaire)

How much have you experienced the following?

		Not at all	A little	A lot
1	Headaches	○	○	○
4	Trouble remembering things	○	○	○
26	Feeling unable to get things done	○	○	○
10	Having temper outbursts	○	○	○
9	Feeling hopeless about your future	○	○	○
39	Thinking only of yourself	○	○	○
33	Feeling uncomfortable in crowds	○	○	○
5	Difficulty participating in conversations	○	○	○

Goal Attainment

N=95

EBIQ score at Entry	Achieved	Partially Achieved	Not Achieved
Quartile 1 <=94	63%	36%	1%
Quartile 2 >94 and <=116	40%	54%	6%
Quartile 3 >116 and <=140	39%	50%	10%
Quartile 4 >140	43%	49%	8%

Bateman, 2005

Conclusion

- The people we often see at OZC may sometimes have milder pathology, but complex problems.
- We appear to be successful in enabling them to achieve their goals

A list of perspectives

- Neurochemical (e.g., S100b)?
- Genetic (APOE allele)?
- Neuroimaging (fMRI, PET)
- Ethics
- Neuropsychological (including variability of cognitive function)
- Systemic – pre and post injury, eg impact on parents
- WHO –ICF +context language provides the 'language of rehab'
- Emotional significance of appraisals, adjustment related factors
- Depression and cognition
- Meaning of changes
- Misunderstandings of the term "cognition"

Guidelines from 1993 still helpful

- Thomas Kay (1993, J Head Trauma Rehabil 1993,8,3,74-85): validate, don't confront emotional factors as primary, re-establish shaken sense of self, involve the family, treat emotional problems along with cognitive problems, begin the process of sorting out primary from secondary deficits

The need for prevention…

- Kay 1993 concluded
- " regardless of how the individual with MTBI became disabled, the reality is that the person is truly in pain and unable to function (*except for malingerer*). We are left with the challenge of preventing such functional disability …

One aim for this talk

- To address the argument that treatment serves to maintain or create disability
- I guess this will happen when treatment is not adapted to the individual

My starting point (& conclusions)

- long term morbidities can follow mild TBI – (Vanderploeg et al, 2007;)
- Treatment can be effective (evidence: range from case histories to some strong studies)
- Emotion and cognition intertwined
- That the clinician needs to examine a wide range of factors. Isolated clinician interventions problematic.
- Prevention of PCS is not systematically organised in UK NHS facilities

Annotated References – Mild Brain Injury Rehabilitation: Assessment and Treatment issues

Andrew Bateman, Clinical Manager, Oliver Zangwill Centre, Ely CB6 1DN

Bazarian, J. et al., (2000). Review of Subject Minor Head injury: predicting, follow-up after discharge from the Emergency Department. Brain Injury, 14,3, 285-294

- Some useful treatment guidelines listed here. Non attendance at follow up poses a high risk for PCS going unrecognised. Gender, Race, lacerations and CT scan were associated with return for follow-up.

Bazarian, JJ, et al., (2006) Serum S-100B and cleaved-tau are poor predictors of long-term outcome after mild traumatic brain injury. Brain Injury, 20:7,759-765

- "The search for a new biomarker should not be delayed"

Chen, SHA., et al (2002) A study of persistent post-concussion symptoms in mild head trauma using positron emission tomography. J Neurol Neurosurg Psychiatry 74, 326-332

- "Persistent post-concussive symptoms may not be associated with resting state hypometabolism. A Cognitive challenge may be necessary to detect cerebral changes associated with mild head trauma" (

Chen, JK. *et al.* (2007). A validation of the post-concussion symptom scale in the assessment of complex concussion using cognitive testing and functional MRI. J Neurol Neurosurg Psychiatry 78, 1231-1238

- study with 28 male athletes grouped according to PCS score. activation peaks seen outside regions of interest not seen in the control group were noted in PCS groups. Self reported PCS associate with cerebral haemodynamic abnormality as well as mild cognitive impairment.

Comper, P. (2005). A systematic review of treatments for mild traumatic brain injury. Brain Injury, 19:11 863-880

Hessen,E. et al (2007). Neuropsychological function 23 years after mild traumatic brain injury: A comparison of outcome after paediatric and adult head injuries. Brain Injury 21, 9, 963 979

- Children ad adults in normal range on battery of tests completed with 119 Norwegians in this major study. However findings support the distinction between 'complicated' and 'uncomplicated' mild head injury.
- Children may be more vulnerable to development of chronic mild neuropsychological dysfunction than adults sustaining similar head injuries.

Kay, T. (1993). Neuropsychological treatment of mild traumatic brain injury. J Head Trauma Rehabil. 8,3,74-85

Lundin, A. (2007) Mild Traumatic Brain Injury – clinical course and prognostic factors for post concussional disorder. PhD thesis published by Karolinska Institutet [http://diss.kib.ki.se/2007/91-7357-078-8/] access checked 9 November 2007

- A PhD on a biopsychosocial aetiological model. Some great work here, but really for me emphasising the level of uncertainty that continues in this field.

Joanna Collicutt McGrath (2007). Ethical Practice in Brain Injury Rehabilitation. Oxford University Press

Mittenberg, W. (2001). Treatment of post-concussion syndrome following mild head injury. Journal of Clinical and Experimental Neuropsychology. 23, 6, 829-326

- Supports 'inoculation against protracted PCS'. – "education about symptoms of PCS, reattribution of these to benign causes, reassurance of favourable prognosis, gradual resumption of premorbid activity…. An early course of treatment with NSAID or serotonergic antidepressants may well complete the required protocol"

Paniak C et al (1998). A randomized trial of two treatments for mild traumatic brain injury. Brain Injury, 12,12, 1011-1023
Paniak C et al. (2000). A randomized trial of two treatments for mild traumatic brain injury: 1 year follow-up.Brain Injury 14,3, 219-226.

- "Within 3 weeks of MTBI a brief educational and reassurance-oriented intervention is as effective as a more intensive and expensive model, not only when assessed at 3 months but continuing to 12 months post injury" (p225)

Sundstrom, A et al., (2004). APOE influences on neuropsychological function after mild head injury: within-person comparisons. Neurology, 62,11, 1963-6

Vanderploeg, RD. (2007) Long term morbidities following self-reported mild traumatic brain injury. Journal of Clin and Exp Neuropsychology, 29,6,585-598

- A cross sectional assessment of 4384 male veterans from the Vietnam Experience Study.