Beyond Workbooks: Functional Cognitive Rehabilitation for People with Persistent Effects Following mTBI

McKay Moore Sohlberg, PhD
CCC-SLP
Communication Disorders & Sciences
Workshop Mindset: It Matters

Audience Disposition
• The Consumer
• The Validator
• The Discerner

Speaker Disposition
• The Expert
• The Counselor
• The Co-Learner

Which one are you?  Which one am I?
Today

Five Segments:
Segment 1: The mTBI client: Understanding the Population
Segment 2: An Assessment and Treatment Map for Persistent Effects
Segment 3: Return to Learn: Treatment in the Schools
Segment 4: Specific Tools for Treatment of Persistent Effects
Segment 5: Teen/Young Adult Support Groups
mTBI: It’s complicated

“There is nothing in the field of neuropsychology that is more divisive than the topic of mild TBI…There is little consensus in the field about the natural course of recovery and whether persisting symptoms of mTBI are attributed to the continuing effects of brain dysfunction, a result of psychological reaction to the injury, or an attempt to obtain secondary gain through litigation.”

Barr, 2014
What are our assumptions?  
Let’s activate background knowledge!

<table>
<thead>
<tr>
<th>ASSUMPTION</th>
<th>AGREE</th>
<th>PARTIALLY AGREE</th>
<th>DISAGREE</th>
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<tbody>
<tr>
<td>Mild TBI and Concussion are different disorders</td>
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<td>The process of cognitive rehabilitation should focus exclusively on the cognitive symptoms</td>
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<td>Persistent cognitive complaints following mTBI are commonly associated with comorbid factors such as mood disorders, chronic pain or sleep disorders</td>
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<td>The language we use during treatment can impact outcome</td>
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<td>The techniques involved in the cognitive treatment of mTBI differ substantially from those used to treat moderate-severe TBI.</td>
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<td>A prolonged course of cognitive rehabilitation (over 6-7 sessions) is strongly recommended for people with mTBI</td>
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<td>SLPs should not be treating cognitive symptoms related to concussion in the first few weeks after injury.</td>
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<td>Cognitive rehabilitation can help strengthen a patient’s resilience and thereby improve outcome.</td>
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<td>It is best to treat comorbid psychological and somatic conditions before assessing and treating the cognitive symptoms.</td>
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<td>Standardized, impairment-level testing should be conducted with each patient, as it is the most important source for guiding intervention</td>
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Myths about Concussion (Courtesy David Cifu)

• Concussions will inevitably lead to neurodegeneration and dementias, and there’s little to do but hope for good genetics.
• One week of rest, preferably in a dark room, after a concussion is usually sufficient to allow for return to sports.
• Newer neuroimaging techniques, blood biomarkers and EEGs allow us to diagnose and prognosticate concussions.
• Safety equipment, including helmets and airbags have helped to reduce concussions.
• There are no evidence-based treatments for symptoms of concussion, it’s all about natural recovery and mind games.
• Animal research has helped us to move closer understanding and managing human concussion.
• Stems cells hold good promise for future recovery
Challenges

- Differing definitions
- PCS are seen with depression, anxiety, sleep, PTSD, chronic pain
- Intra-individual factors interact with cognitive symptoms
- Methodological research challenges
A Definition of mTBI/Concussion

- A recognized clinical syndrome of biomechanically induced alteration of brain function, typically affecting memory and orientation, which may involve loss of consciousness

1. Direct blow to head, face, neck or place that transmits impulsive force to head
2. Rapid onset of spontaneously resolving neurological impairment
3. Possible neuropathological changes with mainly functional (not structural) changes
4. May or may not involve loss of consciousness
5. Usually shows sequential symptom resolution with some symptoms taking longer

(McCrory et al., 2013)
Neurometabolic Cascade (Giza & Hovada, 2001)
Injury Occurs from ROTATION & ACCELERATION

Not from direct skull trauma
What kind of numbers are we talking about?

- Sports-related concussion cases in US range 1.6–3.8 million annually
- 5-15% experience ongoing symptoms at 90 days
- The population-based rate inclusive of all etiologies (falls, MVA, sports) about 600 per 100,000
- Estimated 3.8 million mTBI annually
The mTBI Iceberg

- **Cognitive Symptoms**: Attention, memory, executive functions
- **Iatrogenic Factors**: Incorrect diagnosis, overinvestigation/overtesting, over treating. Creates expectation of lasting symptoms.
- **Comorbid Conditions**: Depression, anxiety, PTSD, chronic pain, fatigue, sleep disturbance. All can contribute to maintenance of PCS.
- **Psychological Factors**: Expectation as etiology, recall bias good old days, perception of little/no control, symptom-focused hypervigilance, personal gain.
- **Pre-Injury Factors**: Diminished resilience (self-efficacy, optimism & positive emotions, positive reframing of negative thoughts, social support, sense of purpose in life), Personality characteristics (neuroticism, low self-esteem, poor coping). Previous concussions.
Management of Concussion

Psychoeducation:
• Concussion caused by a temporary, minor disruption of some signals in the brain which can cause very disruptive symptoms.
• Symptoms are predominantly related to physical trauma, stress from injury and concern over recovery
• Reassurance-Rapid and full recovery very likely; we will support
• Reactivation-Importance of returning to physical and cognitive activity within 1-2 days.
Key Characteristics of the mTBI Population

• Mild is a misnomer - Mild TBI with persisting symptoms persisting beyond 3 months is almost *never* mild.

• Complexity may require attending to cognitive, psychosocial, physical simultaneously
Sylvia

- https://vimeo.com/fpwmediareview/88947190/efe2d72305
Segment 2: An Assessment and Treatment Map for Persistent Effects
Treatment Research Caveats

• The evidence-base in the treatment research is small and fraught with methodological issues

  *BUT research challenges do not mean that therapy does not work*

• Effect sizes when there are positive treatment findings are small

  *BUT small effects might be expected when studying one approach for a heterogenous population with multiple interacting symptom domains*
The tripartite structure of treatment theory.  
A pilot study examining effects of group-based Cognitive Strategy Training treatment on self-reported cognitive problems, psychiatric symptoms, functioning, and compensatory strategy use in OIF/OEF combat veterans with persistent mild cognitive disorder and history of traumatic brain injury.

Marilyn Huckans, PhD;1,3* Shital Pavawalla, PhD;4,5 Theresa Demadura, MA;2 Michael Kolossar, MS;1,6 Adriana Seelye, MS;4 Noah Roost, PhD;2 Elizabeth W. Twamley, PhD;7,8 Daniel Storzbach, PhD1,2

1Research Division and 2Behavioral Health and Clinical Neurosciences Division, Portland Department of Veterans Affairs (VA) Medical Center; Portland, OR; 3Department of Psychiatry, Oregon Health and Science University; Portland,
A Trial of Neuropsychologic Rehabilitation in Mild-Spectrum Traumatic Brain Injury

Lana A. Tiersky, PhD\textsuperscript{a,b}, Vera Anselmi, PhD\textsuperscript{d}, Mark V. Johnston, PhD\textsuperscript{b,d}, Jonathan Kurtyka, MA\textsuperscript{a}, Emily Roosen, MSEd\textsuperscript{a}, Thomas Schwartz, MA\textsuperscript{a}, John DeLuca, PhD\textsuperscript{b,c,d}

http://dx.doi.org/10.1016/j.apmr.2005.03.013

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Cognitive Symptom Management and Rehabilitation Therapy (CogSMART) for Veterans with traumatic brain injury: Pilot randomized controlled trial

Elizabeth W. Twamley, PhD; 1-2* Amy J. Jak, PhD; 1-3 Dean C. Delis, PhD; 1 Mark W. Bondi, PhD; 2-3 James B. Lohr, MD 1-2

1 Center of Excellence for Stress and Mental Health, Department of Veterans Affairs (VA) San Diego Healthcare System, San Diego, CA; 2 Department of Psychiatry, University of California, San Diego, San Diego, CA; 3 Psychology Service, VA San Diego Healthcare System, San Diego, CA

Abstract—Traumatic brain injury (TBI) can result in cognitive impairments and persistent postconcussive symptoms that

INTRODUCTION
Cognitive Rehabilitation for Military Service Members With Mild Traumatic Brain Injury: A Randomized Clinical Trial

Douglas B. Cooper, PhD; Amy O. Bowles, MD; Jan E. Kennedy, PhD; Glenn Curtiss, PhD; Louis M. French, PsyD; David F. Tate, PhD; Rodney D. Vanderploeg, PhD

Objective: To compare cognitive rehabilitation (CR) interventions for mild traumatic brain injury (mTBI) with standard of care management, including psychoeducation and medical care for noncognitive symptoms. Setting: Military medical center. Participants: A total of 126 service members who received mTBI from 3 to 24 months before baseline evaluation and reported ongoing cognitive difficulties. Interventions: Randomized clinical trial with treatment outcomes assessed at baseline, 3-week, 6-week, 12-week, and 18-week follow-ups. Participants were randomly
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| PRIMARY OUTCOME MEASURES            | -Strategy Use Questionnaire
- QOL  
- Symptom Inventory | -Neuropsych Measures
- QOL  
- Symptom and Emotional functioning | -Neuropsych Measures
- QOL  
- Symptom and Emotional functioning | Neuropsych Measures
- QOL  
- Symptom and Emotional functioning |
Research Design

- Prospective, randomized control treatment trial of cognitive rehabilitation for OEF/OIF Service Members with a history of mTBI and persistent (3 to 24 months post-injury) cognitive complaints
Primary Outcome Measures

- **Paced Auditory Serial Addition Test**
- **Symptom Checklist – 90-Revised (SCL-90-R)**
  - Total Score
  - Subscales (anxiety; depression; somatization)
- **Key Behaviors Change Inventory (KBCI)**
  - Inattention; impulsivity; apathy; unawareness of problems
  - Interpersonal difficulties; communication problems; somatic difficulties; emotional adjustment
Secondary Outcome Measures

- Symptom Complaints
- Functional Status
- Antecedents of change
- Neurocognitive abilities
- Strength of treatment alliance
Four Treatment Arms

- **Arm 1.** Psychoeducational control group
- **Arm 2.** Non-therapist directed computerized cognitive rehabilitation
- **Arm 3.** Therapist-directed individualized cognitive rehabilitation
- **Arm 4.** Integrated interdisciplinary cognitive rehabilitation combined with cognitive behavioral psychotherapy

Sample size=160 (40 per arm; 4 arms)
Results

- No difference on the primary outcomes between the groups although the treatment groups ended up on the subclinical range.

- The therapist directed and integrated cognitive rehabilitation groups had superior outcomes on the Key Behaviors Change Inventory.
Conclusions from the SCORE study

• Preliminary Support for Cognitive Rehabilitation
  • Improvements beyond treatment as usual (augmentative)
  • Subjective improvement of cognitive functioning, not objective neurocognitive test performance
  • Interventions are not effective for all subjects

• Key Questions
  – Should we be applying a single intervention/group of interventions to a heterogeneous sample?
  —Is it realistic to expect a treatment response in majority of subjects?
A Pilot Study Investigating Neuropsychological Consultation as an Intervention for Persistent Postconcussive Symptoms in a Pediatric Sample

Michael W. Kirkwood, PhD¹, Robin L. Peterson, PhD¹, Amy K. Connery, PsyD², David A. Baker, PsyD¹, Jeri Forster, PhD¹, ²
Brief cognitive behavioral intervention for children and adolescents with persistent post-concussive symptoms: A pilot study

Kelly A. McNally, Kristina E. Patrick, Jacob E. LaFleur, Jana B. Dykstra, Kerry Monahan & Kristen R. Hoskinson

Pages 1-17 | Received 29 Mar 2016, Accepted 03 Jan 2017, Published online: 26 Jan 2017

Download citation  http://dx.doi.org/10.1080/09297049.2017.1280143
Our Roadmap for Teaching Functional Cognitive Rehabilitation

- Six guiding principles based on evidence and peer reviewed expert consensus that ensures your therapy is patient-centered and optimizes outcome.

- Four stages of rehabilitation critical to assessment and treatment process

- Six distinct approaches to cognitive rehabilitation
Clinician’s Guide to Cognitive Rehabilitation in mTBI

Citation:
Collaborators

- Douglas B. Cooper PhD, ABPP-CN
- Micaela Cornis-Pop PhD, CCC-SLP
- Leslie Freeman Davidson, PhD OTR/L
- Shari Goo-Yoshino, M.S., CCC-SLP
- Carol Smith Hammond, PhD, CCC-SLP
- Mary Kennedy, PhD, CCC-SLP, BC-ANCDS
- Don MacLennan, MA CCC-SLP
- R. Kevin Manning, PhD, CCC-SLP
- Pauline Mashima, PhD, CCC-SLP

- Leslie Nitta, MS CCC-SLP
- Linda M. Picon M.C.D., CCC-SLP
- Mary Vining Radomski, PhD., OTR/L
- Melissa Ray M.S., CCC-SLP
- Carole R. Roth PhD CCC-SLP, BC-ANCDS
- Maile Singson MS, CCC-SLP
- Lyn Turkstra PhD CCC-SLP, BC-ANCDS
- Rodney D. Vanderploeg, PhD., ABPP-CN
Collaborators

Pauline Mashima  Rodney Vanderploeg  Linda Picon  Lyn Turkstra  Micaela Cornis-Pop  Maile Singson

Mary Kennedy  Doug Cooper  Shari Goo-Yoshino  Emi Isaki  Carole Roth  Carol Smith-Hammond
Guiding Principles

1. Focus on Function
2. Cultivate Partnerships
3. Acknowledge Multifactorial complexities
4. Building a Team: "There's no "I" in Team"
5. Recruit Resilience
6. Promote Realistic Expectations for Recovery

Rehabilitation Stages

Getting Started
Setting Stage For Functional Change
Making Functional Change
Transition to self management

Six Cognitive Interventions

- Personalized education
- Cognitive strategy training
- Direct training
- Assistive technology for cognition
- Task specific training
- Environmental management
- TOOLS: Motivational interviewing; goal attainment scaling, dynamic coaching

Roadmap for Functional Cognitive Rehabilitation
Six Guiding Principles

1. Recruit Resilience
   - Identify & incorporate values of patient into therapy
   - Promote self-efficacy, positive expectation, sense of meaning

2. Cultivate the Therapeutic Alliance
   - A strong partnership provides the foundation for the therapeutic process
   - Listen carefully to the patient and resist the impulse to be *the expert*

3. Acknowledge multifactorial complexities
   - Persisting cognitive symptoms are often maintained by factors other than the brain injury
   - Regardless of the lack of clarity surrounding cause of cognitive symptoms, the symptoms are real and the therapist must move beyond symptom attribution to help the patient function better
Six Guiding Principles

4. Build a team
   • Include family wherever possible – family support is a strong prognostic variable for recovery
   • Other team members are driven by specific needs: Physicians for medical tx, Mental Health providers for mood disorders, PTSD, Social Work for community services as needed

5. Focus on function
   • Overarching goal of cognitive rehabilitation after mTBI is to help people resume valued activities
   • This is best accomplished when therapy itself is integration-focused and directed at functional activities in a community context

6. Promote realistic expectations for recovery
   • Positive expectation for recovery is critical for developing self-efficacy and self-determination
   • Provide education about nature of mTBI and expected recovery, highlight abilities and strengths, and demonstrate effectiveness of strategies in resuming everyday activities
Overview

• **Get Started**
  – Establishing the therapeutic alliance, information gathering, engage & motivate

• **Set the Stage for Functional Change**
  – Client selects goals, treatment approaches, measurement plan

• **Make Functional Changes**
  – Engage in therapy, 5 approaches to cognitive rehabilitation, monitor progress, goal attainment

• **Transition to Self-Management**
  – Plan for discharge, evaluate outcomes
Get Started

Get Started:
1. Establish therapeutic alliance
2. Gather information
3. Engage and motivate

• Motivational Interviewing
• Self-Report Measures
• Establish a ‘Quick Win’

Set the Stage for Functional Change

Make Functional Changes

Transition to Self-Management
Motivational Interviewing

(establishing the therapeutic alliance)
Self-Determination Theory

The following principles are required to move people toward *volitional behavior that is sustained over time*:

**Autonomy** – a sense that actions are self-endorsed and consistent with one’s values and interests

**Competence** – a sense that one is effective and has the ability, knowledge, or skill to do something successfully

**Relatedness** – a feeling of being cared for and connected, a sense of belonging
Self-Determination Theory

We refer to these psychological needs every day, however we use different terminology.

**Autonomy →** Veteran-Centered Care, Patient-Centered Care, Collaborative Care

**Competence →** Self-efficacy

**Relatedness →** Therapeutic Alliance
Motivational Interviewing

One Part Philosophy
• Client autonomy
• Resist the ‘righting reflex’

One Communication Technique
• OARS
  • Open-ended questions
  • Affirmations
  • Reflections
  • Summaries
Don’t Be Intimidated by MI
We Use MI Techniques Every Day

Open-Ended Questions

Affirmations

Reflections

Summaries

Socrates

Carl Rogers
Motivational Interviewing (MI) Techniques (OARS): The Path to Collaborative Goals (Miller & Rollnick, 2012)

Open-Ended Questions vs. Yes/No Questions
- How can I help you? How do memory challenges affect you at work? As opposed to:
- Can you remember the things you need to do at work?

Affirmations vs. A simple compliment
- Even though you didn’t always use your strategy on vacation, you did remember to use it twice in very difficult situations, you should feel good about that. As opposed to:
- Nice job

Reflections vs. More Questions
- You have trouble reading textbooks, your mind wanders. As opposed to:
- I see, are you distracted?

Summaries – The Opportunity for Collaboration
Summaries collect a number of things said by the client presented back to the client for validation
Which aspects of MI do you consistently use?

Which are more difficult?
Gathering Information

(What are areas of strength & challenge?)
Testing

• Standardized, norm referenced tests of limited value
• Many times people with mTBI may perform well on neuropsychological tests but c/o significant difficulties in real world contexts
• Self-report may be more valuable than objective test measures to identify functional challenges and develop participation-level goals
• Limited evaluation is better than extensive evaluation

(Duff, Proctor & Haley, 2002; Frith, Togher, Ferguson et al., 2014)
Tension When Selecting Tests

Difficult to achieve this balance

In a review of 31 tests assessing cognitive-linguistic skills, none of the tests were predictive of performance in contexts relevant to daily life (ecological validity). Turkstra et al, 2005
Limited Time for Evaluation

Typical evaluation: Test \(\rightarrow\) Infer Function \(\rightarrow\) Plan Treatment

- Give a standardized, impairment-level test
- Infer the degree to which impairments will likely impact everyday activities
- Plan treatment accordingly – often in traditional therapy with drill & practice activities  
  (Kennedy & MacLennan, 2013)
<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
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<tbody>
<tr>
<td>Episodic Memory</td>
<td>remembering daily events and personal experience</td>
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<tr>
<td>Semantic Memory</td>
<td>remembering facts &amp; knowledge-based information</td>
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<tr>
<td>Prospective Memory</td>
<td>remembering to initiate future intentions</td>
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<tr>
<td>Procedural Memory</td>
<td>remembering procedures and steps</td>
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<tr>
<td>New Learning</td>
<td>ability / rate of learning new information</td>
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<tr>
<td>Attention</td>
<td>holding and processing information in mind</td>
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<tr>
<td>Executive Functions</td>
<td>initiation, planning, organization etc.</td>
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<tr>
<td>Problem Solving</td>
<td>ability to solve problems</td>
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So How CAN We Assess Function

“A combination of psychometric tests, structured observations in functional settings, and standardized ratings by the client, family, caregivers, and therapists is likely to yield the most accurate and complete information with regard to current functional capacity.” (Sohlberg & Mateer, 2001).

Standardized self-report ratings in conjunction with objective screenings may offer an efficient way to take evaluation beyond the impairment level to facilitate functional assessment and goal setting.
Self-Report & Validate with Objective Measures

Makes true client-centered goals achievable

- Standardized, objective, impairment-level test
  - Repeatable Battery of Neuropsychological Status (RBANS)

- Standardized, self-report measure
  - Self-Awareness of Deficit Interview (Fleming, Strong, & Ashton, 1996)
  - Can use Motivational Interviewing techniques to facilitate collaborative, client-centered goals
The Self-Awareness of Deficits Interview (Fleming, Strong, & Ashton, 1995)

0 = Full Awareness; 3 = Severe Unawareness

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<tr>
<th>Part 1: Self-Awareness of Deficits</th>
<th>Cognitive Context</th>
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<td>Probing Items</td>
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<tr>
<td>- Are you any different now than before your injury?</td>
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<td>- Do people who know you well see anything different?</td>
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<tr>
<td>Prompts</td>
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<tr>
<td>- Memory, confusion, concentration, problem-solving</td>
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<td>- Controlling behavior, communication, personality</td>
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<th>Part 2: Self-Awareness of Functional Implications of Deficits</th>
<th>Functional Activity</th>
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<tr>
<td>Probing Items</td>
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<td>- Does your injury affect your everyday life? How?</td>
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<tr>
<td>Prompts</td>
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<tr>
<td>- Live independently, finances, managing a home,</td>
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<td>- Driving, work/study, leisure/social life</td>
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<th>Part 3: Ability to Set Realistic Goals</th>
<th>Functional Goals</th>
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<tr>
<td>Probing Items</td>
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<tr>
<td>- What do you hope to achieve in next 6 months?</td>
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<tr>
<td>- Do you have goals? What are they?</td>
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<tr>
<td>- Do you think your injury will still have an effect in 6 months? If yes, how?</td>
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### Self-Report Assessments

#### Memory
- Everyday Memory Questionnaire (Sunderland, Harris, & Baddeley, 1983)
- Good Samaritan Memory Questionnaire (Mateer, Sohlberg, & Crinean, 1987)

#### Executive Functions
- Behavioral Rating Inventory of Executive Function (BRIEF-A), (Gioia et al, 2000))
- Dysexecutive Questionnaire (DEX) (Wilson et al, 1996)

#### Pragmatic Communication
- LaTrobe Communication Questionnaire (Douglas, O’Flaherty, & Snow, 2000)

#### College Needs Assessment
- College Survey for Students with Brain Injury (Kennedy, Krause, & Turkstra, 2008)
- UW-Madison College Concussion Clinic case history & academic needs assessment (Krug & Turkstra, 2015)
- LASSI: Learning & Study Strategies Inventory (Weinstein 1987)

#### ATC Needs Assessment
Assistive Technology Outcome Measure ATOM (Scherer, 2005)
What is your current assessment process and how does it fit within your initial session(s)

Any tweaks that would be feasible to make it more functional?
Set the Hook

Find a ‘quick win’ at the end of the session that addresses an area of concern

- Task app for supporting headache relief
- Describe a reading strategy for reading textbooks
- Describe an attention strategy to improve conversational focus
The mTBI Iceberg

**COGNITIVE SYMPTOMS**
- Attention, memory, executive functions

**IATROGENIC FACTORS**
- Incorrect diagnosis, overinvestigation/overtesting, over treating
- Creates expectation of lasting symptoms

**COMORBID CONDITIONS**
- Depression, anxiety, PTSD, chronic pain, fatigue, sleep disturbance
- All can contribute to maintenance of PCS

**PSYCHOLOGICAL FACTORS**
- Expectation as etiology, recall bias good old days, perception of little/no control, symptom-focused hypervigilance

**PRE-INJURY FACTORS**
- Diminished resilience (self-efficacy, optimism & positive emotions, positive reframing of negative thoughts, social support, sense of purpose in life),
Set the Stage for Functional Change

Get Started
- Therapeutic alliance, motivation, gathering information
  - Motivational Interviewing

Set the Stage for Functional Change

1. Set goals
2. Select tx approaches/strategies
3. Create measurement plan

- Using MI to develop goals
- GAS / SMART goals
- 5 approaches to Cog Rehabilitation
- Measurement plans

Make Functional Changes

Transition to Self-Management
Goal Setting
(The Drive Behind Rehabilitation)
Goals – The Mismatch Between Clinicians & Patients

Cicerone, 2006

Why does therapy work?

Clinicians: When therapy works: It’s because of the quality of the therapy
When therapy fails: It’s because the patient wasn’t motivated

Patients: When therapy works: It’s because of the effort they put into therapy and the support of their family
When therapy fails: It’s because the therapy was ineffective

Why does therapy fail?
Why Rehabilitation Fails? (van den Broek, 2005)

Failure often arises from a mismatch between the goals of the treatment team and the patient’s aspirations.

Clinicians vulnerable to the “Expert Trap”
  • Especially when patients are perceived to have poor judgment and reasoning.

Clinicians are experts at assessing deficits —> pt needs
  • May be a mismatch between pt needs and what pt wants.
Goals: The Lifeblood of Therapy!

Goals must be truly patient-centered

- Involves *listening* to the patient and putting his or her interest at center stage
- establishes therapeutic alliance
- facilitates intrinsic motivation & self-determination
Operational Definition of a Collaborative Goal Using Motivational Interviewing Techniques

A goal in which

• The functional context, functional activity, and cognitive domain for that goal are identified through client responses to open ended questions or reflections by the clinician

• And validated by the client in response to a clinician summary of that information.
5 Approaches to Cognitive Rehabilitation

(Pathways to functional change)
Five Options for Therapy Approaches

Set the Stage for Functional Change:

1. Set Goals
2. Select Tx Approaches/Strategies

- Personalized Education and Understanding
- Cognitive Strategy Training
- Direct Training of Cognitive Impairments
- Selection and Training the Use of an Assistive Technology Device
- Environmental Management
Personalized Education: Part of Every Program

Clinician Reminders:
- Need clear understanding of the PURPOSE of any education exercises or discussions
- Balance strengths and weaknesses

Primary Tool:
Motivational Interviewing
Adjustment and Symptom Measures

Examples:
- Handout/Discussion about the moderating factors related to TBI
- Peer Recovery Videos-positive expectation for improvement
- Sleep Hygiene Program
- Headachereklist.com
Personalized Education: Primary Tools

• **Discussion**
  – Providers educate person with TBI on the nature of the injury and the range of treatment options
  – Person with TBI educates providers regarding strengths, weaknesses, prior use of strategies

• **Handouts**

• **YouTube**
  – [https://www.youtube.com/watch?v=x9Xso4qGdlI](https://www.youtube.com/watch?v=x9Xso4qGdlI)
  – You Look Great Coming Home with a Mild TBI: John Byler

• **Experiential Tasks**

• **Risk Communication**
The language we use can enhance positive expectation

Mild Traumatic Brain Injury vs. Concussion
Post-Concussion Syndrome vs. Post-Concussion Symptoms
Impairments, Deficits vs. Challenges

Much of the language we use in rehabilitation everyday carries negative connotation that can impact a client’s perception of their condition.

This effect can be amplified by context – receiving tx in a hospital
Consider providing therapy via telehealth
What Is A Concussion?

A concussion is the same thing as a mild TBI. Specifically, it’s a blow or force to the head that causes loss of consciousness lasting less than 30 minutes, or an alteration in consciousness. In other words, you had a concussion if you were “knocked out” for less than 30 minutes or if you were not knocked out at all but were briefly confused or dazed. We will use the term concussion here because most people are familiar with that term.

Being hit in the head can cause memory loss for the time before, during and/or immediately after the injury. For example, it is not uncommon for soldiers to report that they remember “waking up” and feeling confused in the aftermath of an explosion but don’t remember the explosion itself or the events immediately before or after it. Some people think that, in order to be recovered, they need to remember these events. This is not true. In fact, that may never happen, because when you are knocked out or experience a brief period of amnesia for the event, your brain cannot form new memories.
What can I expect after a concussion?

People tend to get better after concussions, but most will have some temporary symptoms. A hit to the brain is never a good thing. Eight out of 10 people with a concussion show some symptoms during the first days to weeks after their injury.

Some symptoms after a concussion, like confusion, will resolve quickly. Post-injury headaches and slowed thinking may take a little longer to get better. People are different, and no two injuries are exactly the same.

In most cases, there are no lasting symptoms or ill effects from the concussion itself. This is because the brain is surrounded by shock absorbing liquid and covered by the skull. Often these are enough to protect the brain from any damage. Even if a person has initial symptoms in the hours or days after a concussion, most people recover completely. In fact, most individuals who suffer a concussion experience few post-injury problems and make a rapid recovery, often returning to normal within hours or days after their injury. Any injury to the brain will heal and get better, not worse, over time.

Remember that symptoms are part of the normal recovery process and are not signs of permanent brain damage or medical complications. Just as scratches or wounds itch while they heal, these symptoms are expected as your brain heals.
Table 3.2. Most Common Symptoms of Concussion Compared to Symptoms of Everyday Stress

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Percentage of Individuals with Concussion</th>
<th>Percentage of Individuals without Concussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor concentration</td>
<td>71</td>
<td>14</td>
</tr>
<tr>
<td>Irritability</td>
<td>66</td>
<td>16</td>
</tr>
<tr>
<td>Tired a lot more</td>
<td>64</td>
<td>13</td>
</tr>
<tr>
<td>Depression</td>
<td>63</td>
<td>20</td>
</tr>
<tr>
<td>Memory problems</td>
<td>59</td>
<td>20</td>
</tr>
<tr>
<td>Headaches</td>
<td>59</td>
<td>13</td>
</tr>
<tr>
<td>Anxiety</td>
<td>58</td>
<td>24</td>
</tr>
<tr>
<td>Trouble thinking</td>
<td>57</td>
<td>6</td>
</tr>
<tr>
<td>Dizziness</td>
<td>52</td>
<td>7</td>
</tr>
</tbody>
</table>

Helps to create positive expectation by reducing “good old days bias”
Management of Specific Symptoms

Poor concentration
Irritability/anger
Fatigue/sleep problems
Depression
Memory problems
Headaches
Environmental Strategies for Sleep

- Block out all distracting noise
- Temperatures above 75 degrees Fahrenheit and below 54 degrees can disrupt sleep. A slightly cool room tends to contribute to good sleep
- Light regulates our biological clocks
  - If you find yourself struggling to fall asleep, try increasing your exposure to bright light during the morning
  - If you find yourself waking earlier than you'd like, try increasing your exposure to bright light in the evening
  - Avoid light if you wake up in the middle of the night to go to the bathroom
- Reserve the bed for sleep and sex. Do not do work, read, play video games or watch TV while in bed
- If you do not fall asleep within 15 to 30 minutes, get up and go into another room and read until sleepy
Cognitive Strategy Training

Clinician Reminders:

• Strategy selection and introduction based on collaborative interview and any testing
• Training should include Knowledge Assessment (how, when, where & why)
• Training should provide adequate practice for fluency and generalization
• Evaluation includes measure of strategy knowledge, use and impact

Primary Tools:

• Goal completion strategies
• Self monitoring strategies
• Internal memory strategies
• Task specific strategies
• Measurement: Usage logs/GAS

[Part of Dynamic Coaching]

Examples:

• Training reading comprehension strategy
• Goal Plan Do Review (Ylvisaker)
Categories of strategies

- **Activity Specific Strategies**
  - Remembering names
  - Prevention of lost items
  - Academic strategies (study skills, writing, reading, assignment management)
  - Social communication strategies (conversation starters, question templates)
  - Navigation strategies

- **Internal Memory Strategies**
  - Imagery
  - Verbal elaboration
  - Retrieval (alphabet searching, mental retracing)
  - Encoding (acronym, story method)

- **Generalized Metacognitive Strategies (self monitoring/goal completion)**
  - Goal Management Training
  - Problem Solving Therapy
  - WSTC
  - Self talk/verbal mediation
Training Use of Assistive Technology for Cognition

Clinician Reminders:
- Device selection and introduction based on collaborative interview and any testing
- Training should include Knowledge Assessment (how, when, where & why)
- Training should provide adequate practice for fluency and generalization
- Evaluation includes measure of ATC knowledge, use and impact

Primary Tools:
- Knowledge of ATC options
- Knowledge of apps and resources for evaluating [http://id4theweb.com/]
- Measurement: Usage logs/GAS [Part of Dynamic Coaching]

Examples:
- Training use of Symple app to monitor triggers to postconcussive symptoms
- Training use of Kurzweil 3000 to improve reading comprehension and school performance
- Training use of alert functions on calendar to increase task management
Direct Training of Cognitive Processes

Clinician Reminders:
• Candidacy
• Theoretical grounding
• Sufficient Repetition
• Patient Performance drives clinical regimen
• Combine drills with strategy training
• Identify and Measure Functional Goals

Primary Tools:
• Programs with evidence-base
• Patient-centered outcome measures that capture generalization
  [Part of Dynamic Coaching]

Examples:
• Attention Training
• Goal Management Training
Setting the Stage for Functional Change: Direct Tx
Direct Training of Cognitive Processes

Training specific cognitive processes with a goal of improving processes at the impairment level

- Drills are repeated over time and level of difficulty is increase as performance improves
- Tasks are not functional but are intended to improve processing of specific cognitive networks to improve function
- Weak evidence with this approach in isolation, stronger evidence for this approach when used in conjunction with strategy training
McKay’s Direct Training Candidacy Requirements

• Clients with consistent assessment results where client-reported concerns match neuropsychological tests
  – e.g., BRIEF and PASAT both show WM deficits and client reports having trouble holding on to textbook info at school
• Sufficient residual neural resources
• Clients motivated and able to participate in impairment-based, drill oriented approach
• Clients with readiness to change, self awareness

Environmental Management

Clinician Reminders:
• Requires home/community assessment and collaboration with relevant others
• Can be “low hanging fruit”
• May require support to implement and training to attend to modification

Examples:
• Setting up dedicated study space
• Change in lighting to reduce headache

Primary Tools:
• Home Assessment
• Collaboration with significant others
• Monitoring Plan

[Part of Dynamic Coaching]
Identification of the environmental modification should be collaborative

- Person with the TBI and significant others should be involved in design and implementation of the modification – home evaluation
- Therapy should provide practice in attending and using the modification including generalized practice in the natural environment facilitated by natural supports
- Evaluate the person’s use or attention to the system as well as the impact on the target goal
Measurement

Who will measure?
- Client
- Another significant person - spouse, supervisor

What will be measured?
- As strategy is introduced focus might be on strategy use.
  - Will use PQRST strategy at least 3x this week.
- As strategy is used consistently, measurement focuses on impact of the strategy.
  - Will use PQRST to read Sociology textbook with no more than 1 moment of distractibility for every 5 pages read within two weeks

When will measurement occur?
- For relatively low-frequency activities (college reading), may measure each time an activity occurs
- For high-frequency activities (conversation), may measure specific examples of the activity
- For global ratings of impact (caregiver burden), may seek ratings at specified intervals.
Measurement is Hardest & Most Critical Aspect of Functional, Participation-Based Therapy

Initiate Strategy & Measure Strategy

Challenge ---- Goal

Evaluate Strategy

Select Strategy

Awareness of Strengths & Weaknesses
The mTBI Iceberg

**COGNITIVE SYMPTOMS**
- Attention, memory, executive functions

**IATROGENIC FACTORS**
- Incorrect diagnosis, overinvestigation/overtesting, over treating
- Creates expectation of lasting symptoms

**COMORBID CONDITIONS**
- Depression, anxiety, PTSD, chronic pain, fatigue, sleep disturbance
- All can contribute to maintenance of PCS

**PSYCHOLOGICAL FACTORS**
- Expectation as etiology, recall bias good old days, perception of little/no control, symptom-focused hypervigilance

**PRE-INJURY FACTORS**
- Diminished resilience (self-efficacy, optimism & positive emotions, positive reframing of negative thoughts, social support, sense of purpose in life),
Set the Stage for Functional Change

Get Started
Therapeutic alliance, motivation, gathering information

Motivational Interviewing
Dynamic Coaching

Set goals; select tx approaches and strategies

Using MI to develop goals
Goal Attainment Scaling/SMART goals
5 approaches to Cognitive Rehabilitation
Measurement plan

Set the Stage for Functional Change

Make Functional Changes
Implement Tx Approaches/Strategies

When to start Cognitive Rehabilitation
Personalized education
Training cognitive strategies
Assistive Technology for Cognition
Direct training of cognitive processes
Environmental management

Transition to Self-Management
When to Start CR?

Mild TBI Consensus Conference: Helmick et al, 2010

Where mTBI occurs with significant Comorbid conditions……

Treat the comorbid conditions first, then engage in cognitive rehabilitation
Step-Care Treatment Model (Brenner, Vanderploeg, & Terrio, 2009)

Begin with expectation for recovery & simultaneously addressing behavioral health issues

Next attend to somatic complaints (headache) & self-care routines (sleep)

Cognitive rehabilitation trial recommended where cognitive symptoms persist > 3 months

Figure 3. Traumatic brain injury step-care treatment model. *Includes sleep hygiene, diet, exercise, and avoiding further traumatic brain injury.
Cognitive symptoms arising from comorbid conditions (PTSD, depression, anxiety, sleep disturbance, chronic pain) may also be a barrier to the treatments for those conditions. When this occurs, low-dose cognitive rehabilitation delivered concurrently with other behavioral and medical therapies may help with adherence & implementation of tx.

- Remembering to take medications
- Remembering appointments
- Following through with sleep hygiene routine
- Completing A-B-C sheets as part of Cognitive Behavioral Therapy
- Initiating assignments related to trauma-focused therapies
Set the Stage for Functional Change

Get Started
- Therapeutic alliance, motivation, gathering information
- Motivational Interviewing
- Dynamic Coaching
- Using MI to develop goals
- Goal Attainment Scaling/SMART goals
- 5 approaches to Cognitive Rehabilitation
- Measurement plan

Set the Stage for Functional Change
- Set goals; select tx approaches and strategies
- When to start cognitive rehabilitation
- Personalized education
- Training cognitive strategies
- Assistive Technology for Cognition
- Direct training of cognitive processes
- Environmental management

Make Functional Changes
- Implement tx approaches & strategies

Transition to Self-Management
1. Plan Discharge
2. Evaluate Outcomes
- Discharge Scenarios
- Why Assess Outcomes
- Types or Levels of Outcomes
- Anticipate Needs
Planning for Discharge: Discharge Scenarios

Discussion regarding discharge should occur early in therapy

Discharge

- Discharge outright with no additional follow-up
- Discharge with scheduled follow-up to verify maintenance of goals
- Discharge with client-initiated follow-up within a specified period related to changes in life context: taking more difficult course load, promotion at work or within military
Planning for Discharge: Why Assess Outcomes?

- Demonstrating to clients and their families that they have made important and significant improvements

- Demonstrating to administrators the need for additional resources to expand successful services and programs

- Program Accreditation and Re-accreditation by CARF or other accrediting agencies

- Program evaluation and improvement: If changes are made, outcomes can be evaluated before and after the change to see if expected improvements were achieved.

- Practice-based evidence
Planning for Discharge: Types of Outcomes

- **Patient:** Assessing outcomes at the level of the patient is generally the most important measure.

  - decrease in symptoms
  - increase in day-to-day functioning
  - increase in participation in work, school, social, or other activities
  - number of treatment goals achieved
  - satisfaction with different aspects of the treatment.
  - change in standardized test relevant to therapy
Planning for Discharge: Types of Outcomes

- **Provider**: Outcome assessment at the provider level might include:
  - access issues such as wait times for an initial appointment or time before treatment sessions can be scheduled
  - effectiveness outcomes such as number of sessions needed to achieve various treatment goals
  - satisfaction outcomes such as satisfaction with service provided, professional demeanor, information/education provided, treatment goals achieved, involvement of family or significant others, etc.
Planning for Discharge: Types of Outcomes

- **Clinic/Program:** Outcome measures at the clinic/program level might include similar outcomes to those assessed at the provider level, but now reflecting clinical program outcomes:
  
  o access issues such as wait times for initial appointment or time before treatment sessions can be scheduled
  o effectiveness of treatment with different types of patients such as number of sessions to achieve treatment goals
  o satisfaction outcomes.
Anticipate Needs

- Community resources?
  - Support groups?
  - Other providers?
  - Classes, recreation?
- Self evaluation surveys
- Phone follow up
- Reminder handouts for family, friends, patient
Summary

• **Get Started**
  – Establishing the therapeutic alliance, information gathering, engage & motivate

• **Set the Stage for Functional Change**
  – Client selects goals, treatment approaches, measurement plan

• **Make Functional Changes**
  – Engage in therapy, 5 approaches to cognitive rehabilitation, monitor progress, goal attainment

• **Transition to Self-Management**
  – Plan for discharge, evaluate outcomes

*While there is no “right” or one approach—there is solid cross population research*

*We need to continue to build practice based evidence*
Have Any of Your Assumptions Been Challenged?

<table>
<thead>
<tr>
<th>ASSUMPTION</th>
<th>AGREE</th>
<th>PARTIALLY AGREE</th>
<th>DISAGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild TBI and Concussion are different disorders</td>
<td>McKay &amp; Don</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The process of cognitive rehabilitation should focus exclusively on the cognitive symptoms</td>
<td></td>
<td>McKay</td>
<td></td>
</tr>
<tr>
<td>Persistent cognitive complaints following mTBI are typically associated with comorbid factors such as mood disorders, chronic pain or sleep disorders</td>
<td>McKay &amp; Don</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The language we use during treatment can impact outcome</td>
<td>McKay &amp; Don</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The techniques involved in the cognitive treatment of mTBI differ substantially from those used to treat moderate-severe TBI.</td>
<td></td>
<td>McKay</td>
<td>Don</td>
</tr>
<tr>
<td>A prolonged course of cognitive rehabilitation (over 6-7 sessions) is strongly recommended for people with mTBI</td>
<td></td>
<td>McKay</td>
<td>Don</td>
</tr>
<tr>
<td>SLPs should not be treating cognitive symptoms related to concussion in the first few weeks after injury.</td>
<td>McKay &amp; Don</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive rehabilitation can help strengthen a patient's resilience and thereby improve outcome.</td>
<td>McKay &amp; Don</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is best to treat comorbid psychological and somatic conditions before assessing and treating the cognitive symptoms.</td>
<td></td>
<td>McKay</td>
<td>Don</td>
</tr>
<tr>
<td>Standardized, impairment-level testing should be conducted with each patient, as it is the most important source for guiding intervention</td>
<td></td>
<td>McKay</td>
<td>Don</td>
</tr>
</tbody>
</table>

McKay & Don
References


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Kennedy & Krause
References


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