SCAFFOLDING STRATEGY RELIANCE AFTER MILD TRAUMATIC BRAIN INJURY

Teaching cognitive strategies and structure to maximize ability in the community.

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DISCLOSURES

- Paid employee of OT Plus, Inc.
- Participate in a multidisciplinary music therapy group at BIAC.

COURSE OBJECTIVES

- Customized strategy provision to support deficits in endurance, attention, language, literacy, memory, processing and executive function after Mild Traumatic Brain Injury (mTBI).
- Innovative treatment solutions to daily mTBI challenges:
  - providing the rehabilitation building blocks: education, strategies, opportunities and internalization
  - individualized to specific deficits and community needs
  - creative, flexible, and open to novel approaches
  - insight building is key to awareness, acceptance and adjustment
  - tools that can be generalized beyond therapeutic settings
  - multidisciplinary intervention
  - pet project: writing/support group

SLIPPING THROUGH THE CRACKS.

Many of our clients:

- Evaluation in an ED or not.
- Poor education regarding atypical recovery or treatment options for mTBI.
- Often advised to seek TX, in the context of seeking legal recourse, typically several months post injury.
- Standard MRI techniques are not helpful in identifying patients with mTBI who are likely to have delayed recovery. (Hughes et al. 2004)

MTBI AND CHRONIC COGNITIVE IMPAIRMENT

- A recent review of 45 studies relating to the presence/absence of cognitive impairment post mTBI found that, in contrast to the prevailing view that most symptoms of concussion are resolved within 3 months post-injury, approximately half of individuals with a single mTBI demonstrate long-term cognitive impairment. (McInnes et al, 2017)

- The causes of protracted recovery are also a point of debate. Influenced by:
  - Post-traumatic stress
  - Pre-injury depression or anxiety
  - Premorbid cognitive problems
  - Substance use
  - External incentives such as involvement in litigation.
- These confounding factors make it difficult to estimate the true prevalence and correlates of lingering mTBI sequelae (Rabinowitz et al, 2015).

- "There is strong evidence for person-centered treatment of cognitive-communication disorders and use of instructional strategies such as errorless learning, metacognitive strategy training, and group treatment."

Togher et al., 2014

COGNITIVE CHALLENGES OF POST-CONCUSSIVE SYNDROME

ATTENTION/PROCESSING SPEED

- Decreased attention
- Cognitive fatigue/overwhelm
- Slowed processing

LANGUAGE

- Word finding
- Thought formulation
- Poor auditory comprehension
- Poor reading comprehension
- Poor written cohesion

MEMORY

- Changes in short term memory
- Changes in working memory
- Problems with new learning.

EXECUTIVE FUNCTIONS

- Planning/sequencing
- Organizing
- Time Management
- Decision making
- Reasoning
- Problem solving
- Multitasking

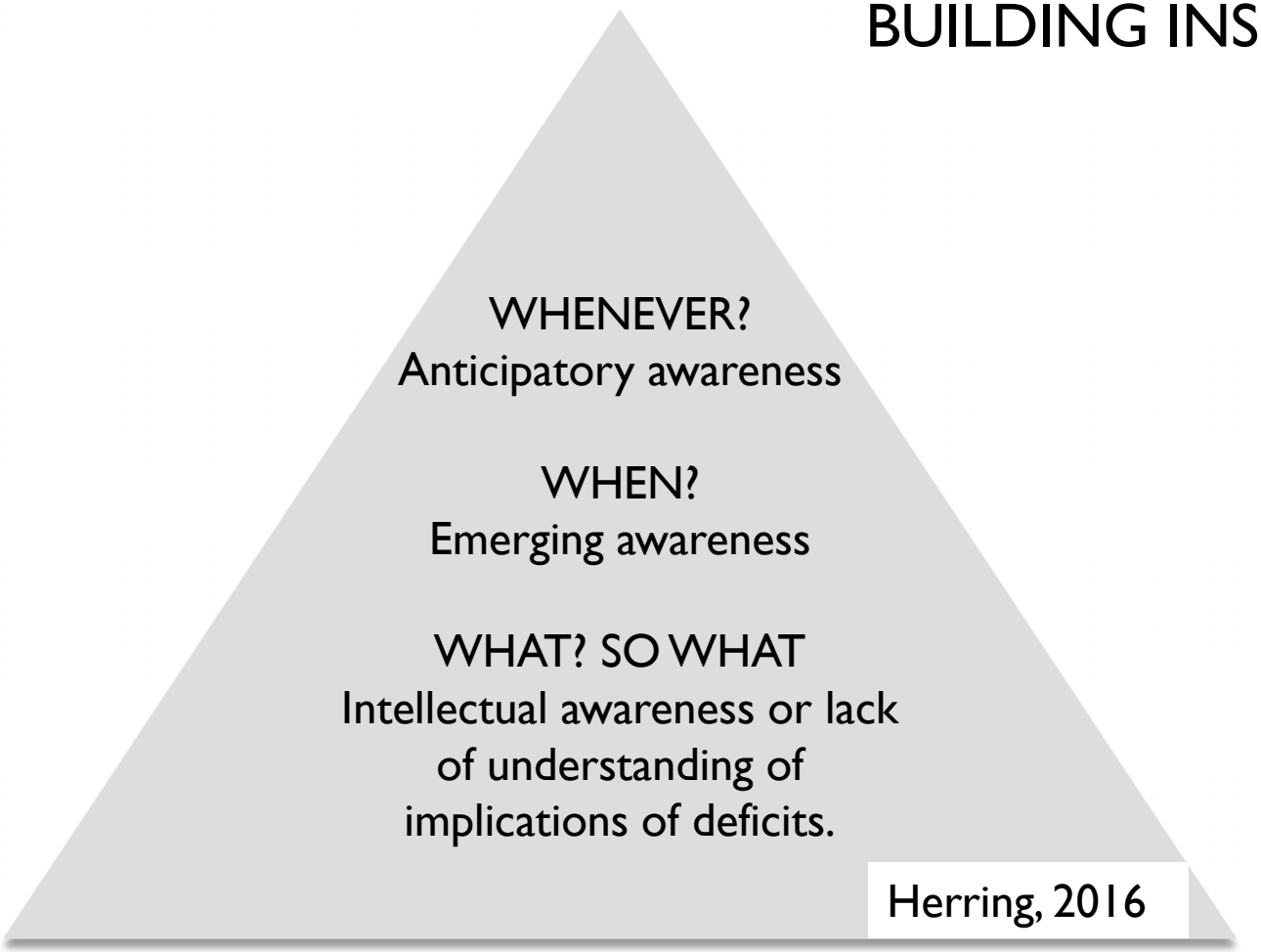
(Hardin, 2017)

ADDITIONAL CHALLENGES

- Fatigue
- Sleep problems
- Vestibular and hearing
- Vision
- Hypersensitivity to light or sound (Photophobia/phonophobia)
- Depression/anxiety
- PTSD

Awareness established in conjunction with daily reliance on strategies to scaffold deficits.

BUILDING INSIGHT



COGNITIVE FATIGUE

- Prevent overload.
- Pay attention to signs of fatigue.
  - Less ability to follow conversations.
  - Slower speed of thinking.
  - More disorganized thinking.
  - Losing train of thought.
  - Increased errors.
  - Trouble finding words or substituting wrong words.
  - Dizziness
  - Blurred vision.
  - Headache.

Sullivan, 2008

THE CHALLENGE OF FATIGUE MANAGEMENT

The use of strategies is important. By resting the brain as much as possible the mental energy struggle will be alleviated. However, the brain and the individual also need positive experiences and stimulation to ensure wellbeing. It is difficult to achieve this balance between rest and stimulation.

(Johansson & Rnnbck, 2014)

FATIGUE STRATEGIES

- Consider physical, emotional and cognitive demands.
- Take regular cognitive breaks.
- Encourage rest before becoming overtired.
- Recommend starting regimen of hourly 5 minute meditative breaks with timer support to build routine reliance.
- Try to work at a steady pace, taking one task at a time with short working periods, and prioritize the tasks.
- Plan the day's activities or the activities for the week in a diary or journal.
- The use of external memory aids reduces cognitive load.

SLOWED PROCESSING SPEED

- Speed of processing can be the biggest issue people face after an mTBI. It doesn't always feel as if that is the cause however it can impact memory, executive processes, shifting attention, and information processing.

- Adjustments for reduced speed give the brain the time it needs to function better.

ERRORLESS LEARNING AND SLOWED PROCESSING SPEED

- Encourage clients to be accurate rather than fast to build stronger pathways in an organized way. This approach is informed by the evidence base of errorless learning even as applied to typical functioning or mildly impaired individuals and is especially valuable in teaching the use of compensatory strategies.

Turkstra & Bourgeois, 2005

PROCESSING SPEED STRATEGIES

- Discourage speed drills (Simons et al., 2016)
- Slow down speed even when reading, walking or trying to remember things
- Use motor support to slow visual scanning speed (eg. reading guide or finger pointing)
- Encourage self talk to slow down so that processing can keep up
- Expect more time to complete tasks
- Don't try to "think on your feet." Plan ahead; anticipate problems. Try avoid situations where instant decisions are needed
- Self advocacy: Ask people to give short amounts of information at a time and not to change topics without warning, or talk before establishing eye contact

ATTENTION TYPES

- **Focused attention** is the ability to respond discretely to particular visual, auditory or tactile stimuli.

- **Sustained attention** is the ability to sustain a steady response during continuous activity. It incorporates the idea of vigilance and concentration.

- **Selective attention** is the ability to maintain attention in the face of distracting stimuli. These distractions may be internal or external.

- **Alternating attention** is the capacity for mental flexibility that allows the shift of focus between tasks (Acimovic, 2010)

, 2010)

ATTENTION ADJUSTMENTS

- **Minimize distractions**
- **Self-talk: say things out loud eg. "stay focused"**
- **Set targets or goals to help stay motivated**
- **Engage in stimulating activity for gradually longer periods of time**
- **Gain control – ask people to slow down, speak one at a time and repeat if needed**

ATTENTION ADJUSTMENTS CONT.

- **Take frequent breaks**
- **Determine the best time of day for concentration**
- **One thing at a time**
- **Don’t rush things**
- **Apply structure: make a plan, keep a record, break things into manageable parts**
- **Self-monitor: check and double check**

ATTENTION AWARENESS BUILDING EXCERCISES

- Put on some background noise (eg. mynoise.net), select a sound and try do something cognitive like mental math, Sudoku, crosswords, word search, reading, even try an auditory task etc. See if after a while it is possible to tune the noise out. Periodically increase volume and change the background sound.

- Try alternating between two auditory streams and suppressing one eg. radio and TV on together and chose to focus on one and ignore the other and then switch after a few minutes.

ATTENTION AWARENESS BUILDING EXCERCISES CONTINUED:

- Catch attention drift: try to notice when focus is lost and write down the distraction, or notice attention is drifting and actively redirect to the original task. Begin adding distractions and practicing screening them out, eg. read in a noisy coffee shop, try a puzzle in a noisy place.

- Try develop stamina: pick a cognitively demanding task, time 5 minutes, and each day build endurance in how long the task is sustained, goal of 20 minutes without needing to take a break.

Acimovic, 2010

ATTENTION STRATEGY FOR WORK OR STUDY RELATED TASKS

- Set aside a dedicated planning time each morning, (prioritize, sequence, organize)
- Use a timer to break work into four focused time blocks (around 25 minutes) separated by a 10-minute transition break, which includes evaluation, noting distractions, and a 5 minute meditation break. If there is an urge to do something else, make a note of it, but stay on task.
- After 4 consecutive working blocks, take a longer break 15-20 minutes.

(https://zapier.com/blog/best-pomodoro-apps/)

MEMORY CHALLENGES

- Bottom up impacts on memory: attention and processing speed
- Top down impacts on memory: executive skills
- Working memory:
  The process of holding information in mind and manipulating or organizing it.
- Prospective memory:

  The ability to plan, retain and retrieve an intention as planned (Walter & Meier, 2014).
- New learning

  Frontal lobe and hippocampus are vulnerable in TBI impacts encoding and storage

  Explicit: deliberate, voluntary encoding
- Retrieval (Ylvisaker, 2006)

EXTERNAL MEMORY STRATEGIES

- Routines
- Organization
- Planner
- Wall Calendar
- Alarms/Timers
- Write it down
- Make lists
- Audio recorder (phone, Livescribe, Sonocent)

INTERNAL MEMORY STRATEGIES

- Involve multiple senses
- Focus
- Rehearse/Repeat
- Make associations
- Visualization
- Categorization
- Chunking
- Create a story, chaining ideas
- Mnemonics (acronyms, sentences, rhymes, etc)

MEMORY ADJUSTMENTS

- Write everything down
- Store data in a central place
- Strategically place reminders to trigger memory
- Set alarms to check schedules
- Make lists
- Practice conscious storage
- Journal if necessary
- Talk out loud
- Develop routines
- Self advocate with others
- Do not drop adjustments too soon.

Acimovic, 2010

MEMORY STRATEGY PRACTICE

- Note taking whilst listening to podcasts, TED talks, Radiolab. Learning to pause presentation, pick out key details, repeat as needed, then describe key points and review for accuracy.
- Practice internal memory strategies when the stakes are low – for example practice repetition, visualization, and association in name learning even for inconsequential encounters.
- Scripting important phone calls to avoid retrieval challenges.
- Have a message taking script to support obtaining all key information.
- Recording lengthy and important verbally presented information.

EXECUTIVE FUNCTION

Difficulty with:

- setting realistic goals
- making plans to achieve the goals
- initiating relevant goal-directed behaviors
- inhibiting distracting behaviors
- monitoring their performance
- evaluating the outcomes in relation to goals
- making strategic adjustments as a result of this monitoring process

Ylvisaker, 2006

EXECUTIVE FUNCTION STRATEGY

"Interventions that promote internalization of self-regulation strategies through self-instruction and self-monitoring may be considered for persons with deficits in executive functioning after TBI."

Cicerone, 2005

EXECUTIVE FUNCTION STRATEGY

Instruct reliance on organizational strategies such as:

- goal setting
- identifying obstacles
- problem solving
- planning: gathering materials and sequencing tasks
- devising a time line with large work tasks broken down into manageable parts.
- executing according to the plan
- review what worked and seek solutions to what didn't.

Ylvisaker, Szekeres, & Feeney1998

WORD FINDING

- Word finding after a mild TBI is typically impacted by processing speed, disorganized search patterns and cognitive fatigue.
- While semantic paraphasias occasionally occur this doesn't present as the primary issue, more commonly it is a delayed retrieval and a sense of feeling blank.
- Stress, anxiety, distractions, and rushing, inhibit the ability to pause, utilize organized search compensations, and locate the word.
- Semantic webs provide an organized search strategy by using associations for the missing word and thereby potential routes for retrieval.
- Semantic webs also help the client talk about the word in an organized way and this can assist circumlocution.

Ylvisaker, 2006

WORD FINDING PRACTICE

- Slow down. Look thoughtful not stuck, ask for family to encourage reliance on word finding strategies and not to give word unless asked.
- Use semantic webs.
- After the word elaboration is complete, it is important to put the word to use. Write it down, write down a definition. Use it in a sentence. Also take time to think of synonyms or opposites, and write these down.
- Do lots of word games: categorical word searches, Scrabble, Scattegories, Taboo, Analogies, Crosswords.
- Conversation or writing in response to podcasts, toastmaster prompts, taking opposing views on controversial topics.

READING CHALLENGES

- Speed: discrepancy between visual scanning speed and information processing.
- Attention.
- Energy: the energy needed to control attention depletes individual quickly.
- Activating prior knowledge to improve readiness for comprehension plus ease recall.
- Shifting: brain single focuses and drops processing of printed material when reader shifts to next task.

Acimovic, 2010

READING STRATEGIES

- Take time to think what is known about the topic before beginning.
- Slow down scanning speed: the eyes and brain may not be going at the same rate. Use a finger or a piece of paper to keep focus from racing ahead. Read out loud this will slow down pace.
- Try read in a quiet place without distractions.
- Don’t try read when tired.

READING STRATEGIES

- Preview, Question, Reread, State, Test (Sohlberg, Griffiths, & Fickas, 2014).
- After each paragraph ask: what/where/when/why/how/who questions and reread to find answers if unsure.
- Paraphrase or summarize after each paragraph to ensure focus and comprehension are still present.
- Take a few minutes after reading to let the information sink in and make sure the brain has time to store it.
- Try to notice when focus or concentration is lost and next time stop reading sooner.

BRAIN INJURY JOURNALING GROUP

Journaling after TBI supports clients in several areas:

- Short-term memory.
- Improving language skills
- Improving organizational systems.
- Emotional outlook and awareness.
- Opportunity to reinforce cognitive therapeutic strategies
- Review and track progress over time.
- Fostering resiliency.
- Companionship amongst participants.

Stahura & Schuster , 2009

ACTIVITIES:

- Provision of strategies to support telling their story.
- Topics and prompts to guide inspiration
- Optional sharing of written output with other participants.
- Occasional support from guest speakers with experience in writing.
- Topics including, but not limited to:
  - Brain injury
  - Loss and change
  - Relationships
  - Adjustments
  - Challenges getting back into the community
  - Finding the positives
  - Publishing

Stahura & Schuster , 2009

WHAT WORKS?

- Small handpicked group 4-6 participants post discharge from therapy or as an addendum to therapy.
- Coaching strategies for relaxation to reduce challenges with initiation and stress.
- A range of prompts with examples of how they might be used.
- Provision of graphic organizers to assist with memory and organizational challenges.
- Functional and individualized projects.
- Flexibility to alter planned activity if discussion tends toward a topic.

GREAT RESOURCES:

Stahura, B., & Schuster, S. B. (2009). *After brain injury: telling your story : a journaling workbook*. Wake Forest, NC: Lash & Associates Pub./Training Inc

http://www.tbihopeandinspiration.com

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