Evidence-based interventions for individuals with traumatic brain injuries

hoepnejk@uwec.edu

Michigan Speech-Language-Hearing Association

2016 Convention

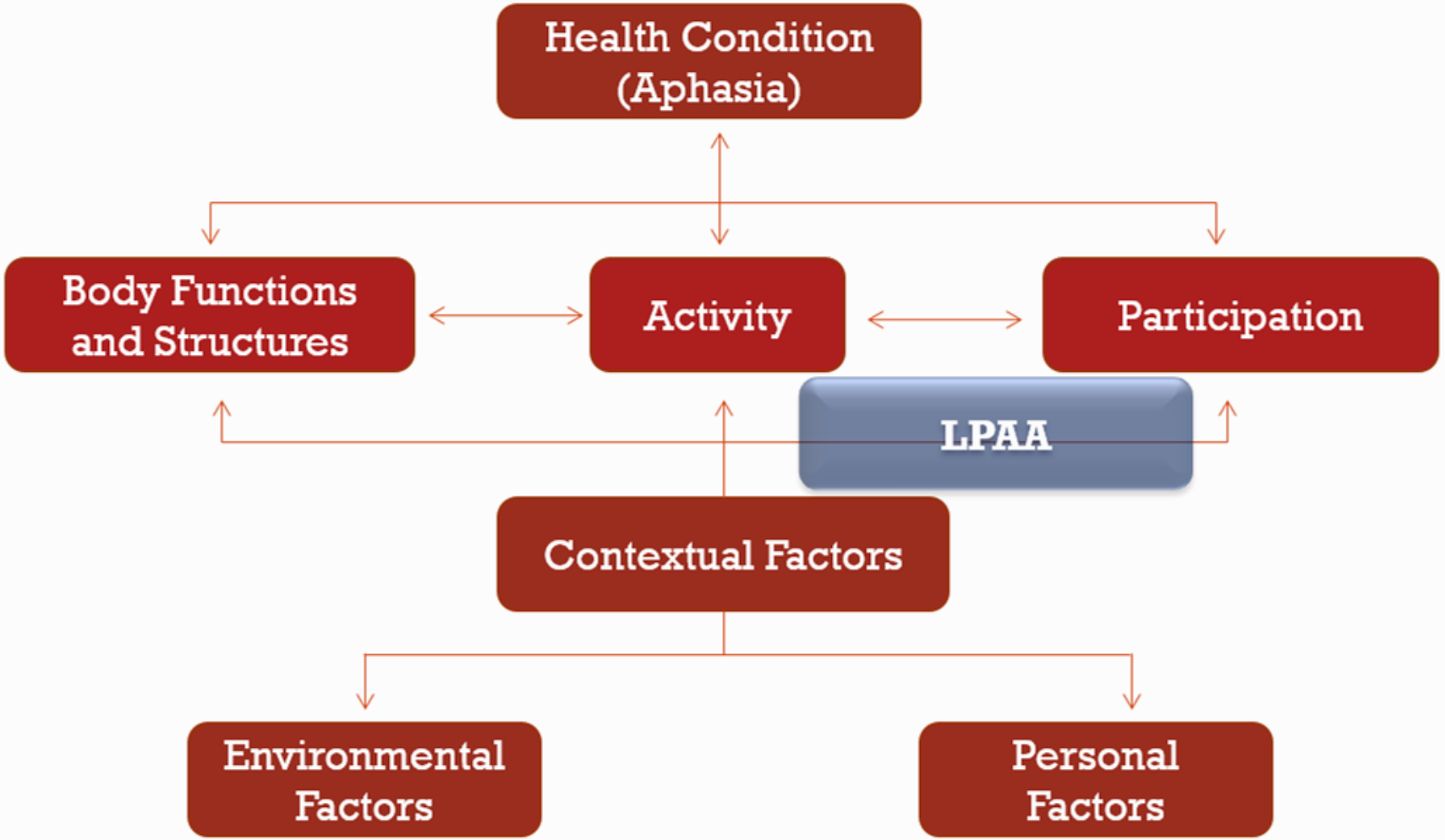
Disclosures

- Jerry Hoepner has the following relevant financial relationships in the products or services described, reviewed, evaluated or compared in this presentation.
  - University of Wisconsin – Eau Claire: salary
  - MSHA: honorarium for this seminar
  - Royalties for chapters in Johnson, P. (Eds.) textbook
- Jerry Hoepner has no relevant non-financial relationships to disclose

Learner Outcomes

- The importance of distinguishing between stability of status along the acute-sub-acute-chronic continuum.
- How to conduct an ecologically valid assessment for persons with TBI across acute-chronic continuum.
- How to implement ecologically valid interventions for persons with TBI across acute-chronic continuum.

WHO-ICF 2001


Health Condition (Aphasia)
Body Functions and Structures
Activity
Participation
LPAA
Contextual Factors
Environmental Factors
Personal Factors

TBI Assessing and intervening along the severity/recovery continuum

Acute

Mild Severe

Subacute

Mild Severe

Chronic

Mild Severe

Earlier/least stable

Later/most stable

TBI Acute

Mild TBI

- Symptom Inventories
- Possibly orientation measures (Galveston Orientation & Amnesia Test)
- Higher level cognitive batteries (RBANS, CLQT, MLCA, BTHI)

Moderate TBI

- Agitated Behavior Scale
- Supervision Rating Scale
- Possibly cognitive batteries
- Possibly language batteries
- Disability Rating Scale (DRS)
- NOMS or FIM
- Ranchos LOCF Scales
- Talking Mats

Severe TBI (Coma emergence)

- Western Neuro Sensory Stimulation Profile
- Madonna
- Rappaport Near Coma Scale
- JFK Coma Scale
- Disability Rating Scale (DRS)
- NOMS or FIM
- Ranchos LOCF Scales

TBI Sub-Acute to Chronic

Mild TBI

- RBMT
- SCATBI
- BADS
- TASIT
- FAVRES
- CVLT
- TEA
- RBANS
- MCLA
- CLQT
- Trailmaking
- WCST
- CHBT

Moderate TBI

- Cognitive batteries
- Language batteries
- Ranchos LOCF
- TASIT
- FAVRES
- CVLT
- Contextual Hypothesis Based Testing (CHBT)

Severe TBI

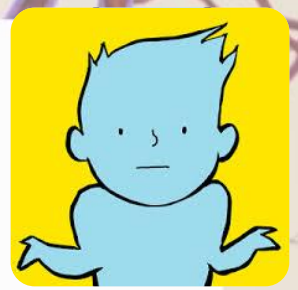
- FIM
- NOMS
- Talking Mats
- Ranchos LOCF
- ABCD

Appendix A: Standardized Tests Reviewed

Turkstra, L.S., Coelho, C., & Ylvisaker, M. (2005). The use of standardized tests for individuals with cognitive-communicative disorders. *Seminars in Speech and Language*, 26(4), 215-222.

ASHA Functional Assessment of Communication Skills
Aphasia Diagnostic Profiles
Behavior Rating Inventory of Executive Function (Patient Report Form)
Behavioral Assessment of the Dysexecutive Syndrome
Brief Test of Head Injury
California Verbal Learning Test – Second Edition
California Verbal Learning Test for Children
Children's Orientation and Amnesia Test
Clinical Evaluation of Language Fundamentals (Third Edition)
Cognitive Linguistic Quick Test
Communication Activities of Daily Living (Second Edition)
Comprehensive Assessment of Spoken Language
Controlled Oral Word Association Subtest
Discourse Comprehension Test
Functional Independence Measure
Galveston Orientation and Amnesia test
LaTrobe Communication Questionnaire
Measure of Cognitive-Linguistic Abilities
Mount Wilga High Level Language Test
Multilingual Aphasia Examination
Paced Auditory Serial Attention Test
Ranchos Los Amigos Levels of Cognitive Functioning
Repeatable Battery for the Assmt of Neuropsychological Status
Rivermead Behavioral Memory Test
Ross Information Processing Assessment (Second Edition)
Scales of Cognitive Ability for Traumatic Brain Injury (Normed Edition)
The Speed and Capacity of Language Processing Test
The Token Test (Shortened Form)
Test of Everyday Attention for Children
Test of Language Competence – Extended
Western Aphasia Battery

Salience: Talking Mats



Disability and Rehabilitation: Assistive Technology, June 2006; 1(3): 145–154

Taylor & Francis
Taylor & Francis Group

CONCEPTUAL PAPER

Using the ICF in goal setting: Clinical application using Talking Mats®

JUAN BORNMAN[1] & JOAN MURPHY[2]

[1]*Centre for Augmentative and Alternative Communication (CAAC), University of Pretoria, Pretoria, South Africa and*
[2]*Augmentative and Alternative Communication (AAC) Research Unit, University of Stirling, Stirling, Scotland, UK*

Abstract

Purpose. The purpose of this article is to suggest how Talking Mats® can be used in accordance with the International Classification of Functioning, Disability and Health (ICF) proposed by the World Health Organisation (WHO) when setting intervention goals.

Method. A theoretical framework for using Talking Mats® when setting intervention goals in accordance with the ICF is provided.

Conclusions. An international system such as the ICF offers a conceptual framework that can be used to set appropriate goals for intervention. Talking Mats® on the other hand can be seen as the strategy through which individuals can be empowered to participate in this goal-setting activity.

Keywords: *Communication difficulties, goal setting, ICF, participation, rehabilitation, talking mats®*

Personal Relevance & Goal Setting

- Minimal demands on working memory
- Allows for multiple sorts and thus more specific information

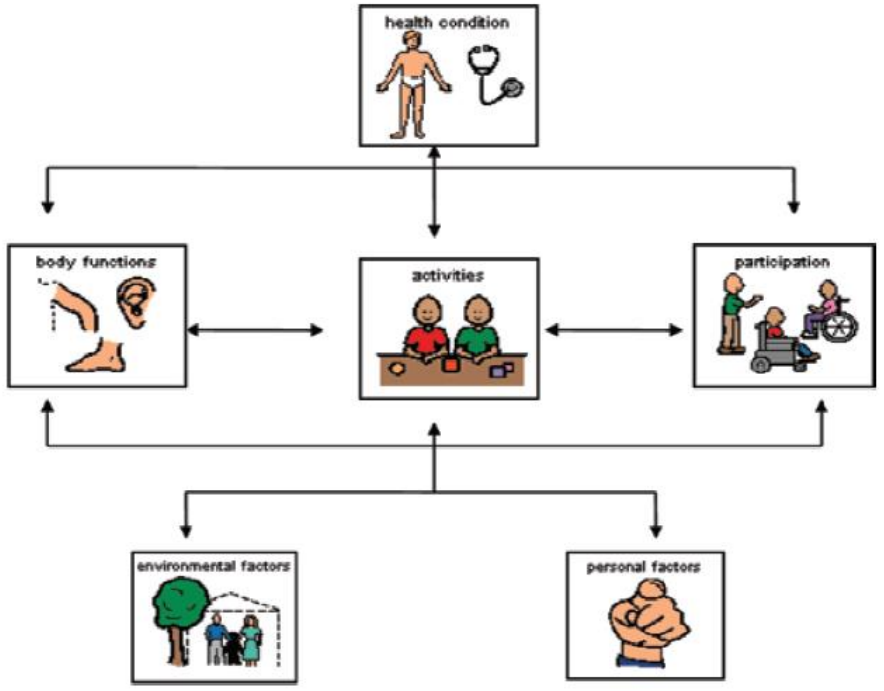


Figure 1. WHO-ICF in graphic form (Bornman & Murphy, 2006).

Murphy & Cameron, 2000; Murphy et al., 2010

Full autobiographical sketch is in the ***AAC for Adults with Acute or Chronic Medical Conditions*** text by Beukelman, Garrett, & Yorkston, 2007

AAC-Aphasia Autobiographical Information

Instructions: Fill in as much information as you know. Add comments and stories in the margins when you think they will help us get to know your family member better. Think of things that have always been interesting to discuss together. Leave blanks if the question is not relevant, or change the wording of the question.

My name is _____.

My nickname is _____.

I live in _____ in the state of_____.

I was born in _____ in the year _____.

I mostly grew up in the city, town, or area of _____.

I had _____ brothers and _____ sisters.

My maiden name was _____.

My ancestry is _____.

Some of the things that happened to me in my childhood included_____

_____

_____

_____

_____.

I went to school for _____ years.

I was good at _____ in school.

My first job was _____.

After the school day was over, I would _____.

I will be remembered for _____.

I started dating when I was _____ years old.

I met my husband/wife/significant other at _____.

We got married on _____.

We lived in _____ after we were married.

We moved to _____. We bought/rented/built our first house.

Routine-Based Interview

- Examines existing routines
- Piggy-backs on existing routines
- Establishes priorities

McWilliam, 2010

Interactional/Conversational Assessments

- Elicits perceptions of interactional behaviors by client and partner
- Can be used retrospectively (traditional) or directly (video review)
- Can highlight consensus and discrepancies
- Can provide insight into partner knowledge & attitudes

LA TROBE COMMUNICATION QUESTIONNAIRE by Jacinta Douglas, Christine Bracy & Pamela Snow

LCQ-Close Other Form: Frequency and Change

Name:_____ Age:_____ Gender: M F Date:_____/_____/_____

Patient Name/ID#: _____ Relationship to patient:_____

Instructions: The following questions ask about aspects of _____ communication. For **every** question please circle the response which best answers the question, where:
1 = Never or Rarely **2 = Sometimes** **3 = Often** **4 = Usually or Always**

The questions also ask you about **change** in these aspects of communication since _____.
For **every** question please circle the response which best answers the question, where:
+ = happens **More** **0 = No change** **-** = happens **Less** since _____.

Make sure you consider ***all*** the communication situations encountered in daily life (e.g. family, social and work situations).

WHEN TALKING TO OTHERS DOES _____:	**FREQUENCY**					**CHANGE**		
1. Leave out important details?	**1**	**2**	**3**	**4**		**+**	**0**	**-**
2. Use a lot of vague or empty words such as "you know what I mean" instead of the right word?	**1**	**2**	**3**	**4**		**+**	**0**	**-**
3. Go over and over the same ground in conversation?	**1**	**2**	**3**	**4**		**+**	**0**	**-**
4. Switch to a different topic of conversation too quickly?	**1**	**2**	**3**	**4**		**+**	**0**	**-**
5. Need a long time to think before answering the other person?	**1**	**2**	**3**	**4**		**+**	**0**	**-**
6. Find it hard to look at the other speaker?	**1**	**2**	**3**	**4**		**+**	**0**	**-**

Hoepner & Turkstra, 2013; Hoepner, 2010; Turner & Whitworth, 2006; Kagan et al., 2001; Olswang et al., 1998

Kagan scales (MPC & MSC)

- Measure of participation in conversation (MPC) examines client contributions
  - Interaction – engagement
  - Transaction – productivity
- Measure of skill in supported conversation (MSC) examines partner support
  - Acknowledging competence
  - Revealing competence
- Has been modified for use with TBI (Togher, 2010)

Kagan, Winckel, Black, Felson-Duchan, Simmons-Mackie, & Square, 2004

MSC

Measure of skill in

Supported Conversation

Name: _____

Date: _____

Rated by: _____

MPC
Measure of level of Participation in Conversation (for partner with aphasia)

Interaction ☐

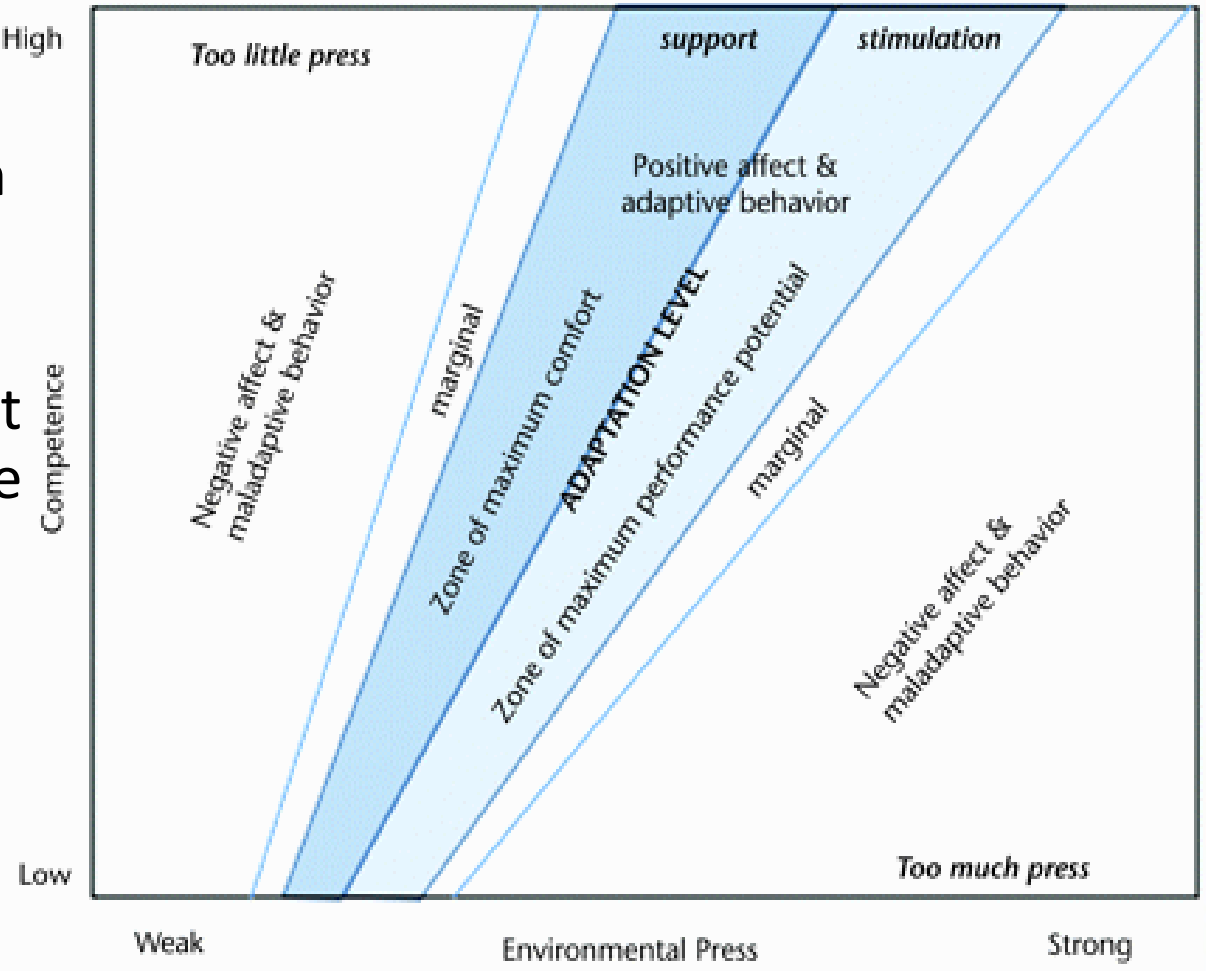
Transaction ☐

			Score
A.	**Acknowledges competence**		
B.	**Reveals competence**		
	1. Ensures that Partner with Aphasia understands	☐	
	2. Ensures that Partner with Aphasia has a means of responding	☐	☐*
	3. Verifies	☐	

*Average of B1, B2 and B3

Environmental Assessment

- WHO-ICF model (2001)
- Environmental Press Model (Lawton & Nahemow, 1973)
  - SLP, RN, OT, PT conduct
  - What existing conditions support success vs. contribute to struggle with performance? (barriers & facilitators)
  - Performance across partners



Brush, Sanford, Fleder, Bruce, & Calkins, 2011

Agitated Behavior Scale

- A middle-phase assessment tool for TBI and mild-mod dementias
- A good framework for dynamic environmental and partner assessment
- Sampling across partners, across time of day, across environmental contexts
- A starting point for positive interventions

- ≤21 – within normal limits
- 22-28 – mild agitation
- 29-35 – moderate agitation
- >35 – severe agitation

Bogner, 2000; Tabloski, McKinnon-Howe, & Remington, 1995; Corrigan, Bogner, & Tabloski, 1996

ABS: COMBI SCALES

AGITATED BEHAVIOR SCALE

Patient _____ **Period of Observation:**

Observ. Environ._____ **From:**_____ **a.m.** **p.m.**_____/_____/_____

Rater/Disc._____ **To:**_____ **a.m.** **p.m.**_____/_____/_____

At the end of the observation period indicate whether the behavior described in each item was present and, if so, to what degree: slight, moderate or extreme. Use the following numerical values and criteria for your ratings.

1 = absent: the behavior is not present.
2 = present to a slight degree: the behavior is present but does not prevent the conduct of other, contextually appropriate behavior. (The individual may redirect spontaneously, or the continuation of the agitated behavior does not disrupt appropriate behavior.)
3 = present to a moderate degree: the individual needs to be redirected from an agitated to an appropriate behavior, but benefits from such cueing.
4 = present to an extreme degree: the individual is not able to engage in appropriate behavior due to the interference of the agitated behavior, even when external cueing or redirection is provided.

DO NOT LEAVE BLANKS.

_____ 1. Short attention span, easy distractibility, inability to concentrate.
_____ 2. Impulsive, impatient, low tolerance for pain or frustration.
_____ 3. Uncooperative, resistant to care, demanding.
_____ 4. Violent and or threatening violence toward people or property.
_____ 5. Explosive and/or unpredictable anger.
_____ 6. Rocking, rubbing, moaning or other self-stimulating behavior.
_____ 7. Pulling at tubes, restraints, etc.
_____ 8. Wandering from treatment areas.
_____ 9. Restlessness, pacing, excessive movement.
_____ 10. Repetitive behaviors, motor and/or verbal.
_____ 11. Rapid, loud or excessive talking.
_____ 12. Sudden changes of mood.
_____ 13. Easily initiated or excessive crying and/or laughter.
_____ 14. Self-abusiveness, physical and/or verbal.

_____ **Total Score**

Validation Therapy

- Validate and redirect!
  - “I need to go to work”
  - “I need a cigarette”
  - “I have to go to the bathroom”

- Are there benefits to using this approach? Participation?

Neil & Briggs, 2003; Zeltzer, 2003;Toseland et al., 1997

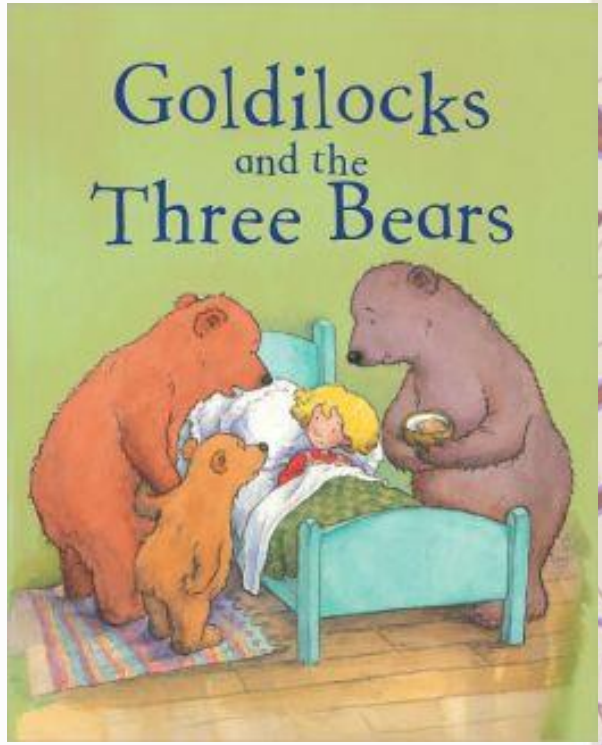
Meet Ken! Late-Early/Early Middle Phase = Rancho IV

- Ken is a 45 year old man who crashed his snowmobile and was thrown unhelmeted across the ice. He is generally oriented to self, inconsistently oriented to place (hospital) but not situation (thinks he's visiting someone), "grossly" oriented to time (year). He is disinhibited, unpredictable, and attention fluctuates wildly. As you see, he has an enclosure bed, which he does not resist or seem to mind. Attention span is <1 min for unstructured tasks but he can play board games (checkers, kings in corner) for several minutes at a time. He can talk a good game (orientation-wise) but his bluffing becomes evident after 5-10 minutes.
- He needs routines, structured activities, and interactional support/environmental modulation to allow increase participation.

Support = maximizing on-task participation by shifting task modalities. Don't over do it though or the refractory period & behaviors are problematic.

A day in the life of a mid-late intervention

- Passive Orientation
- Routines – self-cares, activities, sleep
- Environmental modifications
- Scaffolding context – partner demands (and supports), task demands, altered physical environment (sounds, sights, smells, and such)
  - Adjust supports and demands to match their needs (Environmental Press)
- Increase participation – on-task behaviors, physical and cognitive endurance, eating and drinking intake

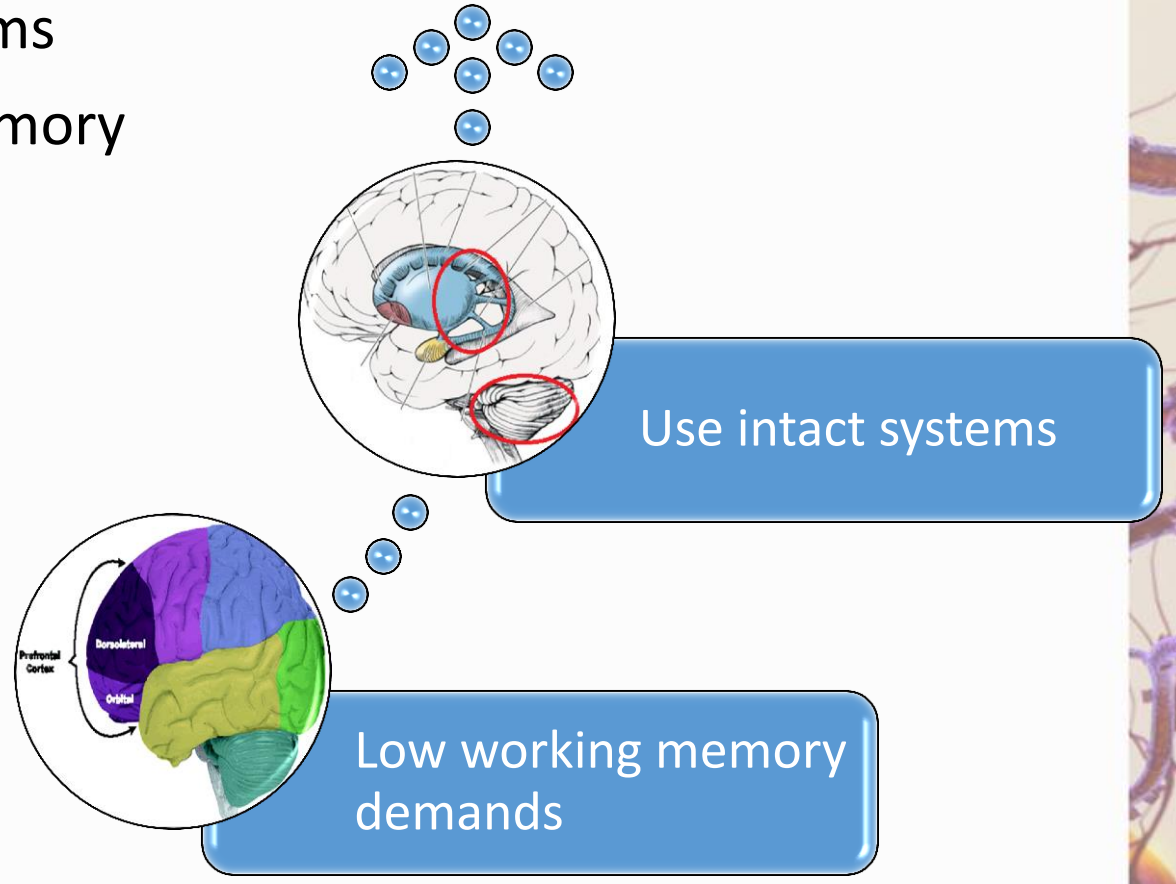


Steve's story

- Profound TBI
- Severe physical impairments
- Almost NO prospective memory
- Functionally NO declarative learning capacity
- Challenging behaviors

Principles of Routines

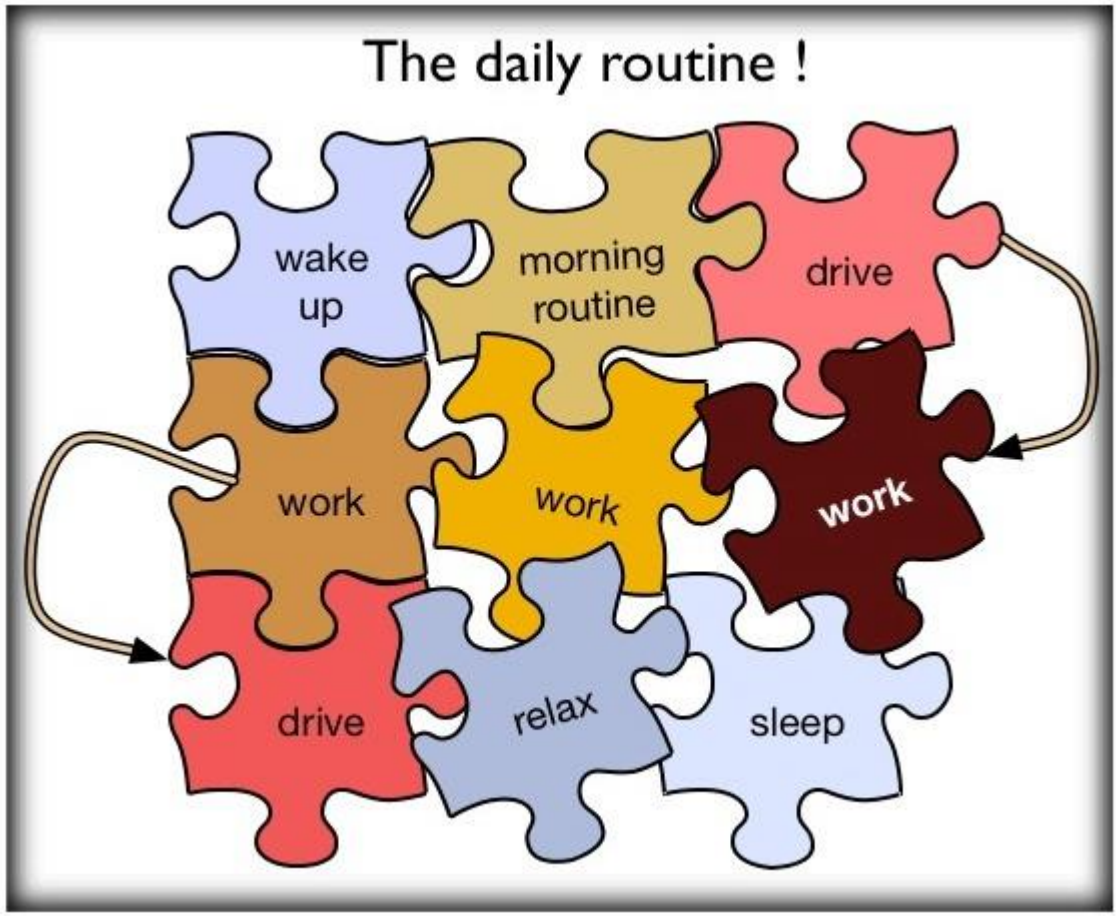
- Capitalize on implicit learning paradigms
- Minimize consumption of working memory
- Conserve working memory
- Easier to piggy-back than start anew



Hoepner in Johnson eds., in press; Ylvisaker & Feeney, 2000; Ylvisaker & Feeney, 1998

Important Considerations for Partners

- Buy-in
- Attitudes
- What's in it for them?



Keys to Effective Implementation

Tag-on to an existing routine. New routines take a substantial amount of time to develop. While there are no hard and fast timeframes identified throughout empirical research, popular press estimates place timeframe for learning a new routine between 21 and 40 plus days. Adding to an existing routine shortens this timeframe.

Avoid or limit direct, explicit teaching of routines. This is especially true for individuals who have severe impairments to new learning. Ylvisaker identified that explicit teaching can limit implicit learning. This truth is supported by evidence in spaced-retrieval research. Instead, just provide consistent repetition of routine learning within natural contexts.

Consistency. The more consistent, the more efficient and effective routines will be implemented. Consider use of external aids such as calendar apps, reminders, and the like on smart phones, iPods, iPads, and other tablets.

Train routines in their natural context. Whenever possible, implement routines in the environment where they will be conducted permanently. This includes physical environmental factors (e.g., physical space, time of day, conditions in that space) and partner-based environmental factors (e.g., the people who are likely to support or facilitate routines should be present, caregivers and/or family).

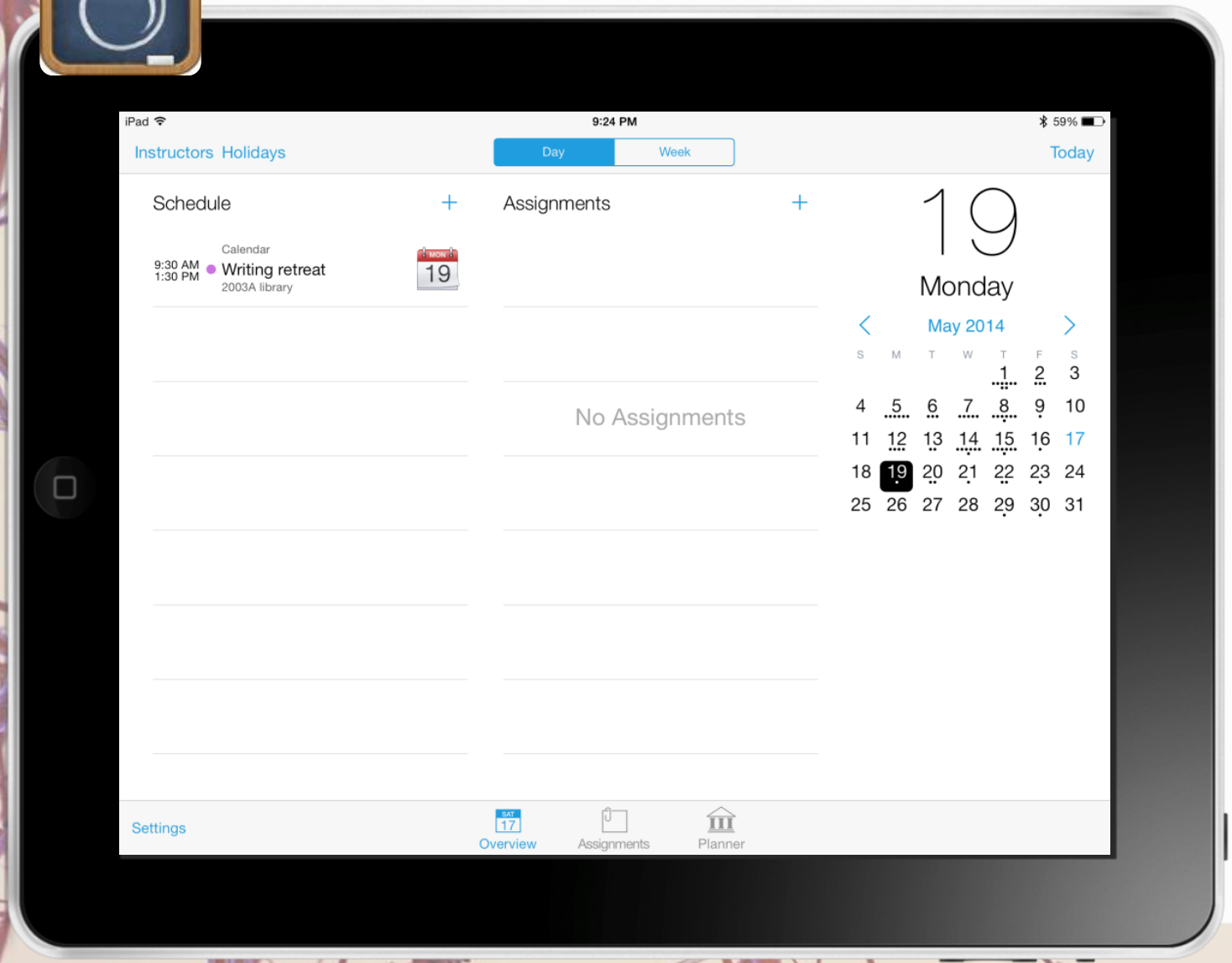
Hoepner, 2015 in Johnson, eds.

Modulating Environment

- Remember, performance environments are more complex
- Capacity environments lack incidental supports (including partners)

- Partner roles: modulate environment by reducing demands when the individual with TBI cannot
- Eventually, the person with TBI must modulate
- Payoff – success and partner reinforcement when supported

Togher, 2000; Hoepner, 2010


iPad
9:24 PM
59%
Instructors Holidays
Day
Week
Today
Schedule
Assignments
Calendar
9:30 AM
1:30 PM
Writing retreat
2003A library
No Assignments
19
Monday
May 2014
S M T W T F S
1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31
Settings
Overview
Assignments
Planner


Carrier
12:09 AM
HabiTimer
Edit
Eat Small Meal
12:30 AM, 9:30 AM, 12:30 PM...
ON
Work Break
10:00 AM, 10:30 AM, 11:00 AM...
ON
Take Meds
9:15 AM, 1:15 PM, 5:15 PM...
ON
ON
+

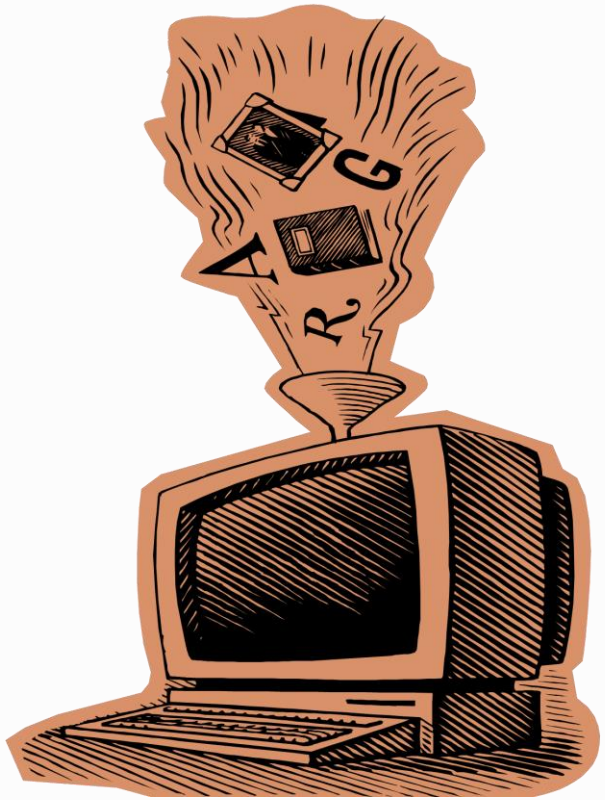
Addressing Personal Factors

Reducing Intrinsic Demands (e.g., feelings, perseverations) or Extrinsic (e.g., task complexity)

1. Download
2. Physically incompatible activity
3. Change the environment

“Downloading”

- Emptying mental space and feelings that consume working memory fuel
  - Journaling
  - Venting
- Download within physical tasks to make them more concrete – table-top approaches to simplifying tasks.



* Behaviors change despite awareness limits

Knight et al., 2002; Medd & Tate, 2000; Ownsworth et al. 2000

A case for Table Top approaches

- Carl is a 52 year old man with a TBI who refused to tell his employer he had a head injury. Despite my recommendations, he returned to work with no disclosure. He had tinnitus and vertigo so bad that it became an occupational hazard at times. He installed high-tech audio systems. One day, while installing a new system in a vaulted ceiling of a church, he stepped laterally (into thin air) off of one of the top steps of a 20 foot ladder, forgetting that he was standing on a ladder. After recovering from his injuries, he says “I need a better way to handle this.” I thought he was going to say – let’s tell my boss but instead he and I worked together to devise a plan – Table top is the result.

Table Top Approaches

Hoepner, 2015 in Johnson, eds.

Physically Incompatible Activity

- This is key for addressing the emotional draining of working memory capacity.
- When an individual becomes anxious or emotionally charged, they will burn off working memory and have none left over to make good choices.
- Perseverative thoughts also exhaust working memory quickly
- When an individual feels this coming on (discuss what it feels like) – they need to break to something different.
- It’s also true when an individual is being overwhelmed by the complexities of the task.
- When they feel their wheels spinning and mind racing they needs to switch to another activity.

Change the Environment

- Reduce demands in the current environment

or

- Change to a different environment