Mental Health 3.0 “From broken limbs to broken minds: Managing THE workplace health issue of the 21st century”
the century of brawn
the century of brain

Results at Work

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The most valuable asset of a 21st century institution will be its knowledge workers and their productivity

Peter Drucker
(1909-2005)
Two significant threats to knowledge work...

The human brain has been designed to solve problems related to survival in an outdoor unstable environment and to do so in almost constant motion.

Stress damages cognition in virtually every way. It can be measured.

Dr. John Medina, *Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School*
Who is most/least at risk?

- Most: managers and administrators, teachers, clerical, sales
- Least: craftspeople, science and engineering, machine operators
- High demands of job + low control = a recipe for the worst type of stress and present greatest risk of mental injury
An employee who is suffering costs the company...

Weakening of the collective workforce: excess work for the team, withdraw of spirit of cooperation, training and orientation of replacement employee

Decrease in collective performance: production, quality, image

Atmosphere and industrial relations affected: interpersonal conflicts and tension

A guide to the business case for mental health by the European Network for Workplace Health Promotion – ENWHP
Proven strategies to protect knowledge workers from mental injury

1. Promote and support physical activity, adequate sleep, time for reflection
2. Increase employees’ sense of control
3. Increase rewards and recognition

…train managers to recognize signs of mental health and illness

- Advanced mental health knowledge 8.3%
- Basic 8.3%
- Limited 83.3%

Source: AGS Rehab Solutions employer survey 2013
Recognizing mental injury/illness

Mental Health Continuum Model

<table>
<thead>
<tr>
<th>HEALTHY</th>
<th>REACTING</th>
<th>INJURED</th>
<th>ILL</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Normal mood fluctuations</td>
<td>* Irritable / impatient</td>
<td>* Anger</td>
<td>* Angry outbursts / aggression</td>
</tr>
<tr>
<td>* Calm &amp; takes things in stride</td>
<td>* Nervous</td>
<td>* Anxiety</td>
<td>* Excessive anxiety / panic attacks</td>
</tr>
<tr>
<td>* Good sense of humour</td>
<td>* Sadness / overwhelmed</td>
<td>* Pervasively sad / hopeless</td>
<td>* Depressed / suicidal thoughts</td>
</tr>
<tr>
<td>* Performing well</td>
<td>* Displaced sarcasm</td>
<td>* Negative attitude</td>
<td>* Over insubordination</td>
</tr>
<tr>
<td>* In control mentally</td>
<td>* Procrastination</td>
<td>* Poor performance / workaholic</td>
<td>* Can’t perform duties, control behaviour or concentrate</td>
</tr>
<tr>
<td>* Normal sleep patterns</td>
<td>* Forgetfulness</td>
<td>* Poor concentration / decisions</td>
<td>* Can’t fall asleep or stay asleep</td>
</tr>
<tr>
<td>* Few sleep difficulties</td>
<td>* Trouble sleeping</td>
<td>* Restless disturbed sleep</td>
<td>* Sleeping too much or too little</td>
</tr>
<tr>
<td>* Physically well</td>
<td>* Intrusive thoughts</td>
<td>* Recurrent images / nightmares</td>
<td>* Physical illnesses</td>
</tr>
<tr>
<td>* Good energy level</td>
<td>* Nightmares</td>
<td>* Increased aches and pains</td>
<td>* Constant fatigue</td>
</tr>
<tr>
<td>* Physically and socially active</td>
<td>* Muscle tension / headaches</td>
<td>* Increased fatigue</td>
<td>* Not going out or answering phone</td>
</tr>
<tr>
<td>* No or limited alcohol use / gambling</td>
<td>* Low energy</td>
<td>* Avoidance</td>
<td>* Alcohol or gambling addiction</td>
</tr>
<tr>
<td>* Normal mood fluctuations</td>
<td>* Decreased activity/socializing</td>
<td>* Withdrawal</td>
<td>* Other addictions</td>
</tr>
<tr>
<td>* Calm &amp; takes things in stride</td>
<td>* Regular but controlled alcohol use / gambling</td>
<td>* Increased alcohol use / gambling is hard to control</td>
<td></td>
</tr>
</tbody>
</table>

Results at Work
Managing Workplace Mental Health

- no objective assessment
- MHCC released Psychological Health & Safety Standard in 2013

**Issue:** You are trying to manage an “invisible” health issue that is under increasing scrutiny

**The solution:** To “ACE” it (Accommodation, Coaching, Expertise). ACE is an objective tool to help you measure employee mental fitness.

*Results at Work*
ACE = Mental Health Fitness and Cognitive Screen

Results at Work
Our ACE Mental Health Team

• Dr. K. Zakzanis
• Dr. R. Azarbehi

Ontario-wide Consultants:
• Mental Health trained
• Certified Vocational Professionals

Results at Work
ACE Data being collected

- RTW outcomes
- Duration of service
- Cost
- Customer satisfaction
- Employee/employer satisfaction
- Overall ROI and value
- 26% of surveyed employees feel that their supervisor effectively manages mental health issues

Results at Work
Outcome: Insurer Feedback
Initial Pilot Project Results

- Service is unique and innovative
- Improved outcomes realized
- Interdisciplinary approach is effective
- Zeroes-in on true cognitive barriers
- Flexible – three service options
- Truly an objective assessment
Pilot Project Results- Cont’d

• Employers/unions find value
• Can replace a costly Neuro Psych IME
• Can be repeated (no practice effect)
• Applicable at SAW, STD, LTD or during RTW
• Tool is validated standardized, published
Next Steps – Pilot Project

- Improved reporting format
- Increase mental health ACE capacity
- Refine the service options
- Launch province-wide
- Key Targets – employer groups
- Ongoing data collection of outcomes
Dr Zakzanis’ cognitive screen…
here’s one approach
he’ll explain the other!

Results at Work
On the Nature of Cognitive Testing & Mental Illness

Professor Konstantine K. Zakzanis, PhD, C.Psych
University of Toronto Scarborough
who is this guy?

• professor of Psychology & Neuropsychology at the University of Toronto Scarborough
• consulting Editor to *The Clinical Neuropsychologist* and *The Journal of Clinical & Experimental Neuropsychology*
• over 200 publications
• author of “Neuropsychological Differential Diagnosis”
• consulting Scientist to HEMISPHERE CENTRE FOR MENTAL HEALTH & WELLNESS
• developed BRAINscreen

• *Blah, blah, blah*…. CV available upon request…
presentation outline

• cognitive impairment anyone?
• cognitive disorders
• epidemiology
• cognitive signatures
• limitations of traditional neuropsychological assessment
• cognitive screening
• introducing BRAINscreen
• implications for employers
cognitive impairment anyone?
neuropsychological testing in the modern ages

- executive functions
- receptive and expressive language function
- information processing speed and capacity
- supervisory attentional abilities
- visual perceptual and spatial abilities
- memory
- reaction time
- motor speed and dexterity
WCST
WCST

Right!
WCST

Right!
time estimation
Digit symbol substitution test

2 9 2 9 4 9 4 9 1 8 9 3 1 7 2 3 6 4 8 3 1 7 8 2 5

4 7 1 7 5 8 4 1 5 2 6 9 9 5 6 7 6 2 9 4 8 7 2 8 6

8 6 2 8 2 9 4 7 4 8 6 7 3 1 6 2 1 8 7 4 3 1 6 2 9

2 5 4 6 1 6 3 1 2 7 2 6 4 9 1 8 5 7 1 5 4 5 3 9 2

3 9 7 1 7 1 3 5 7 6 1 6 5 9 1 3 1 3 9 8 9 7 3 4 3
confrontation naming
oh yes, I forgot about memory

- Working Memory
- Encoding
- Consolidation
- Retrieval
- Recognition
- Prospective Memory
- Semantic Memory
- Autobiographical Memory
and it does not stop there...
cognitive disorders

- dementia (e.g., Alzheimer’s disease)
- traumatic brain injuries (concussion)
- vascular disorder (e.g., stroke)
- psychiatric disorders (e.g., depression)
- medical conditions (e.g., diabetes)
- multiple sclerosis
- substance abuse and dependence
- pain disorders (e.g., fibromyalgia)
epidemiology of cognitive disorders in various disorders...

- Its immeasurable…
- traumatic brain injuries / concussion
  - In 2010, about 2.5 million emergency department (ED) visits, hospitalizations, or deaths were associated with TBI—either alone or in combination with other injuries—in the United States
- dementia
  - In 2011, 747,000 Canadians were living with cognitive impairment, including dementia - that's 14.9 per cent of Canadians 65 and older
- psychiatric disorders
  - In 2012, there were an estimated 43.7 million adults aged 18 or older in the U.S. with a mental illness in the past year. This represented 18.6 percent of all U.S. adults.
cognitive signatures
cognitive signatures

• Depression
  – Slowed information processing, poor learning

• Alzheimer's disease
  – memory, naming, visual spatial impairment

• Vascular dementia
  – Variable depending on location of insult
  – Slowed information processing common

• Traumatic brain injuries
  – Poor attentional abilities, slowed information processing

• Frontal temporal dementias
  – Executive dysfunction
cognitive signatures

• Parkinson’s disease
  – Slowed information processing, slowed reaction time, attentional deficits, inaccurate visual spatial skills

• Substance abuse & dependence
  – Slowed reaction time, poor memory, inaccurate visual spatial skills

• Multiple Sclerosis
  – Variable findings; deterioration of executive function is predictive of progression

• Pain disorders (e.g., Fibromyalgia)
  – Slowed information processing, poor attention, poor learning
limitations of neuropsychological assessments

• Resource demanding (clinician and psychometrist)
• Costly
• Validity is dependent on standardized instructions
• Human error in test scoring
• False positive conclusions common because “flexible batteries” not normed together
• Threats to validity include language norms and language tests are administered in
cognitive screening

• Advantages to computerized cognitive screening
  – Capacity to administer to a large number of individuals quickly
  – Ready available of assessment services without advance notice
  – The ability to measure performance on time sensitive tasks, such as reaction time
  – Reduced assessment times
  – Reduced costs relating to test administration and scoring
  – Ease of administering measures in different languages
  – Automated data for exporting and mining
  – Increased accessibility to individuals in areas or settings in which professional neuropsychological services are scarce or non existent
  – The ability to integrate and automate interpretative algorithms such as decision rules for determining impairment or statistically reliable change
cognitive screening

• Advantages to computerized cognitive screening

  – Helpful to identify persons most likely at risk for some specified condition or in need of further diagnostic study and where brevity is required – whether because of the press of individuals who may benefit from a neuropsychological assessment or because the individual’s condition may preclude a lengthy assessment

  – Can improve access to cognitive testing for underserved individuals, who by virtue of economic, sociodemographic, geographical, logistical or cultural reasons are not referred for, or cannot access, needed services
introducing BRAINscreen

- 15 minute online test in several languages

- Effective screening tool to help identify cognitive disorders i.e.: Alzheimer’s disease, other Dementia syndromes, Attention Deficit Disorder, and Post-Concussive Syndrome.

- Scientifically valid, reliable & normed for ages 10 and up

- Peer reviewed

- ONLY patent pending technology providing cognitive screening tool across multiple impairments and applications with no practice effects
BRAINscreen© is simple to use and easy to deploy over the web

- Client data entry
- Client instructions and font selection
- Questions that test memory, cognition and executive function
- Client’s responses scored relative to normed data
- Copy of test data sent to CRS for research
- Customized report
- Overall score generated

**Brainscreen© results indicate:**
- No concerns
- Possible cognitive impairment
- Probable cognitive impairment
assessments composition

• BRAINscreen uses long standing neuropsychological test measures that have been employed in clinical practice for decades

• These tests have been demonstrated to be both sensitive and specific to a vast number of neurological, psychiatric, and medical disorders

• Test elements are specific and sensitive to illness and disease related to cognitive impairment broadly defined (i.e., not limited to only memory testing).
assessment composition

• Cognitive Tests Used in BrainScreen
  – Learning and Memory Recall
    • Testing short term memory
  – Learning and Delayed Memory Recall
    • Testing long term memory
  – Digit Span
    • Testing working memory
assessment composition

- Reverse Digit Span
  - Testing working memory and executive functions
- Time Estimation
  - Spatial orientation, decision making, visual cue processing
- Digit-Symbol Matching
  - Visual cue processing, decision making, fine motor skills, short term memory, speed of information processing

A little bit of overlap on tests to ensure each aspect of cognitive performance is redundantly tested
Choose the ONE word from each list that you remember from what you have just seen.

- Cap
- Van
- Cap
- Egg

Next >
digit symbol
Outcome reports

• Outcome reports may be customized from:
  
  – No information to the participant user and basic interpretation for the administrator
  
  – Basic feedback to the participant user and administrator
  
  – No, or Basic feedback to the participant user and detailed feedback to the administrator
  
  – Detailed feedback to both the participant user and administrator
  
  – Detailed feedback can include:
    • Statistical analysis of domain specific tests and overall percentile interpretations
    • Automated narrative of test results
graphic reporting
graphic reporting
demographic & percentile reporting

<table>
<thead>
<tr>
<th>Year</th>
<th>2021-2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month</td>
<td>03/2021</td>
</tr>
<tr>
<td>Age</td>
<td>25</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>White</td>
</tr>
<tr>
<td>Language</td>
<td>English</td>
</tr>
<tr>
<td>Primary Language</td>
<td>English</td>
</tr>
<tr>
<td>Use of Mobile</td>
<td>Yes</td>
</tr>
<tr>
<td>History</td>
<td>None</td>
</tr>
<tr>
<td>Country of Residency</td>
<td>USA</td>
</tr>
<tr>
<td>史籍 or 民族</td>
<td>White</td>
</tr>
</tbody>
</table>

**Basic Cognitive Screenings**

<table>
<thead>
<tr>
<th>Current Year</th>
<th>2021 (actual year of screen: 2021)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Day</td>
<td>Wednesday (actual day of screen: Tuesday)</td>
</tr>
<tr>
<td>Current Time</td>
<td>01:00 (actual time of screen: 20:00)</td>
</tr>
</tbody>
</table>

**Score Schedules – Data**

<table>
<thead>
<tr>
<th>Task</th>
<th>1st Percentile</th>
<th>99th Percentile</th>
<th>80th Percentile</th>
<th>10th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reaction Time</td>
<td>1.5</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Memory</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Digit Span</td>
<td>9</td>
<td>19</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>15</td>
<td>25</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Overall</td>
<td>4.3 (Percentile)</td>
<td>1.0 (Percentile)</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

*October 7, 2020, Hemispheric Centre for Mental Health*
**BRAINscreen deployment**

- **BRAINscreen** may be administered multiple times without affecting outcomes.
- **BRAINscreen**’s technology negates practice effect through randomization of the test elements. Thus permitting a near infinite number of consistently reliable and valid tests to be presented.
- Data and outcomes captured at the time of disability may be used during adjudication of a claim to validate and measure any changes in cognitive performance – similar to baseline testing in athletic/sport endeavors.
- It can be helpful to evaluate efficacy of treatment intervention.
- It can raise a flag in the instance of those who may be feigning/malingering.
BRAINscreen deployment

BRAINscreen as a demedicalized web-based tool affords employers those identified key requirements:

• Client acceptability
• Ease of administration
• Reliable
• High sensitivity and specificity
• Low cost
acknowledgements

• MITACS accelerate funding
• The University of Toronto
  – Jeanine Skretas
  – Eliyas Jeffay
  – Ray Astaphan
  – Aliya Lucatch
  – Alex Bilbily
  – Grace Nasri
  – Kelly An
• Dr. Ros Azarbehi
Word cloud of sample report
Three Key Features of ACE Reports

1. 13 Factor Feedback
2. Expert review
3. Strategic approach

Results at Work
Results at Work

Feedback on Thirteen Factors
Cognitive Test Results with Expert Opinion/Recommendations

Results at Work
Case Study #1

- 53-year-old Fraud Investigator suffering from PTSD
- Immigrated from Bosnia during war – witnessed spouse’s murder and lost parents after arriving in Canada
- Feeling ‘ashamed of being off work’
- Employer accommodating
- Brain Screen results: no evidence of grossly disturbed functioning but reduced memory, speed and accuracy, information processing and problem solving
- Recommended: CBT included tape-recorded sessions, use of note-taking/reviewing
- Medical restrictions include inability to work in crowded space, reduced workload and limiting work hours
Case Study #2

- 47 year old Legal Assistant off work due to major depressive disorder.
- Difficulty with concentration, executive function, ability to multi-task, solve problems and make decisions.
- With reactivation program / change in meds employee’s condition improved
- Re-test showed improvement in cognitive function
- GRTW arranged with employer and she RTW within six weeks

Results at Work
Questions?
Thank You!

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