Cognitive Remediation: Improving Clients’ Capacity to Successfully Engage in AOD Treatment

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What is Cognitive Impairment?

• Deficits in information processing, including:
  – memory,
  – attention/concentration,
  – visuo-spatial skills,
  – language skills, and/or
  – executive functioning

...relative to population norms or a person’s baseline.

• Multiple causes
Major Causes of Cognitive Impairment
CI Prevalence and Implications in AOD

• The prevalence of cognitive impairment among clients accessing AOD treatment has been estimated to be between **30% and 80%**
  – (Copersino, et al., 2009)

• Marceau et al (2016). Using a Brief Screening Tool to assess Cognitive Impairment in residents of an Alcohol and other drug Therapeutic Community. *Journal of Substance Abuse Treatment*
  – **43.8%** of clients attending WHOS services scored in the CI range
Impact of CI in AOD Treatment

• Cognitive impairment one of the strongest predictors of relapse or failure to benefit from AOD treatment (Miller, 1991)
  – Executive skills
  – Frontal lobe functions

  1. Cognitive Impairment
  2. Younger Age
  3. Personality Disorder
Types of Neuropsychological Intervention

• Cognitive Rehabilitation
  – Mostly in ABI intervention
  – Primarily makes use of ‘top-down’ approaches, including training in compensatory strategy use

• Cognitive Remediation
  – Mostly used in mental health intervention
  – Primarily involves ‘bottom-up’ approaches including drill and practice on cognitive tasks
Neuropsychological Intervention in AOD

• Across 64 databases, a search for:
  
  • "cognitive remediation" and alcohol or drug or substance – 1 result
  
  • “cognitive rehabilitation” and alcohol or drug or substance – 2 results
Our Goal

• To develop a frontline user-friendly cognitive remediation program that impacts AOD treatment outcomes
  – Focus on executive functioning
  – Combines bottom-up and top-down approaches to CR
  – Duration and intensity suitable for implementation in residential AOD treatment
  – Targets and results in real-world functional outcomes
Levels of Impact

- Premature drop-out from AOD treatment
- Limited ability to benefit from AOD treatment program
- Memory Impairment
- Executive Impairment

WHO ICF Level

- Participation
- Restriction
- Activity
- Limitation
- Impairment
Our Pilot - Design

• Nonrandomised controlled trial
  – Cohort allocation to CR and TAU groups
  – CR (Intervention) Group
    • 12 x 2 hour sessions, run 3 times per week over 4 weeks
    • Intervention compromised of:
      – 1 hr of group work-Top down (strategies to address memory, attention and executive function weaknesses)
      – 1 hr Lumosity training - Bottom up (completed on iPads)
  – Control Group
    • Treatment as usual after washout of CR participants (i.e. once all clients who had completed the intervention had left the service)
Design

• Pre- post- intervention measures
  – Cognitive tests
  – Self-report inventories
  – Everyday goal attainment
  – AOD treatment indicators (treatment completion)

• Maintenance measured by questionnaires/inventories at 3 months following completion of the intervention.

- **n=126**
  - SUD group recruited from outpatient and residential treatment facilities

- **n=32**
  - convenience sample control group

- **Compared sensitivity of performance-based and inventory-based measures of EF**
  - Performance based measures
    - IGT, Stroop, TMT
  - Inventory-based measure
    - Behavior Rating Inventory of Executive Functioning (BRIEF-A)

- The BRIEF-A was **more sensitive** at differentiating between the groups compared with performance-based measures.
- The BRIEF-A was **associated with social adjustment indicators**
  - criminal lifestyle
  - conflict with caregiver
  - stable housing
- Recommended BRIEF-A to be considered as an integral measure of EF in patients with SUD.
Overall BRIEF-A Results

Hagen et al (2016) Controls
Hagen et al (2016) SUD
Marceau et al (2016) Pre-CR
Marceau et al (2016) 3 Months

Behavior Regulation Index
Metacognition Index
Everyday Goals

Final Outcome (3 months)

Control Group

CR Group
Treatment Completion Gains

• CR participants were 165% more likely to complete the program than the control group