HOPE NETWORK
NEURO REHABILITATION

Advancing the Plot: Cognition and Mental State

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Disclosures

- Kim McGowan and Jaimie Farrington are both paid employees of Hope Network Neurorehabilitation. They have no non-financial disclosures.

Learning Objectives

- Address the connection between the emotional state and cognition
- Understand activation of the limbic system and access to the frontal lobe
- Identify emotional barriers to therapy and when to adjunct psychological services to the team
- Explore strategies to help consumers get out of their own way in order to make progress in therapies.

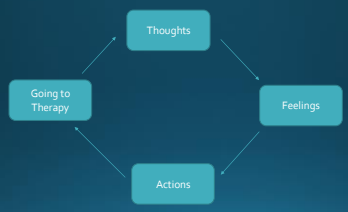
What is Cognition?

- Cognition can be defined as the process by which knowledge is acquired.
- It is the process by which "sensory input is transformed, reduced, elaborated, stored, recovered, and used" (Neisser, 1967, p.4)
- Involves all of the following :
  - Attention/Concentration
  - Problem Solving
  - Reasoning
  - Judgement
  - Executive Functioning
  - Memory
- "If no cognition, no memory; if no memory, no production, for the things produced come largely from memory storage. If neither cognition nor production, then no evaluation" (Guilford, 1967, p.3)

What is Mental State?

- A mental condition in which the qualities of the state are relatively constant even though the state itself may be dynamic.
  - Mad
  - Glad
  - Sad
  - Scared

The Link



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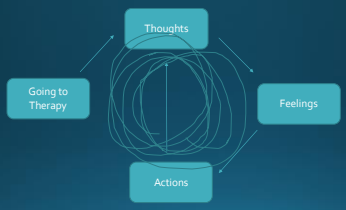


Is there a psychologist in the house?!

"It's all in your head"

	Concussion	Stress	Anxiety	Depression	PTSD
Headache	x	X	X	X	X
Drowsiness	X	X	X	X	X
Irritability	X	X	X	X	X
Depression	X	X	X	X	X
Poor Memory	X	X	X	X	X
Attention/ Concentration	X	X	X	X	X
Fatigue	X	X	X	X	X
Poor Sleep	X	X	X	X	X
Nausea	X	X	X	X	X
Worry	X	X	X		X
Dizziness/Loss of balance	X		X		
Impaired Hearing	x				X
Blurred Vision	x				

Kolakowsky-Hayner, Reyst, & Abashian, 2016, p. 81

"It's all in your head"

Your psychologist trying to figure out cognition

Your SLP trying to figure out emotional response

Speech and Psychology -They just work

- Psychology and speech can work together in de-escalation techniques to support goal attainment
  - Psychology
    - Identify triggers to prevent escalation
    - If escalation occurs, need to identify how to best de-escalate
    - Resume the activity
    - Not reinforcing escape/avoidance
    - Allowing person to be successful
    - If previous history of trauma, mindful skills may be essential for speech success
  - Speech Therapy
    - Orientation to situation and deficit areas
    - Attention and Memory-education on how these skills go hand in hand
    - Functional Problem Solving and Reasoning
      - Identifying the right problem and developing a plan

This is what we found to be true…

- Once we can get mental state under control, the patient's ability to focus and attend in therapy has the potential to make significant improvements
- An individual is less irritable when worry is under control
- Radical acceptance: stop fighting reality
- Comprehensive strategy to help compensate for psychological distress as they become more aware of cognitive deficits
  - Not aware- no stress
  - Insight- stress
  - Over insight- a lot of stress

Anxiety Provoking Therapies

- Development of the brain is social by nature.
  - Early social interactions set the stage for behavioral activation for the purpose of survival.
- Limbic system : the fight/flight/survival
  - Hippocampus, hypothalamus and amygdala
- Frontal lobe : the thinking center
  - Appears less active when the limbic system is turned on full blast.
  - It is the analytical center.
- We need the limbic system and frontal lobe to be working together in order for therapeutic interventions to be effective.
- Benefits to learning to manage emotions to improve ability to access the frontal lobe
  - How do we do this?

How do we turn down the volume?

- This is where psychology and speech can work together to set the stage for improved outcomes for cognitive goals and overall outcomes.
- Psychology teaches the skills needed to dampen the limbic system
  - If the thalamus and amygdala are turned down, the prefrontal cortex has the opportunity to turn up. i.e., reducing anxiety to open the door for improving thinking skills.
- Helping patients learn to pay attention to the present moment by mindfulness skills acquisition. Getting skilled at invoking the relaxation response. It's gene changing.

Case Studies

Case Study 1

- 36 year old female, mother of two young children
- Dx: Post-concussive syndrome
- Baseline- high stress, multi-tasking, high-achieving
- Occupation: Regional Manager
- Strengths: Family support, motivated to improve, natural supports intact, education
- Barriers: History of anxiety, PTSD post-injury, mother in end stage cancer, visual disturbances, short term memory, difficulty with high level attention tasks
- Seen for outpatient services – PT, OT, Speech, Psychology (also participated in Brain Injury Support Group)

Case Study 1

- Intervention Strategies Used
  - Psychology
    - Relaxation techniques, including breathing exercises to decrease anxiety
    - Writing down worries
    - Guided imagery
    - Self-monitoring when anxiety/overstimulation is occurring and taking a break
  - Speech
    - Task analysis:
      - Pre-planning tasks that are preemptively "difficult", identify potential barriers and strategies for successful completion (ex. making waffles in the morning)
    - Teaching compensatory strategies for memory and attention
    - Education on TBI
- Outcomes
  - Developed coping strategies along with cognitive strategies
  - When she demonstrated successful behaviors, she "proved" that she could do it; more confidence, less anxiety

Maslow's Hierarchy of Needs

McLeod, 2017

Case Study 2

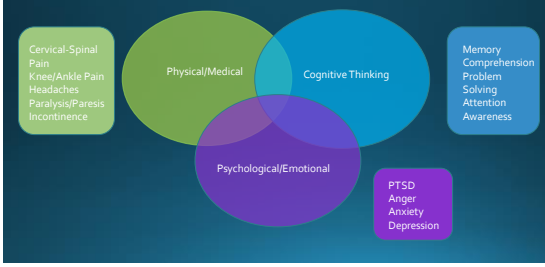
- 30 year old male, veteran
- Dx: Fluency disorder, post concussive syndrome with LOC
- History of PTSD, anger, anxiety, depression
- Workers Comp: Limited resources- facing homelessness, shelter, food (physiological needs)
- Stuttering-highly distressful leading to increased anxiety, influenced self-confidence and ability to advocate for himself
- Unable to fully engage in treatment due to high level of stress and anxiety related to basic needs
- Strengths: Age, Motivation, Awareness of deficits
- Barriers: Awareness of deficits, limited use of natural supports, basic needs often unmet, difficultly understanding medical needs and getting authorization for therapies

Case Study 2

- Intervention Strategies Used:
  - Relationship building; gaining trust with staff
  - Relaxation techniques introduced to reduce anxiety and dysfluent speech
  - Resource development (ensuring comprehension of resources)
    - Food
    - Shelter
    - Mental Health
    - Financial
- Outcomes
  - Services became our of our scope; referral to Community Mental Health

Dynamic Factors

Adapted from concepts by Hawley and Newman (2010)



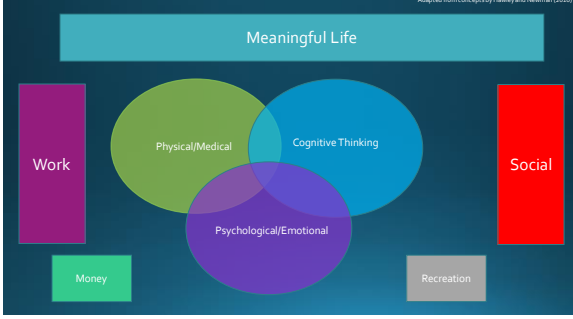
Case Study 3

- 59 year old male, spouse hx of seizure disorder
- Dx: Mild-Moderate TBI following fall
- Pre-morbid: high level of frustration, worry, anxiety, family problems from childhood
- Pre-morbid medical issues: cardiac, diabetes, high blood pressure
- Pseudo-seizures post-injury
- Workers Comp- limited resources
  - Only enough funds to purchase food OR medications
- Strengths: Motivated to improve, intact natural supports, attendance and "buy in" to therapeutic process
- Barriers: Medically complex, limited access to resources, ambivalence for returning to wellness

Case Study 3

- Evidence of overstimulation
  - Pseudo-seizure
  - Angry outbursts
- Intervention Strategies Used:
  - Reduced core therapies, added on psychology
  - Increased therapies as he was able to tolerate
  - Saw improvements after he was involved in psychology
    - Cognitive restructuring/narrative
    - Relaxation skills training
- Outcomes
  - Continued difficulties adjusting, ongoing BI support group and psychological services

Adapted from concepts by Hawley and Newman (2010)



Case Study 4

- 68 year old female, living with daughter
- Dx: Traumatic subdural hemorrhage with LOC
- Baseline- physically active and independent, working, active in community and social groups
- Strengths: Severity of injury (mild BI), high baseline
- Barriers: High level of anxiety and depression, self-critical, lack of family support, belief that brain injury was worse than it actually was, co-morbid brain tumor
- Seen for outpatient services – PT, OT, Speech, Psychology, and Social Work

Case Study 4

- Intervention Strategies:
  - Personal Narrative/Cognitive Restructuring
  - Identifying therapy interfering stressors
    - Family dynamics
  - Catastrophic thinking error
    - "The doctor said I had the worst brain injury he had ever seen."
    - DSM: Mild cognitive impairment
  - Attempted relaxation training
  - Behavioral activation – resuming normal activities
  - Attempting to normalize experience
- Outcomes
  - Continued difficulties adjusting

Case Study- 5

- 54 year old male
- Dx: Aphasia following CVA
- Baseline- worked as a brick mason, active in church and community
- Strengths: family support, awareness of deficits, "can do" attitude, no depression or anxiety
- Barriers: Severity of injury
- Seen for outpatient services – PT, OT, Speech
  - PT/OT were short-term, good follow through with recommendations and HEP
- Outcomes: returned to work, recreational/leisure activities despite receptive/expressive barriers

Fertile Ground

Without psychological comorbidities

With psychological comorbidities

Lessons Learned

- We see more robust outcomes by reducing therapy interfering behaviors when psychology can support core services (ST, OT, PT).
- Psychological services can support distress tolerance of therapies
  - Relaxation skills
  - Distress tolerance skills
  - Frustration tolerance
  - Radical acceptance of consequence of injuries
- Next steps: Education!!
  - Clinicians, Family, and Patients
  - Focus our awareness on subsequent head injuries and their effects on rehabilitation
  - Cultural, socioeconomic, and ethnic differences

Education

- As skilled providers, we need to be addressing the following questions:
  - What is brain injury? What is anxiety? How do the two intersect?
- Why?
  - People will come up with their own narratives to describe their experience, which can be unhelpful and interfere with progress
- Resource: www.biami.org – Mild TBI Recovery Guide
- Resource: Model Systems Knowledge Translation Center (MSKTC)- website http://www.msktc.org/
- Education and Support should not stop at handouts. When possible, incorporate education through multimodal approach, including
  - Handouts with visual and written information
  - Video
  - Community support groups
  - Online support groups (Facebook, Trymunity)

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