FUNCTIONAL COGNITION

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Objectives

1. Understand how cognitive deficits may impair performance in functional activities

2. Analyze functional performance to identify areas of executive dysfunction

3. Understand how to structure therapeutic activities to incorporate cognitive strategies to maximize functional performance
Clinician Barriers

- Focus on function (FIM)
- Decreased ELOS
- Productivity Standards
- Lack of clinician comfort with cognition
- Ambiguous clinician roles
Background

• Clinicians may observe clients have difficulty learning or generalizing skills, but what can they do?

• Clients may decompensate when lacking structured cues from a therapist or specific clinical environment.
Conditions

- Traumatic Brain Injury
- Stroke
- Spinal Cord Injury
- Multiple Sclerosis
- Diabetes
- Cancer
- HIV
- Chronic Pain
- Chronic Kidney Disease
- Congestive Heart Failure
- Age Related Cognitive Changes
# Cognition- OT Practice Framework

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mental functions</strong> (affective, cognitive, perceptual)</td>
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<tr>
<td><strong>Specific mental functions</strong></td>
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<tr>
<td>Higher-level cognitive</td>
<td>Judgment, concept formation, metacognition, executive functions, praxis, cognitive flexibility, insight</td>
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<tr>
<td>Attention</td>
<td>Sustained shifting and divided attention, concentration, distractibility</td>
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<tr>
<td>Memory</td>
<td>Short-term, long-term, and working memory</td>
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<tr>
<td>Perception</td>
<td>Discrimination of sensations (e.g., auditory, tactile, visual, olfactory, gustatory, vestibular, proprioceptive)</td>
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<tr>
<td>Thought</td>
<td>Control and content of thought, awareness of reality vs. delusions, logical and coherent thought</td>
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<tr>
<td>Mental functions of sequencing complex movement</td>
<td>Mental functions that regulate the speed, response, quality, and time of motor production, such as restlessness, toe tapping, or hand wringing, in response to inner tension</td>
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<tr>
<td>Emotional</td>
<td>Regulation and range of emotions; appropriateness of emotions, including anger, love, tension, and anxiety; lability of emotions</td>
</tr>
<tr>
<td>Experience of self and time</td>
<td>Awareness of one’s identity, body, and position in the reality of one’s environment and of time</td>
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Executive Function

Organization

• How a person gathers and uses information
• Examples:
  • Planning multi-step tasks
  • Time management
  • Providing information to another person effectively

Regulation

• How a person changes behavior in response to the environment
• Examples:
  • Responding to other people’s moods/emotions
  • Managing changes in one’s own abilities
  • Safety
Executive Function

• Inhibition
  • Self-control
  • Interference control

• Working memory

• Cognitive flexibility
  • Thinking “outside the box,”
  • Seeing things from different perspectives
  • Adapting to changed circumstances
EVALUATION
Evaluation

**Paper and Pencil**
- Lowenstein Occupational Therapy Cognitive Assessment (LOTCA)
- Montreal Cognitive Assessment (MOCA)
- BCAT - Brief Cognitive Assessment Tool
- Independent Living Skills
- Texas Functional Living Scale
- BRIEF - Pediatric
- Trail Making A and B

**Performance Based**
- Multiple Errands Test (MET)
- Executive Function Performance Test (EFPT)
- Kettle Test
MOCA

• Simple cognitive screen
• 10 minutes
• No training required for administration
• Manual can be printed online without cost
• Constructs: attention and concentration, executive functions, memory, language, visuoconstructual skills, conceptual thinking, calculations, and orientation
• www.mocatest.org
Multiple Errands Test (MET)

- 60 minutes for administration
- No training required
- Environmental considerations
- Can be obtained online without charge from author (Morrison et al., 2013)
- Versions: simplified, hospital, shopping mall, virtual reality
- 12 tasks must be performed while following several rules
Executive Function Performance Test (EFPT)

- 45 min for administration
- No training required for administration
- Manual can be printed online without cost
- Supplies are needed for task completion
- Constructs: Initiation, organization, sequencing, safety and judgement, completion
- Tasks: Cooking, telephone use, medication management, money management
Kettle Test

- 20 min for administration
- Manual can be accessed online without cost however materials must be purchased
- No training required
- Task: Preparation of 2 hot beverages
- Scoring:
  - 0: intact performance
  - 1: slow/trial and error
  - 2: Received general cues
  - 3: Receives specific cueing/incomplete performance
  - 4: Received physical demo or assistance
- 52 is max score = more severe functional performance deficits
INTERVENTION STRATEGIES
Environment

- Noise level
- Light level
- Visual distractors
- Scents/Smells
- People
- Familiarity
Levels of Verbal Cue's

<table>
<thead>
<tr>
<th>Level 1: Verbal support/affirmation</th>
<th>“You are moving along, “Keep it up”, “Great”</th>
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<tr>
<td>Level 2: Verbal non-directive</td>
<td>“Is there anything missing?”, “Can you try another way”</td>
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<tr>
<td>Level 3: Verbal directive</td>
<td>“Check the recipe again”, “The date needs to be filled in on the check”</td>
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<tr>
<td>Level 4: Gesture</td>
<td>“Pointing to an item”, “Tapping an undone button”</td>
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<tr>
<td>Level 5: Task Rearrangement</td>
<td>Placing a stool under the client’s foot when donning shoes, removing task objects that are distracting and then presenting them as needed; breaking down the task into smaller steps</td>
</tr>
<tr>
<td>Level 6: Demonstration</td>
<td>Wiping part of the counter and then handing the sponge to the client, and lifting the garbage sack, heading to the door, and then coming back and replacing it for the client to proceed</td>
</tr>
<tr>
<td>Level 7: Physical guidance</td>
<td>Positioning hand over a knife or button, guiding a leg out of the tub, and positioning a hand on the bathtub edge</td>
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<td>Level 8: Physical support</td>
<td>Physical support of an arm when client is getting out of the tub or supporting the weight of the soup pan when the soup is being poured</td>
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<tr>
<td>Level 9: Total assistance</td>
<td>Reading the directions on the soup can or muffin box, filling in the date on the check</td>
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Therapeutic Use of Self: “Therapist as Coach”

- Problem solving training and opportunity for failure
- Goal Plan Do Check
- Emotional regulation training
- Use of cognitive supports
- Incorporate coaching in family training
Client Self Management

**Skills**
- Attitude
- Self Monitoring
- Problem Solving
- Communication
- Organization
- Stress Management

**Interventions**
- Making appointments
- Doing research
- Questions for doctor
- Coaching to talk to doctor
- Role Play
Attention

Sustained

Alternating

Selective

Divided
Interventions for Attention

- Combining motor and cognitive based tasks
  - Assembling pipe tree while listening to a story for comprehension
- Therex with alphabet game
- Combining multiple cognitive tasks
- Environmental Distractors
Interventions for Attention

• Dual task gait intervention
• Pathfinding while doing math problems
• Walking with ball toss
Interventions for Attention

• Attentional endurance
  • Sorting cards
  • Matching cards (picture of card board)
• Calling and transcribing movie times
• Bop It/ Simon
• Ipad or apps
• Videogames: Cakemania, Brain age, Big Brain Academy
• Stroop Test
Generating Active Problem Solving

• Safety questions/scenarios, safety cards
• Planning alternative scenarios, decision trees

• Real Time Problem Solving
  • Fall recovery
  • Executing patient ideas in a controlled environment
• Therapeutic distance
• Novel task
Reflection

• Pre/Post activity rating
• Evaluation of performance
  • Self
  • By therapist
• Discussion of strengths and weaknesses
• Plans for Improvement
IADLS
Cooking

- Planning list of ingredients, supplies
- Sequencing steps, including prep, and cleanup
- Time Management
- Safety Awareness: stove/oven, sharp objects, hygiene
- Dual-attention
Medication Management

• Reading pill bottles
• Setting up pill box
• Reviewing current medications
• Medication safety
Money Management

• Making change
• Bank account management simulation
• Bill pay activity
• Simulated or real world shopping experience
Community Re-entry

• Scavenger Hunt
• Outing to store, restaurant, etc
• Internet searches
• Phone calls
• Making a schedule
• Emergency Preparedness
Parenting and Caregiving

• First aid
• Safety
• Task analysis
RESOURCES

Handouts and Activities
Mac & Cheese

• **Ingredients**
  • 5 oz dry macaroni
  • 2 tablespoons of unsalted butter
  • 2 tablespoons of all-purpose flour
  • 1 cup whole milk
  • 1 cup cheddar cheese
  • Salt and pepper to taste

• **Instructions**
  • Cook macaroni in generous amount of salted boiling water for 8 minutes.
  • Drain and set aside.
  • In sauce pan, add butter and melt it over low heat.
  • Add flour and cook over low heat while stirring for 1-2 minutes.
  • Add ¼ cup of milk and stir until smooth.
  • Add remaining milk and increase heat to medium, gently stirring constantly.
  • When boiling, reduce heat to low and stir for 2 minutes.
  • Remove pan from heat, add cheddar cheese and stir until sauce is smooth.
  • Add cooked macaroni, salt, and pepper and stir.
Med management questions

**Simple Medication Management** - 1

Answer the following questions and complete the activity using the pill bottles provided.

1. How many tablets should be taken each day for the medication Metronidazole?
2. Which medication does not have a refill available?
3. What is the prescription number for Fluoxetine?
4. Which prescription has an expiration date of 12/06/2017?
5. What is the name of the doctor who prescribed the Levoxyl Levothyroxine?
6. How many tablets of Gabapentin should you take on day 3?
7. How many pills are in the bottle of Metronidazole?

Fill the provided pillbox with all of John’s medications.

**Complex Medication Management** - 1

Answer the following questions and complete the activity using the pill bottles provided.

1. Your bottle of Levoxyl Levothyroxine is empty.
   a. What number would you call to refill it?
   b. What is the prescription number?
2. How many milligrams of Gabapentin will you take on Day 2?
3. You are filling your pillbox for the week and
   a. Will the pharmacy refill your prescription at this time?
   b. Who will you have to contact to get the prescription?
4. How many tablets of Metronidazole will you take each day
   a. Should you take all of the tablets at the same time?
   b. How would you plan the times to take this medication?
5. John forgot to take his Fluoxetine before bed last night. What should he do?

Fill the provided pillbox with all of John’s medications. His doctor will start his new medication Gabapentin on Wednesday.
Levoxyl Levothyroxine 0.15 mg
Take 1 tablet by mouth every day.
QTY: 30
RX: 977468
Discard after 12/06/2019
Prescriber: Dr. Jessica Kim, MD

Fluoxetine 20 mg
Take 1 tablet by mouth at bedtime.
QTY: 30
RX: 759640
Discard after 8/24/2019
Prescriber: Dr. Jessica Kim, MD

Gabapentin 300 mg
Take 1 tablet by mouth 1 time per day on 1st day
Take 1 tablet by mouth 2 times per day on 2nd day
Take 1 tablet by mouth 3 times per day on 3rd day
QTY: 60
RX: 240173
Discard after 5/12/2019
Prescriber: Dr. Jessica Kim, MD

Metronidazole 500 mg
Take 1 tablet by mouth 3 times a day.
QTY: 21
RX: 868559
Discard after 02/02/2019
Prescriber: Dr. Jessica Kim, MD
Scavenger Hunt Example

**SCAVENGER HUNT ON UNIT**

1. What is today’s day and date?
2. Find a magazine or a newspaper.
3. How many beds are in room 933?
4. How many water fountains are on the unit? Are they operational?
5. How many clocks are in the gym? What time does the clock say?
6. Find the dining room.
7. Find something with “University of MD Rehabilitation and Orthopaedic Institute” written on it.
8. What color is the guest phone at the nurses station?
9. Find a therapist that you do not know. What is his/her name? Write it here
   ________________________________
10. What color is the biggest ball in the gym?

**OFF UNIT SCAVENGER HUNT**

1. Sign yourself off the unit.
2. Find the dental suite. What is the room number?
3. Find the elevator and go to the ground floor. Find the aquatic therapy pool. Is it open?
4. Find the gift shop.
5. How much is a bag of chips and a soda? If you paid with a $10, what would your change be?
6. Find the elevator. Go back to the T (Terrace) level. Find the cafeteria. How many vending machines are there in the seating area?
7. Find your way back to the brain injury unit.
8. Sign yourself back on the unit.
9. How many water fountains are on the unit? Do they work?
Online Scavenger Hunt

1. Click on Google Chrome Icon
2. Search for movie times in Owings Mills
3. What movie theater is located in the mall? What is the address?
4. Pick a movie time that is after dinner, what is the time and title?
5. Search for a place to eat dinner near the theater.
6. What website did you use to find a restaurant?
7. What is the phone number and address of the restaurant you chose?
8. How many miles away is the restaurant from 2200 Kernan Dr, Gwynn Oak, MD 21207?
1. What is the account number on this bill?
2. What was the amount and the date of the last payment received?
   a. 114.37 received on December 9, 2009
   b. $134.00 received on December 15, 2011
   c. $116.08 received on January 4, 2010
   d. $119.27 received on December 8, 2009
3. When is this bill due?
4. What was the total kWh used for this bill?
   a. 743
   b. 750
   c. 755
   d. 720
5. On what date was the gas meter read and what is the gas meter number?
6. What are four ways that this bill can be paid?
7. What is the billing period of this bill?
8. According to this bill, what was the average temperature for December 2011?
   a. 55
   b. 53
   c. 48
   d. 52
# Safety questions

## HOME SAFETY

**Kitchen**
1. Where do you keep household cleaners and insecticides? How can they be dangerous?
2. What should you be careful of when using electrical appliances?
3. How can you prevent from burning yourself when using the stove, oven or microwave?

**Living room/Bedroom**
1. How can you made scatter rugs less dangerous?
2. What things should you do when getting up in the middle of the night?

**Bathroom**
1. What items can you add to made the shower/bathtub safer when getting in or out?
2. What is a safe thing to hold onto when getting in and out of the tub?

**Crime Prevention**
1. What is the safe thing to do when someone comes to your door and says that he is the repair man?
2. What is the safe thing to do if you must carry around large amounts of money?
3. Before you leave the house at night, what should you do?
Read the sentences and select the best answer to each question

1. Dave, a non-swimmer, is sitting on the beach when he hears someone yelling for help from the water. What should he do?
   a. Ignore it
   b. Yell for “help”
   c. Alert a near-by life guard

2. While walking her dog, Mrs. Hayes notices smoke coming from a nearby house, what should she do?
   a. See if there is anyone in the house
   b. Continue walking her dog
   c. Call the dog catcher

3. Tuesday was pay day. Mr. Stanley got his paycheck but on the way to the bank he lost it. What should he do?
   a. Write another check for himself
   b. Ask the bank to give him a loan
   c. Call his office and tell them the check is lost

4. You see a coat in a store that you’d like to buy, but you don’t have enough money, what can you do?
   a. Put the coat on layaway until you can buy it
   b. Buy the store
   c. Borrow the coat

5. Mr. Jones missed his plane flight to Chicago. A friend was waiting to pick him up at the airport there. What should Mr. Jones do?
   a. Call his friend and tell him he’ll be on another plane
   b. Take a bus
   c. Go back home
You have a busy day ahead. You have a doctor’s appointment. You must also go to Party City to buy balloons for a party, fill up your car with gas, go to the post office to mail an important package, go to the bank to get enough money to pay the doctor’s fee (he demands cash on visits), order and pick up a special ice cream cake for your friend’s birthday, bring your prescription to the drug store, and meet a friend for lunch.

The post office, bakery, drug store, and Party City all close at 5:00pm. The bank closes at 3:00pm. It is 10:00am now. Your doctor’s appointment is at 2:00pm. At what time should you leave the house? Where will you go first, second, third, etc.??
Task Sequencing

- Gather toothbrush, toothpaste, towel, etc
- Rinse with mouthwash
- Open toothpaste
- Apply toothpaste to toothbrush
- Spit in sink
- Wet toothbrush
- Brush all teeth
References


