Learner Objectives

Part I: Overview of Cognition
1. Describe neurological locations, connections, and systems important for aspects of attention, memory, and executive functioning.
2. Describe neuropsychological models of attention, memory, and executive functioning.

Part II: Assessment of Cognition
3. Identify three standardized assessments each to evaluate attention, memory, and executive functioning, and acknowledge strengths & limitations of each.
4. Describe functional measures of activity completion & social participation/QOL for adults with ABI.
5. Develop a quick, functional battery to assess cognitive-communication performance in adults with ABI in your own work setting.

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Part I

OVERVIEW OF COGNITION
• WHAT & WHY OF COG REHAB
• PRINCIPLES OF COG REHAB
• OVERVIEW OF 3 COGNITIVE DOMAINS

Principles of Cog Rehab (CR)
• CR is goal-oriented, problem-focused, and builds on strengths
• CR is team-based and interdisciplinary or transdisciplinary
• CR requires sound therapeutic alliance among all team members
• CR emphasizes collaboration and active participation
• CR is eclectic and individualized
• CR is ever-evolving, based on client needs from various perspectives
• CR sessions are structured, based on assessment & performance data

(Sohlberg & Mateer, 2001)

Cognitive Rehabilitation
• Addresses challenges with:
  • Attention/concentration
  • Memory/new learning
  • Executive functioning
  • Awareness/insight
  • Social communication
• Interdisciplinary and holistic by nature, to manage whole human person
• Is it “medically necessary”?

Cognitive Domains & Processes

(Perception)
Attention
Memory
Executive Functions
(Communication)

(Sohlberg & Mateer, 2001)
Interconnectivity of Cognition

• Each cognitive domain is interdependent upon other areas
• Example: Prospective Memory

• Awareness impairments can be biggest barrier to progress...
For each cognitive domain...

- Breakdown of different aspects of processing
- Underlying neurology
- Impact for assessment

- Essential to understanding assessment of cognitive functioning!
- Skilled observation!!!

Attention

- “concentration”
- A complex set of cognitive processes involving diffuse areas spread throughout the brainstem, subcortex, and cortex

- Two big-picture levels of attention:
  - Basic attention (“lower levels”)
    - Mediated by brainstem & posterior brain circuits
  - Executive attention (“higher functions”)
    - Mediated by frontal circuits

Clinical Model of Attention

- Basic arousal/alertness
- Focused attention

- Sustained attention
  - Vigilance
  - Working Memory
  - Selective attention
  - Alternating attention
  - “Multi-tasking”

Basic Attention

- arousal/alertness (RLA II)
  - mediated through reticular formation (throughout brainstem)
  - diffuse activation

- focused attention (RLA III)
  - posterior circuit
    - posterior parietal lobe
    - pulvinar nucleus (thalamus)
    - superior colliculus (midbrain)

www.learningdiscoveries.com.au
media-2.web.britannica.com
Pathophysiology of Visual Neglect

**Visual Processing**
- Ventral “what” pathway
- Dorsal “where” pathway

Pathophysiology of Neglect

- Left parietal lobe attends only to right visual space
- Right parietal lobe attends to **BOTH** left & right visual space
- Lesions/damage to (R) parietal lobe, or its connections through the thalamus, internal capsule, & basal ganglia (Filley, 2002)
- Neglect is not a problem with sight, but an impairment of focused attention mediated by posterior attention circuits

“Executive” Attention

- Sustained attention
  - vigilance (maintain continued focus over time)
  - example?
  - internal distraction
  - right prefrontal cortex
- working attention (hold & manipulate)
  - example?
  - dorsolateral prefrontal cortex
  - + other cortical areas

“Executive” Attention

- **Selective attention** (suppression)
  - example?
  - external distraction
  - thalamus as “filter” or “gate” to select certain information to pass into higher-level thought
  - inhibit/suppress irrelevant information
  - [cocktail party effect]
“Executive” Attention

- Alternating Attention
  - example?
  - allows us to “switch set”
  - anterior cingulate gyrus

Recovery from Severe TBI

Rancho los Amigos Scale of Cognitive Functioning (RLA)

- RLA I – Coma
- RLA II – Vegetative state [arousable]
- RLA III – Minimally conscious state [focus attention]
- RLA IV – Confused & agitated
- RLA V – Confused & inappropriate [sustain attention]
- RLA VI – Confused & appropriate
- RLA VII – Automatic & appropriate [executive attention]
- RLA VIII – Purposeful & appropriate (assisted)
- RLA IX – Purposeful & appropriate (supervision)
- RLA X – Purposeful & appropriate (strategies)

Attention Disorders in TBI

- Varies with severity
- Common patterns of attention challenges:
  - Difficulty sustaining attention for long periods of time
  - Difficulty with working memory (“hold on to & manipulate info”)
  - Slowed information processing
  - Distractibility, perseveration
  - Limited cognitive capacity (one thing at a time)

Attention Disorders in RHD

- Difficulties with focused attention (L neglect)
- Severe difficulties with sustained attention (R frontal lobes)

- May also have difficulties with executive attention:
  - Selective attention (distractible: difficulty suppressing or over-riding automatic responses)
  - Alternating attention (perseveration)
  - Visual working memory limitations
Attention Disorders in LHD

- More “executive” attention impairments accompany (non-fluent/anterior) aphasias:
  - Selective attention (difficulty suppressing automatic responses)
  - Alternating attention (perseveration)
  - Verbal working memory limitations

Attention Disorders in Alzheimer’s Dementia

Cortical/anterior → brainstem/posterior

- Early: mild executive attention deficits (distractible, difficulty shifting attention, working memory challenges)

- Middle: executive attention deficits (distractible, perseveration, difficulty sustaining, working memory limited)

- Late: basic attention deficits (arousal, focused attention)

Approaching Attention Assessment

- Is there an attention impairment?
- Which aspects of attention are impaired?
- To what degree?
- What is the functional impact on the client’s everyday life and activities?
- We will review assessment methods to help answer these questions!
- What behaviors might you observe to indicate attention challenges???
Memory

- A complex set of cognitive processes involving learning new information/skills and recalling previously learned information/skills

- We shall review:
  - STM vs LTM
  - Declarative vs Non-Declarative systems
  - Processes of declarative learning

STM vs LTM?

- An Important Clarification:
  - Short Term Memory (STM) = hold onto small chunks of information for brief periods without distraction
    - an attention function!
  - Working Memory (WM) = hold onto & manipulate information for brief periods
    - an executive function!
  - Long Term Memory = LEARNING (recent & old!)
    - a “pure” memory function!

STM & WM

- STM = “sensory store” for visual, auditory, tactile, olfactory etc input
  - Capacity limited (7 ± 2)
  - Time limited
- WM involves the “central executive” in frontal lobes to manipulate information (visual in R; verbal in L)

Quick Question

- You can’t remember what you ate for breakfast this morning...
  - Is this a failure of STM?
Long-Term Memory

- “Learning” – for both recent & remote memories!
- 2 distinct and distinguishable aspects of LTM:
  - Declarative memory systems
  - Non-Declarative memory systems
- Involve different brain systems
- Perform different functions
- Can be differentially affected following brain injury!
- Need to assess both

Declarative Memory: Encoding

- perceptual information capture & organization
- phonological representations (verbal)
- graphic representations (visual)
- thalamus & temporal lobes (sensory perception) and frontal lobe connections for organizing
- “effortful” or “strategic” encoding helps
- Be strategic & planful when you know you need to remember something important!
Declarative Memory: Storage

- transfer from working memory to “permanent” representation in neural networks
- hippocampus & surrounding entorhinal cortex (medial temporal lobes) critical for storage & organization of new memories
- transfers “permanent” memory traces to proper “file folder” in lateral temporal lobes

Declarative Memory: Retrieval

- searching for/activating existing memory traces from neural networks
- triggered by many stimuli or active searching
- need to monitor for accuracy (competence) and appropriateness (confidence; “sense of knowing”)
- Mediated by frontal lobes for systematic, organized search/retrieval
- Activate search through working memory/attention
- Retrieve through cues/traces in memory network
- Retrieval can be tested via free recall or recognition

Prospective Memory

- Ability to remember and act on future intentions
- Common, functional, everyday memory
- Complex overlap between memory, attention, and executive functioning that requires a set of processes
- Encoding task & time
- Retention over a delay
- Retrieval of intention/memory
- Execution of action
- Evaluation/monitoring of output effectiveness/efficiency

Clinical Memory Terminology

- amnesia = specific memory impairment
- retrograde = unable to recall info prior to injury
- anterograde = unable to lay down new memories after injury
- confabulation = made-up memories; false memories not grounded in reality that seem real to the person
- Often with damage to ventral surface of frontal lobes

Memory in TBI
- Relative strengths in:
  - long-term semantic knowledge (pre-injury)
  - non-declarative (procedural) memory systems
- Challenges with:
  - working memory (frontal lobe damage)
  - new declarative learning (hippocampus)
  - free recall of information (frontal lobes)
  - meta-memory/awareness (frontal lobes)
  - prospective memory
- Often benefit from errorless learning, systematic instruction, & routines that capitalize on non-declarative systems!

Memory in RHD
- Relative strengths in:
  - long-term memory systems (“memory” may be ok)
  - verbal skills (verbal working memory, semantic memory)
- Challenges with:
  - attention (focused attention, vigilance)
  - encoding visual information
  - visual-spatial working memory (R frontal lobe damage)
  - free recall of information (frontal lobes)
  - prospective memory
- May benefit from direct attention training, visual scanning treatment, awareness training, organization to enhance perceptual encoding & efficiency of storage/retrieval

Memory in LHD
- Relative strengths in:
  - long-term memory systems (“memory” may be ok)
  - visual skills (visual working memory, visual/spatial memory)
- Challenges with:
  - executive attention
  - encoding verbal information
  - verbal/phonological working memory (L frontal lobe damage)
  - free recall of information (frontal lobes)
  - prospective memory
- May benefit from direct attention training, language (aphasia) treatment, meta strategies for strategic approaches to enhance new learning

Memory in Alzheimer’s Dementia
- Signature/primary presenting problem is memory
- Relative strengths in:
  - retrieval of long-term(remote) memories (reminiscence)
  - non-declarative (procedural) memory systems
- Challenges with:
  - new declarative learning (hippocampus)
  - working memory (frontal lobe damage)
  - loss of semantic knowledge in AD (temporal lobes)
  - free recall of information (frontal lobes)
  - prospective memory
- May benefit from errorless learning, systematic instruction, spaced retrieval techniques, routines, and environmental modifications/supports
Approaching Memory Assessment

- Is there a memory impairment?
- Which aspects of memory are impaired?
  - STM, WM, LTM
  - Encoding, Storage, Retrieval
  - To what degree?
  - What is the functional impact on the client's everyday life and activities?

- We will review assessment methods to help answer these questions!
- What behaviors might you observe to indicate memory challenges???

Executive Functions

- A complex set of cognitive processes involving the higher-level cognitive abilities to self-regulate and oversee various body functions and cognitive efforts that help to set, manage, and attain goals in a flexible and strategic manner

- Executive Functions help us over-ride (suppress) automatic responses, habits, or behaviors

- Executive Functioning also encompasses awareness

- Overlap with “social communication” (pragmatics) & macro-linguistic/discourse structure!! (communication)

Executive Functions

- Critical functions in/from the frontal lobes
- not a “specific” localization of a specific function; rather, a network used to mediate with other brain regions (activate, inhibit, & integrate)

- Lots of inter-connections with other brain areas
- Sensitive to TBI (diffuse)
Frontal Lobes

- Ventral surfaces (orbital cortex) linked closely with limbic system
  - When damaged, tend to see impulsivity, anger management problems, and behavioral challenges
- Dorsal surfaces (esp. superior frontal gyrus and pre-motor areas) implicated in movement planning/behavioral initiation
  - When damaged, tend to see lack of initiation
  - Abulia = lack of initiation (cognitive)
- Many times, we see both... = challenging!

Meet “the Executive Functions”

**Overlap with Attention:**
- “executive attention”
  - sustained/vigilance (R frontal)
  - sustained/working attention (DLPFC)
  - selective attention (thalamus & connections)
  - alternating attention (anterior cingulate)

**Overlap with Memory:**
- working memory (central executive in DLPFC)
- prospective memory (act on future intentions)
- efficient retrieval of memories (organization)

Meet “the Executive Functions”

**New Functions:**
- planning for goal-oriented tasks
- initiation of behavior
- inhibition of non-target behaviors
- awareness: monitoring & regulating one’s own behavior
- ability to take another person’s perspective
- mental flexibility & creativity for problem-solving
- prioritization, organization of information, & time mgmt

Executive Functions Symptoms (Dysexecutive Syndrome)

- Impulsivity
- Poor social judgment
- Social disinhibition
- Egocentrism
- Difficulty interpreting the behavior of others
- Perseveration
- Poorly regulated attention
- Disorganization (in thinking, talking, and acting)
- Weak goal formulation
- Ineffective planning
- Decreased flexibility/shifting
- Slowed processing
- Diminished divergent thinking
- Concrete thinking
- Immature problem-solving
- Weak self-monitoring
- Inefficient responses to feedback/ consequences
- Reduced initiation
- Dulled emotional responses

(Feeney, 2005)
Inter-Connectivity

Sohlberg & Mateer (2001)

Awareness (Insight)

- “Meta-cognition”
  - thinking about thinking
  - reflect on one’s own performance

- Possible Reasons for “Denial” of Symptoms
  - Psychosocial denial to major life change
  - Organic denial due to cognition
    - Education: Do they have the knowledge to understand?
    - Integration: Can they link cause-effect to their own life?
    - Application: Can they generalize to novel “problems”?

Self-Regulation & Meta-Cognition

Kennedy & Coelho (2005) Seminars in Speech & Language

“Typical” (???) Executive Dysfunction

- Dissociation between what you can SAY and what you can DO
  - don’t just ask... observe!

- Wide variety of symptoms that may fluctuate within a person, within a day! (challenging!)

- May benefit from routines (less demand for “executive control” on auto-pilot), external supports, education, and environmental modification for success
Approaching Assessment of EF

- Is there an executive dysfunction?
  - (wide range of "typical"!)
  - Observe, don’t just ask! Check with team...
  - Which aspects of EF are impaired?
  - To what degree?
- What is the functional impact on the client’s everyday life and activities?
  - ***Awareness has major impact on need for supervision

- We will review assessment methods to help answer these questions!
- What behaviors might you observe to indicate executive dysfunction???

Cognitive Domains & Processes

(Perception)
Attention
Memory
Executive Functions
(Communication)

(Sohlberg & Mateer, 2001)

How are we doing?

Part I: Overview of Cognition
1. Describe neurological locations, connections, and systems important for aspects of attention, memory, and executive functioning.
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3. Identify three standardized assessments each to evaluate attention, memory, and executive functioning, and acknowledge strengths & limitations of each.
4. Describe functional measures of activity completion & social participation/QOL for adults with ABI.
5. Develop a quick, functional battery to assess cognitive-communication performance in adults with ABI in your own work setting.
Part II

COGNITIVE ASSESSMENT
• PRINCIPLES OF ASSESSMENT
• ORGANIZED BY DOMAIN
• APPROACHED BY SEVERITY

Principles of Assessment

• Your question dictates your assessment methods

• We can ask lots of different questions:
  • Is there an impairment? [diagnosis]
  • Standardized, norm-referenced tests required
  • How severe is the impairment? [severity]
  • Standardized, norm-referenced tests required
  • Which processes are impaired? [describe]
  • Standardized, criterion referenced tests work well to establish relative strengths & weaknesses
  • What is the functional impact? [function, QOL]
  • Standardized tests won’t help you!
  • Interview, questionnaires, observations will help you!

Standardized Testing

• Valuable in making a diagnosis, quantifying severity, and describing strengths & weaknesses
• Useful to establish “objective” baseline & chart progress over time

• NOT HELPFUL to determine functional impact!!!
  • Limited “ecological” or “predictive” validity!

• Also beware of cultural, educational, gender, & other biases and threats when interpreting results!!!

Standard Scores (SS, z, T, %ile)

• Scaled Scores (SS): $M = 100$, $SD = 15$
**Pre-Assessment**

- Review medical records for PMH & HPI
  - Previous brain injury or baseline cognitive challenges?
- Gather information from multiple sources
- Gather baseline status of education & vocation
- Gather information about culture
- Don’t make assumptions!

**Initial Screening**

- Screen/review before cognitive testing:
  - Sight (acuity) + Vision (neuro) - Glasses?
  - Hearing & processing - Amplification?
  - Language (ELL?)
  - Psychiatric diagnoses
  - Mobility, balance, & fine-motor abilities?
- Find out about possible contributing factors
  - Medications, sleep, nutrition, seizures, etc

**Behavioral Inattention Test**

*BIT, Wilson, Cockburn, & Halligan, 1987*

- Standardized, Norm-Referenced (2 alternate forms)
- Purposes:
  - Diagnosis? Yes, make a diagnosis of unilateral visual neglect
  - Severity? Yes, quantify severity level
  - Describe? Yes, assess strengths & weaknesses
  - Functional? Says it predicts everyday functioning...
- Subtests:
  - Conventional: line crossing, letter cancellation, shape cancellation with distraction, copying figures/shapes, line bisection, drawing
  - Behavioral: picture scanning, telephone dialing, menu reading, oral article reading (3 columns), telling & setting time, coin identification, address & sentence copying, map scanning, card identification

**Assessment of Attention**

- Some Lower-Level Standardized Tests:
  - Behavioral Inattention Test (BIT)
  - APT Test
  - Digit/Symbol Span (forward)
  - Trail Making Test (Part A) – speed
  - Symbol-Digit Modalities – speed
- Some Higher-Level Standardized Tests:
  - Test of Everyday Attention (TEA)
  - Paced Auditory Serial Addition Test (PASAT)
Line Bisection Test

Common Assessments for Neglect

- Line Bisection
- Symbol Cancellation (consider array, size, & complexity)
- Copy/Drawing

- Functional Reading
  - Reading Comprehension Battery for Aphasia (RCBA)
  - Communication Activities of Daily Living-2 (CADL-2)
  - Functional Writing (informal; complete a form, card, check…)

Attention Process Training Test

(APT Test; Sohlberg & Mateer, 2001)

- Standardized, Criterion-Referenced (1 form)
- Purposes:
  - Diagnosis? No
  - Severity? No
  - Describe? Yes, assess strengths & weaknesses
  - Functional? No
- Subtests (1 auditory stimuli):
  - Simple sustained attention (target identification)
  - Complex sustained attention (executive attention-WM)
  - Selective attention (with background noise)
  - Divided attention (visual + auditory tasks)
  - Alternating attention (shifting between two tasks)

APT Test Examples
Digit/Symbol Span (forward)

- Part of Wechsler Adult Intelligence Scale (WAIS-4; 2008)
- Neuropsychological Measure
- Standardized, norm-referenced (2 alternate forms)
- Norms for ages 16-91 years

- “Magic Number 7 ± 2”
- Forward span is a measure of “STM” or attention to hold onto small chunks of information for brief periods of time
- Not a measure of learning/LTM!

Trail Making Test

- Standardized, Norm-Referenced (1 form)
- Purposes:
  - Diagnosis? Yes
  - Severity? No
  - Describe? No
  - Functional? No
- Subtests:
  - Trails A – sustained attention to connect #1-25
  - Trails B – executive abilities (alternating attention & working memory) to connect #s & letters (1-A-2-B... L-13)
- There’s an App for That!
  - Trail Making Test A & Trail Making Test B
  - By Parker O’Brien & Associates; $2.99 each

Trail Making Test

Trail Making Test

Digit/Symbol Modalities

- Speed of Processing Test (90 sec timed)
  - A version is included in the R BANS (see later slide)

- Also “Symbol-Digit Modalities Test” (Smith, 1973; Western Psychological Services, $104)
  - Diagnostic, Norm-Referenced (ages 8-78 years)
  - Takes ~ 5 min to administer

- Reported to be more sensitive to milder issues where accuracy may be good but inefficient (i.e., slowed)
Symbol-Digit Modalities Test

**KEY**

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

**Test of Everyday Attention**
(TEA; Robertson, Ward, Ridgeway, & Nimmo-Smith, 1994)

- Standardized, Norm-Referenced (3 alternate forms)
- Purposes:
  - Diagnosis? Yes
  - Severity? Yes
  - Describe? Yes, assess strengths & weaknesses
  - Functional? Says it’s functional tasks (trip to Philadelphia)
- Subtests:
  - Map Search (visual; selective)
  - Elevator Counting (auditory; sustained)
  - Elevator Counting with Distraction (auditory; selective)
  - Visual Elevator (visual; alternating)
  - Elevator Counting with Reversal (auditory; alternating)
  - Telephone Search (visual; selective)
  - Telephone Search while Counting (mixed; divided)
  - Lottery (auditory; vigilance + working memory)

**Paced Auditory Serial Addition Test**
(PASAT; Gronwall, 1977; www.brainmetric.com)

- Standardized, Norm-Referenced (1 form)
- Purposes:
  - Diagnosis? Yes
  - Severity? No
  - Describe? No
  - Functional? No
- Subtests (4 speeds):
  - 2.4 sec ISI (inter-stimulus interval)
  - 2.0 sec ISI
  - 1.6 sec ISI
  - 1.2 sec ISI
- Add qualitative notes about frustration tolerance, delayed responses, self-corrections, etc.
Attention Questionnaires

- Standardized questionnaires
- Not diagnostic, but very helpful to determine strengths/weaknesses and functional impact
- APT Questionnaire (Sohlberg & Mateer, 2001)
- Attention Rating & Monitoring Scale (ARMS; Cicerone, 2002)
- Who is completing the questionnaire?
  - Adequate comprehension of questions? (Review to validate)
  - Possess adequate knowledge?
  - Possess adequate awareness? (Consider two informants)

Questionnaire Examples

APT Questionnaire (rate by frequency of problem from not a problem to all the time) – 12 questions
- I seem to lack mental energy to do activities.
- I can’t keep my mind on an activity or thought because my mind keeps wandering.
- I miss details or make mistakes because my level of concentration has decreased.
- I get easily distracted by nearby noise.

ARMS Questionnaire (rate by frequency of problem from never to always) – 15 questions
- I have difficulty returning to a task after being interrupted.
- I forget things immediately or just after being told, for example, telephone conversations.
- I have difficulty concentrating or keeping my mind on an activity for more than a few minutes, for example, when reading or watching television.
- I need to repeat things or slow down in order to avoid mistakes.

Some Functional Observations to Assess Attention

- Is the person able to attend to you during your initial interview?
- Short attention span? (sustained)
- Distractible? (selective)
- Perseverative? (alternating)
- Slow to process? (speed of processing)
- Need to repeat questions? (maybe working memory)
- Neglect of visual space?
- Can the person follow 2-3 step instructions?
  - BDAE, “Tap each shoulder with two fingers while keeping your eyes closed.”
  - PT: “Before you stand up, I want you to lock your brakes, bring your walker up close, and put your hands on the hand rests as you stand.”
- Can the person repeat instructions back to you in a noisy gym?
  - PT: “Before you stand up, I want you to lock your brakes, bring your walker up close, and put your hands on the hand rests as you stand.”
- Can the person read a magazine article in a noisy room and recap for you what they read?

Guidelines for Observations

- Many factors could contribute to observed difficulties
- Ask yourself:
  - How could attention be contributing to the behavior?
  - Which aspect(s) of attention seem to break down?
  - Is the client already compensating for challenges?
  - Can I objectively operationalize the observed behavior and relate it to attention?
    - “seemed distracted”?
    - “lacked motivation”?
    - “lost focus”?
Think you’ll do Direct Attention Training?

- To Assess for Treatment Planning Purposes:
  - APT Test

- To Assess for Pre/Post Objective Changes:
  - TEA (specific subtests can be scored individually)
  - PASAT
  - Symbol-Digit tests or Trails (for speed)

- To Assess for Functional Impact:
  - Logs/Questionnaires/Interview to assess and compare baseline to post-therapy changes in everyday life

Assessment of Memory

- Some Lower-Level Standardized Tests:
  - Galveston Orientation & Amnesia Test (GOAT)
  - Arizona Battery for Communication Disorders of Dementia (ABC)

- Some Higher-Level Standardized Tests:
  - Rivermead Behavioural Memory Test (RBMT-3)
  - Verbal Learning Tests

Galveston Orientation & Amnesia Test

(LEVIN, O'Donnell, & Grossman, 1979)

- Standardized, Criterion-Referenced (1 form)
  - Can be used every day, serially to assess PTA

- Purposes:
  - Diagnosis? Yes, make a diagnosis of disorientation
  - Severity? No (normal/borderline/impaired)
  - Describe? Yes, assess strengths & weaknesses; graph changes
  - Functional? PTA is good predictor of cognitive functioning

- No subtests (1 test with 14 questions to assess orientation to person, place, time, & situation)

- Score out of 100 points
  - 76-100 Normal
  - 66-75 Borderline
  - <65 Impaired

GOAT: Example Questions

www.utmb.edu/psychology/Adultrehab GOAT.htm

- No clock, calendar, watch, or signs in view. No assistance from others. All from memory.

- What is your name? (first + last) 2 pts
- When were you born? (month+day+year) 4 pts
- Where do you live? 4 pts
- Where are you now? (name of facility) 5 pts
- When were you admitted to this place? (date) 5 pts
- What time is it now? (-1 for each ½ hr error) 5 pts
- What is the year? (-10 for each year error) 30 pts
Arizona Battery for Communication Disorders of Dementia (ABCD; Bayles & Tomoeda, 1993)

- Standardized, Norm-Referenced (1 form)
- Purposes:
  - Diagnosis? Yes (but we don’t diagnose dementia)
  - Severity? Yes, quantify severity level
  - Describe? Yes, assess strengths & weaknesses
  - Functional? No
- 5 Constructs:
  - Mental Status (orientation)
  - Episodic Memory (Story retelling immediate & delayed; Word Learning tasks)
  - Linguistic Expression (object description, generative naming, confrontation naming, concept definition)
  - Linguistic Comprehension (following commands, comparative questions, repetition, reading comprehension)
  - Visuospatial Construction (figure copying, generative drawing)
- Or Screening with just episodic memory tasks

ABCD Screening for Dementia

- 2 subtasks (Story Recall + Word Learning)
  - Verbal episodic memory (encoding, storage, retrieval)
  - (Auditory comprehension & verbal expression)
- Provides cutoff scores for normal controls (age 65+), mild DAT, & moderate DAT
- High Sensitivity
  - 80-93% for mild DAT
  - 96-100% for moderate DAT
- Specificity not reported

ABCD Screening – Word Learning

- Controlled Encoding
  - (Count to 20)
- Free Recall
- Cued Recall
- Recognition

ABCD Screening – Word Learning

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<tr>
<th>Word</th>
<th>Controlled Encoding</th>
<th>Free Recall</th>
<th>Cued Recall</th>
<th>Recognition</th>
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Screening for Deficits

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Lemoncello (2012)
Rivermead Behavioural Memory Test
(RBMT-3; Wilson, Greenfield et al., 2008)

- Standardized, Norm-Referenced (2 alternate forms)
- Purposes:
  - Diagnosis? Yes
  - Severity? Yes
  - Describe? Yes, assess strengths & weaknesses
  - Functional? Says it’s “everyday” tasks
- Tasks:
  - First & Last Name
  - Belonging
  - Appointment
  - Story Retelling
  - Picture Recognition
  - Face Recognition
  - Route Learning & Message
  - Orientation
  - Novel Task Learning

RBMT-3: Examples

- Story Recall
- Route Learning & Novel Task
- Novel Task Learning

Verbal Learning Tests

- Standardized, Norm-Referenced
- Purposes:
  - Diagnosis? Yes
  - Severity? Yes
  - Describe? Yes, assess strengths & weaknesses
  - Functional? Yes (new episodic learning)
- Lots of Versions Available:
  - California Verbal Learning Test
  - Rey Auditory-Verbal Learning Test
  - Hopkins Verbal Learning Test
  - Denman Verbal Learning Test

Verbal Learning Tests

- Learning of a Word List (often containing categories)
- Immediate free recall on repeated initial learning trials
- Distractor list of related but new words
- Delayed free recall of original list
- Delayed cued recall of original list
- Recognition

- Useful to determine stage/aspect of LTM declarative learning strengths/weaknesses:
  - Encoding (difficulty with initial learning)
  - Storage (poor delayed recall & recognition)
  - Retrieval (better recognition/cued recall than free recall)
Memory Questionnaires

- Standardized questionnaires
- Not diagnostic, but very helpful to determine strengths/weaknesses and functional impact

- Comprehensive Assessment of Prospective Memory (CAPM; Shum & Fleming, 2008)
- Everyday Memory Questionnaire (EMQ; Sunderland et al., 1984)

- Who is completing the questionnaire?
  - Adequate comprehension of questions? (Review to validate)
  - Possess adequate knowledge?
  - Possess adequate awareness? (Consider two informants)

Questionnaire Examples

EMQ Questionnaire (rate by frequency of problem from not at all in past 3 mos. to more than once/day) – 28 questions
- I forget to take things with me or leave things behind and have to go back to get them.
- I fail to recognize, by sight, close relatives or friends that I meet frequently.
- I forget important details of what I did or what happened the day before.

CAPM Questionnaire – 3 sections
- A: Frequency (never to very often) & B: Problem Seriousness (not a problem to a very serious problem) – 39 questions
  - Forget to buy an item at the grocery store
  - Leave the iron on (allows for N/A option!)
  - Forget to pass on a message
- C: Ways of Remembering (Strong Disagree – Strongly Agree) – 15 questions
  - If something is important to me, I usually remember to do it.
  - I rely on other people to remind me when I have to remember to do things.

Some Functional Observations to Assess Memory (New Learning)

- Is the person oriented or confused?
- Is the person learning safety precautions & strategies from PT, OT, nursing?
- Can the person track changes to his/her medications?
- Can the person learn staff members’ names?

- Can the person recall details of previous appointments?
- Can the person recall recent “current events” from news?
- Can the person find his/her way out after your appointment?
- Can the person follow through to call you in an hour?
- Can the person quickly pick up a new game/skill?

Guidelines for Observations

- Many factors could contribute to observed difficulties
  - Exp. motivation, attention, opportunity, & time mgmt.

- Ask yourself:
  - How could memory be contributing to the behavior?
  - Which aspect(s) of memory seem to break down?
    - Declarative (episodic, semantic) or Non-Declarative?
    - Encoding? Storage? Retrieval?
  - Is the client already compensating for challenges?
  - Can I objectively operationalize the observed behavior and relate it to memory?
Think you’ll treat memory?

• Direct memory “drills” do not work!
• Focus on attention training, education, internal mnemonic strategies, or external supports
• To Assess for Treatment Planning Purposes:
  • RBMT or Verbal Learning Tests to determine breakdowns
• To Assess for Pre/Post Objective Changes:
  • Not likely to change “underlying memory”
• To Assess for Functional Impact:
  • Logs/Questionnaires/Interview to assess and compare baseline to post-therapy changes in everyday life

Assessment of Executive Functioning

Some Lower-Level Standardized Tests:
• Behavioural Assessment of Dysexecutive Syndrome (BADS)
• Controlled Oral Word Association Task (COWAT)
• Trails B

Some Higher-Level Standardized Tests:
• Executive Function Route Finding Task (EFRT)
• Functional Assessment of Verbal Reasoning & Executive Strategies (FAVRES)
• Stroop Test

Caveats to Standardized Testing of Executive Functions

• Wide range of “normal” executive abilities. Also linked with education, culture, SES…
• Unstructured tasks are more likely to reveal executive dysfunction
• Intelligence is a separate cognitive domain from executive functioning. May people can “Talk the talk” during a Q&A test, but fall apart in the real world
• Dissociation between saying & doing
• Hard to predict real-world functioning based on results of standardized (norm-referenced) tests used for the purpose of diagnosis

Behavioural Assessment of the Dysexecutive Syndrome (BADS; Levin, O’Donnell, & Grossman, 1979)

• Standardized, Norm-Referenced (1 form)
• Purposes:
  • Diagnosis? Yes
  • Severity? No (normal/borderline/impaired)
  • Descriptive? Yes, assess strengths & weaknesses; graph changes
  • Functional? PTA is good predictor of cognitive functioning
• Subtests:
  • Rule Shift Cards
  • Action Program
  • Key Search
  • Temporal Judgment
  • Zoo Map
  • Modified Six Elements
Controlled Oral Word Association Test
(COWAT; Benton & Hamsher, 1976)

- Standardized, Norm-Referenced (1 form)
- Purposes:
  - Diagnosis? Yes
  - Severity? Yes
  - Describe? No
  - Functional? No
- “Divergent Naming” Tasks:
  - FAS Task
  - Animal Naming task
- Norms available from Tombaugh, Kozak, & Rees (1999)

COWAT: Qualitative Data

- What to look for:
  - Number of items generated (generative thinking & verbal fluency)
  - Task persistence? (get into set, stay in set)
  - Able to alternate between letters? perseveration?
  - Functional memory (repetitions? Self-monitoring?)
  - Organization by categories? (strategy use)

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FAS Task

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Animal Naming Task

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Executive Function Route Finding Task (EFRT; Boyd & Sautter, 1985)

- Standardized, Criterion-Referenced (1 form)
- Purposes:
  - Diagnosis? No
  - Severity? No
  - Describe? Yes, assess strengths & weaknesses; observe strategies
  - Functional? YES

Route Finding task in the facility to locate a novel destination; allows for specific or non-specific cues

Scored across several domains (scale from 1-4):

- Task understanding (information processing; attention)
- Information seeking strategies (problem solving)
- Retaining directions (functional memory)
- Error detection (self-monitoring)
- Error correction (self-corrections)
- On-Task behavior (functional attention)

EFRT Scoring Rubric

Functional Assessment of Verbal Reasoning & Executive Strategies (FAVRES; MacDonald, 2005)

- Standardized, Norm-Referenced (1 form)
- Purposes:
  - Diagnosis? Yes
  - Severity? Yes
  - Describe? Yes, assess strengths & weaknesses & strategy application
  - Functional? Yes (but consider educational & cultural limitations)

Tasks:
  - Planning an Event
  - Scheduling
  - Making a Decision
  - Building a Case

Scoring is complex, based on time, accuracy, rationales for all decisions, and qualitative checklist for relative strengths/weaknesses on each task.

EF skills required: attention to details, suppress irrelevant info, generate alternative options, weigh choices, cognitive flexibility, predict consequences, take another person’s perspective...

FAVRES Examples

- Scheduling
- Making a Decision
**Stroop Color & Word Test**  
(Stroop; Golden & Freshwater, 1998)

- Standardized, Norm-Referenced (1 form)
- Purposes:
  - Diagnosis? Yes
  - Severity? Yes
  - Describe? Yes, assess strengths & weaknesses & strategy application
  - Functional? Yes (but consider educational & cultural limitations)
- Tasks:
  - Planning an Event
  - Scheduling
  - Making a Decision
  - Building a Case
- Scoring is complex, based on time, accuracy, rationales for all decisions, and qualitative checklist for relative strengths/weaknesses on each task

**Stroop Example**

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**Executive Functioning Questionnaires**

- Standardized questionnaires
- Not diagnostic, but can be helpful to determine strengths/weaknesses and functional impact
- Limitations of awareness with executive dysfunction
  - Compare Client & Care provider results (separate questionnaires)
    - Severe brain injury - care providers usually say the person is doing worse than the client’s own report (we assume this means “poor awareness”)
    - Mild brain injury - care providers often say the person is doing better than the client’s own report (we assume this means “over-reporting symptoms”)
  - Often internal, invisible struggle, so significant others may not be aware

**Executive Functioning Questionnaires**

- Dysexecutive Syndrome Questionnaire (DEX; Wilson et al., 1996)
- Pragmatic Protocol (Prutting & Kirchner, 1987)
  - Section B (Topic)
  - Section C (Turn-Taking)
  - Section D (Lexical discourse)
- Who is completing the questionnaire?
  - Adequate comprehension of questions? (Review to validate)
  - Possess adequate knowledge?
  - Possess adequate awareness? (Consider two informants)
Questionnaire Examples

DEX Questionnaire (rate by frequency of problem from never to very often) – 20 questions
• I act without thinking, doing the first thing that comes to mind.
• I have difficulty thinking ahead and planning for the future.
• I do or say embarrassing things when in the company of others.
• I will say one thing, but will do something different.
• I lose my temper at the slightest thing.

Pragmatic Protocol (rate as appropriate or inappropriate) – 30 questions
• Topic selection
• Topic maintenance
• Communication repair
• Pause time
• Discourse cohesion

Some Functional Observations to Assess Executive Functioning

• Time Management:
  • Do they have a planner? Can they follow their schedule?
  • Can they create their own schedule?
  • Can they follow through on tasks at a certain time? Alarms?
• Organization:
  • Observe how their room/home is organized (or not). Does it work for them?
  • How do they track medications? Bills? other?
• Judgment/Impulse control:
  • Do they say inappropriate comments?
  • Do they act impulsively (before you complete instructions)?
  • Anger management, impulsive shopping...
• Problem-Solving:
  • Persevereate on the same solution that isn’t working?
  • Cooking tasks can be good to evaluate flexible problem solving.
• Navigation:
  • Can they find their way to your office and back to their room?
  • What happens when there’s a detour or change in routine?

Guidelines for Observations

• Many factors could contribute to observed difficulties
  • Esp. motivation, attention, memory, opportunities...
• Ask yourself:
  • How could EF be contributing to the behavior?
  • Which aspect(s) of EF seem to break down?
  • Is it an underlying attention problem?
  • Is it an underlying memory problem?
  • Is the client already compensating for challenges? If so, are they effective and efficient strategies?
  • Can I objectively operationalize the observed behavior and relate it to executive functioning?
    • “disorganized”?
    • “reduced flexibility”?
    • “easily confused”?

Cognitive Pyramid

- Executive Functions
- Memory & Learning
- Attention / Concentration
- Processing & Perception
- Energy
Think you’ll treat executive functioning?

- Target base of cognitive pyramid first.
- A few direct EF “drill” (meta-cognitive, explicit) approaches
  - Otherwise a lot of education, counseling, external supports, environmental modifications, and care provider education...

- To Assess for Treatment Planning Purposes:
  - BADS, FAVRES, or questionnaires to determine breakdowns

- To Assess for Pre/Post Objective Changes:
  - BADS, Trail Making, FAVRES, COWAT, Stroop

- To Assess for Functional Impact:
  - Logs/Questionnaires/Interview to assess and compare baseline to post-therapy changes in everyday life

General/Holistic Measures

- Include tasks that assess more than one “specific” cognitive domain
- Present an “overall” picture of cognitive functioning
- These are some quick screeners for overall cognition:
  - Repeatable Battery for Assessment of Neuropsychological Status (RBANS)
  - Cognitive-Linguistic Quick Test (CLQT)
  - Scales of Cognitive Ability for TBI (SCATBI)
  - Some Disorder-Specific Scales:
    - TBI: Rancho Los Amigos (RLA) Scales of Cognitive Functioning
    - RHD: Mini-Inventory of Right Brain Injury (MIRBI-2)
    - Dementia: MMSE, MoCA, SLUMS

Repeatable Battery for the Assessment of Neuropsychological Status
(RBANS; Randolph, 1998)

- Standardized, Norm-Referenced (2-4 forms)
- Purposes:
  - Diagnosis? No (screen for dementia)
  - Severity? Yes
  - Describe? Yes, assess strengths & weaknesses
  - Functional? No

- Subtests:
  - Immediate Memory (list learning, story memory)
  - Visuospatial/Constructional (figure copy, line orientation)
  - Language (picture naming, semantic fluency)
  - Attention (digit span, symbol-digit coding)
  - Delayed Memory (list recall & recognition, story recall, figure recall)

RBANS: Line Orientation
Cognitive-Linguistic Quick Test (CLQT; Helm-Estabrooks, 2001)

- Standardized, Norm-Referenced (1 form; Spanish available)
- Purposes:
  - Diagnosis? Yes & differential diagnosis
  - Severity? Yes
  - Describe? Yes, assess strengths & weaknesses
  - Functional? No
- Scored in 5 domains (attention, memory, executive functioning, language, visuospatial)

Verbal Tasks
- Personal Facts
- Confrontation Naming
- Story Retelling
- Generative Naming

*Non-Verbal* Tasks
- Symbol Cancellation
- Clock Drawing
- Symbol Trails
- Design Memory
- Mazes
- Design Generation

CLQT: Symbol Trails
**CLQT: Design Generation**

![Design Generation Diagram](image)

**CLQT: Clock Drawing**

- Draw a clock.
- Put in all the numbers.
- Set the hands to “ten minutes after eleven.”
- Be careful.
- Be neat.

![Clock Drawing Diagram](image)

**CLQT – Clock Drawing Scoring**

![Clock Drawing Scoring Table](image)

**CLQT – Clock Drawing Scoring**

![Clock Drawing Scoring Table](image)
CLQT - Clock Drawing Examples

Clock Drawing: Detecting Changes
Shulman (2000)

Clock Drawing: Practice

Scales of Cognitive Ability for TBI
(SCATBI; Adamovich & Henderson, 1992)

- Standardized, Norm-Referenced (1 form)
- Purposes:
  - Diagnosis? Yes
  - Severity? Yes
  - Describe? Yes, assess strengths & weaknesses
  - Functional? No
- Subtests:
  - Perception & Discrimination
  - Orientation
  - Organization
  - Recall
  - Reasoning
SCATBI: Perception & Discrimination

SCATBI: Recall

SCATBI: Reasoning

Participation/QOL Measures

Community Integration Questionnaire (CIQ; Willer et al., 1993)
- Varied response choices
- 15 items

Mayo-Portland Adaptability Inventory (MPAI-4; Lezak & Malec, 2003)
- 4-point scale (varies)
- 35 items
- 3 sub-scales (Abilities, Adjustment, Participation)
- Can also do brief 8-item participation scale on its own
- Provides standardized T-scores to compare to other people with ABI

Satisfaction With Life Scale (SWLS; Diener et al., 1985)
- 7-point agreement scale
- 5 items

www.tbims.org/combi
Home-Grown Assessments

- Include some low-level and high-level tasks
- Select tasks/subtests that give you what you want
  - Need norms for diagnostic purposes?
  - Need functional activities for impact purposes?
  - Need varied tasks to describe strengths/weaknesses?
  - Want to do dynamic assessment to probe stimulability?
- Should be quick and easy to administer in your setting, but also be valid and used reliably.
- Do you need assessments with alternate forms for re-testing? (esp. important for memory tests)

Normed Subtest Recommendations

- Attention
  - Digit Span (RBANS*)
  - Symbol-Digit Coding (SDMT or RBANS*)
  - Trail Making Test
  - TEA subtests can be administered separately
  - PRASAT each of 4 speeds can be administered separately
- Memory
  - ABCD Screening (Word Learning + Story Recall)
  - RBMT-3 subtests can be administered separately**
  - Verbal Learning Task (list+story+figure in RBANS; CVLT short form)
- Executive Functioning
  - COWAT
  - Clock Drawing (stands alone in CLQT)
  - EFRT
  - Stroop
  - FAVRES tasks can be administered separately

*Have to administer both tasks to get a standardized “index” score.
**Timing & filled-interval are important for delayed recall tasks.

Two Caveats about Using Subtests

- Tests are more “powerful” (higher validity, sensitivity, and specificity) when administered as a whole test.
- Think about how you will ensure standardized procedures for administration & scoring if you are not using the whole test manual & form with instructions…

Good Testing Resources

- Center for Outcome Measurement in Brain Injury (COMBI) for cognitive scales
  - www.combi.org
- Burns Institute of Mental Measurements for listing of Neuropsychological or Speech/Hearing tests (reviews cost $15 per test)
  - http://burns.unl.edu/burns/jsp
- Books:
  - Lezak et al. (2012). Neuropsychological Assessment. $107
  - Strauss et al. (2006). Compendium of Neuropsychological Tests: Administration, Norms, & Commentary. $100
  - Mitrishina et al. (2005). Handbook of Normative Data for Neuropsychological Assessment. $91
Cognitive Test Publishers

- Pearson Assessments
  - http://www.pearsonassessments.com

- Western Psychological Services
  - http://portal.wpspublish.com

- Pro-Ed
  - http://www.proedinc.com

- PAR Publishers
  - http://www4.parinc.com

Conclusions & Wrap-Up

- Purpose of your assessment dictates methods/tools
  - Diagnosis? Norm-Referenced
  - Severity? Norm-Referenced
  - Describe? Any with a variety of tasks
  - Function? Best with informal observation
  - Impact? Questionnaires, Interview

- We reviewed lots of assessments to choose from...
  - Do you need norm-referenced measures?
  - What is quick, easy, and inexpensive?
  - How will you ensure standardized procedures?

Where do we go from here?

- A standardized battery is nice to develop...
  - You get familiar with it
  - Same tests with variety of patients to see variety
  - Hone your observation skills with practice

- Work together as a study group to develop your own home-grown battery of subtests & procedures
  - Call on me if you want consultation: rrl@pdx.edu

- Develop local norms
  - Great student project!!!

How did we do?

Part I: Overview of Cognition

1. Describe neurological locations, connections, and systems important for aspects of attention, memory, and executive functioning.

2. Describe neuropsychological models of attention, memory, and executive functioning.

Part II: Assessment of Cognition

3. Identify three standardized assessments each to evaluate attention, memory, and executive functioning, and acknowledge strengths & limitations of each.

4. Describe functional measures of activity completion & social participation/QOL for adults with ABI.

5. Develop a quick, functional battery to assess cognitive-communication performance in adults with ABI in your own work setting.
TRAIL MAKING TEST

SAMPLE A:
Look at this page. There are 8 numbers displayed in random order. Your task is to connect the numbers, in order, from 1 to 8. Begin here [point to “1”], and draw a continuous line from 1 to 2 to 3 and so on until you get to the end [point to “End”].

TRAIL A:
Okay, this time you will see more numbers on the page, from 1 to 25. Your task is to connect the numbers, in order, from 1 to 25. Begin here [point to “1”], and draw a continuous line from 1 to 2 to 3 and so on until you get to the end [point to “End”].

You are to work as quickly and as accurately as possible. If you get off track, I will help you. Are you ready to begin?

[Start timer, record total # of seconds to complete. Follow along & provide immediate correction if out of sequence.]

Total Time to Complete Trail A = ______________ sec

SAMPLE B:
Look at this page. This time, notice that there are both numbers and letters here. Your task is to connect them using a continuous line, but this time you will switch between numbers and letters. Begin here [point to “1”], and draw a continuous line from 1 to A, A to 2, 2 to B, to 3, to C and so on until you get to the end [point to “End”].

TRAIL B:
Okay, this time you will see more numbers and letters on the page. Your task is to connect them using a continuous line, but remembering to switch between numbers and letters. Begin here [point to “1”], and draw a continuous line from 1 to A, A to 2, 2 to B, to 3, to C and so on until you get to the end [point to “End”].

You are to work as quickly and as accurately as possible. If you get off track, I will help you. Are you ready to begin?

[Start timer, record total # of seconds to complete. Follow along & provide immediate correction if out of sequence.]

Total Time to Complete Trail B = ______________ sec
TRAIL MAKING
PART A

SAMPLE

Begin

End

1

2

3

4

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6

7

8
TRAIL MAKING
PARTB

Begin
1

End
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**Zoo Map Test** Version 1

**Rules**

Imagine that you are going to visit a zoo.

Your task is to plan a route in order to visit the following (not necessarily in this order):

- Elephant house
- Lion’s cage
- Llama enclosure
- the Café
- the Bears
- Bird sanctuary.

When planning your route the following rules must be obeyed:

- start at the **entrance** and finish with a **picnic**
- you may use the shaded paths as many times as you like but the unshaded ones only once
- you may take only one **Camel ride**.
Zoo Map Test Version 2

Rules

Imagine that you are going to visit a zoo.
Your task is to visit the following animals in the order indicated:

1. from the **Entrance** visit the **Llama enclosure**
2. from the **Llama enclosure** visit the **Elephant house**
3. after visiting the **Elephants** go to the **Café** for refreshments
4. from the **Café** go to see the **Bears**
5. visit the **Lions** after the **Bears**
6. from the **Lions** make your way to the **Bird sanctuary**
7. finally, finish your visit with a **picnic**.

When planning your route the following rules must be obeyed:

- start at the **entrance** and finish with a **picnic**
- you may use the shaded paths as many times as you like but the unshaded ones only once
- you may take only one **Camel ride**.
INSTRUCTIONS:
Suppose that you have a busy day today. Look below at your Things To Do List and all of your messages. Write out your day’s schedule on sheet 2-2. List tasks in the best possible order, according to time. The time it takes to complete each task is also listed below. (Estimated time frame). Keep in mind that you must try to do everything today by yourself. You may not give your work to an assistant or co-worker. You may write on any of the sheets given to you but put your final answer on the DAILY SCHEDULE SHEET.

THINGS TO DO LIST:
- Finish the Customer Service Project and have it delivered to TALLTOWN by 3:00 p.m.
  (1 hour drive away). Note: It is too large to send by FAX or Email.
- Order flowers for Chris’s birthday today.
- Don’t forget to find 1989 statistics for the Customer Service Project.
- Go to Security to arrange free parking for a visitor who is coming to the staff meeting.
- Complete Department Safety Questionnaire
- Staff meeting at 4:30 p.m.
- Call Don to ask what kind of flowers Chris is allergic to.
- Start new Moving and Sorting Project.

ESTIMATED TIME FRAMES:
Meetings = 60 minutes
Customer Service Project Completion (includes finding 1989 Stats) = 2 hours
Phone calls = 5 minutes
Computer Repair = 1 week
Flowers = Need 3 hours notice
Courier Service = 4 hours advance notice required

MESSAGES:
- Your friend John called: Would you like to join him for lunch?
- Pat Tomkins, your main customer: Wants to talk to you over lunch (Has a complaint about your services)
- Receptionist: The computer has broken down so you will have to borrow Debbie’s computer to finish the Customer Service Project. Call her before she leaves at 10:00 a.m.
- Leslie the accountant called: Can you meet at 10:00 a.m. to discuss sales receipts?
<table>
<thead>
<tr>
<th>Time</th>
<th>Tasks</th>
<th>Reason you chose this timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 am</td>
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<td>9:30 am</td>
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</table>
**INSTRUCTIONS:**
Suppose that you are watching a show on television. One of the main characters, Tim, has just won some money!!! He wants to buy gifts for his parents. You are listening to him talk to them. You are trying to figure out what kind of gift Tim will pick for them. Read their conversation on page 3-Stim (Making a Decision, Television Conversation).

From their statements, try to decide which gift these people would like. Choose one of the gifts listed on the GIFT IDEA LIST. You can choose ONLY ONE GIFT to be shared by both the mother and the father. You will see that some of the gifts are more fitting than others. Try to choose the gift that is most likely to be appreciated by these people.

Pick one gift from the Gift Idea List below. Write “YES” beside it and your reason for choosing it. Beside all of the others, write “NO”, and your reason for not choosing it. Pick only one of these gifts for the couple.

<table>
<thead>
<tr>
<th>Gift Idea List</th>
<th>Do you think this gift is right? Why/why not?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Season’s tickets to the Music Hall</td>
<td></td>
</tr>
<tr>
<td>Stocks</td>
<td></td>
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<tr>
<td>Gardening Equipment</td>
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<tr>
<td>Week at a Northern Lodge</td>
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<tr>
<td>Donation to a Political Party</td>
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<tr>
<td>Trip to a Sunny Vacation Spot</td>
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<tr>
<td>Gourmet Restaurant Guide</td>
<td></td>
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<tr>
<td>Snorkeling Equipment</td>
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</table>