COGNITIVE IMPAIRMENT IN SUBSTANCE USE:

RECOGNITION, ASSESSMENT, & REHABILITATION

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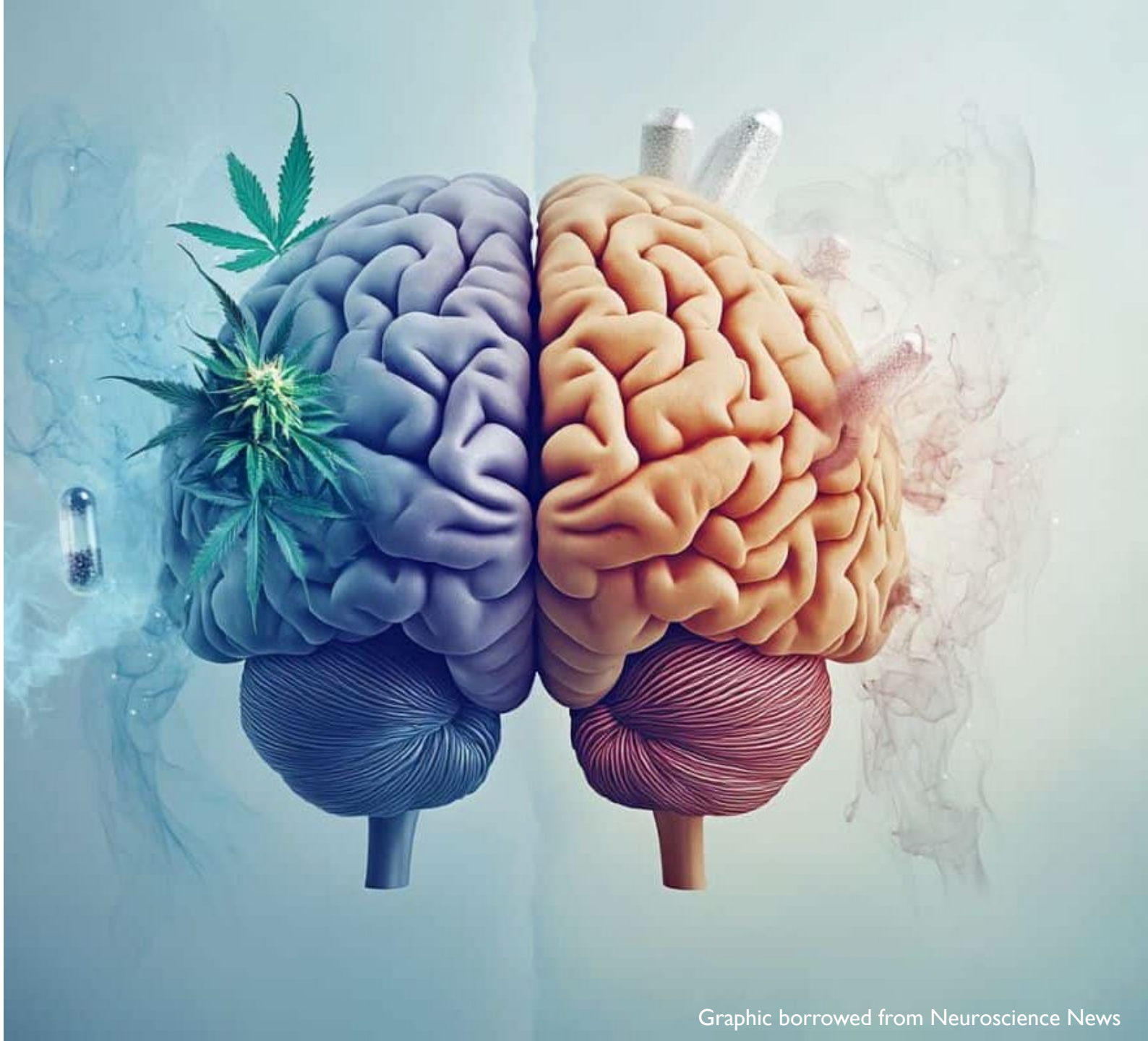

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DISCLOSURES

I have no relevant financial relationships, commercial interests, or other conflicts of interest to disclose related to the content of this presentation.

Educational content is intended for clinical learning and does not replace individualized medical, neuropsychological, or substance-use assessment.

AGENDA

- Cognition and Neurocognitive Disorders
- Commonly used substances
  - Cognitive/neuropsychological profiles
- Assessment
- Rehabilitation
- Accommodations

OBJECTIVES

1

Differentiate mild vs. major neurocognitive disorder

2

Recognize common cognitive domains affected by substance use across intoxication, withdrawal, early recovery, and prolonged use

3

Integrate screening, neuropsychological referral, and cognitive rehabilitation into SUD treatment planning

4

Apply treatment accommodations to improve engagement, retention, and follow-through

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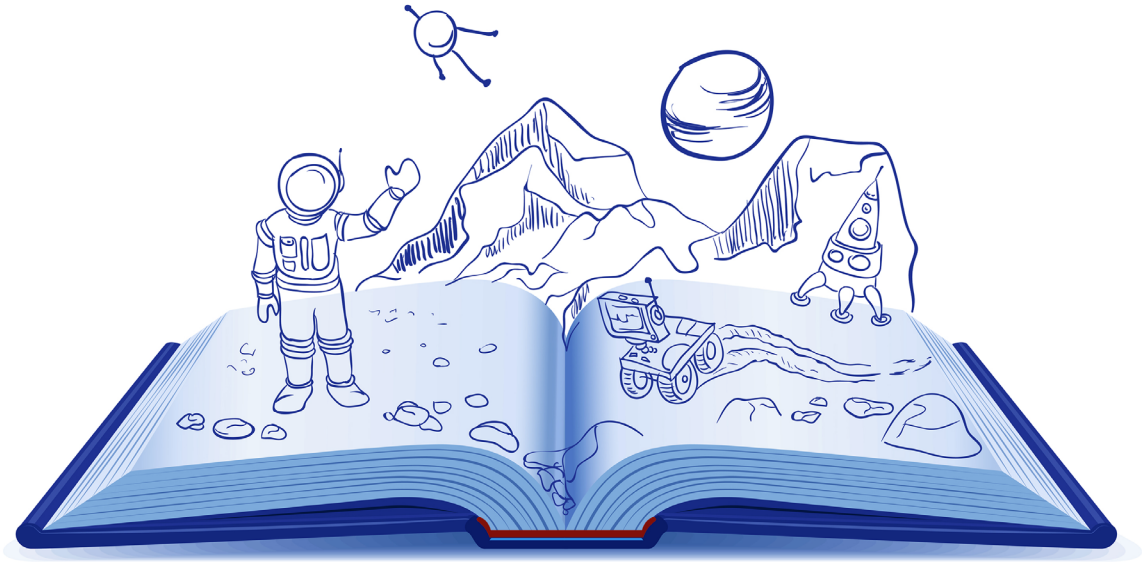
COGNITION

THE RELATIONSHIP BETWEEN COGNITION AND SUDS, COGNITIVE DOMAINS, AND DIAGNOSIS



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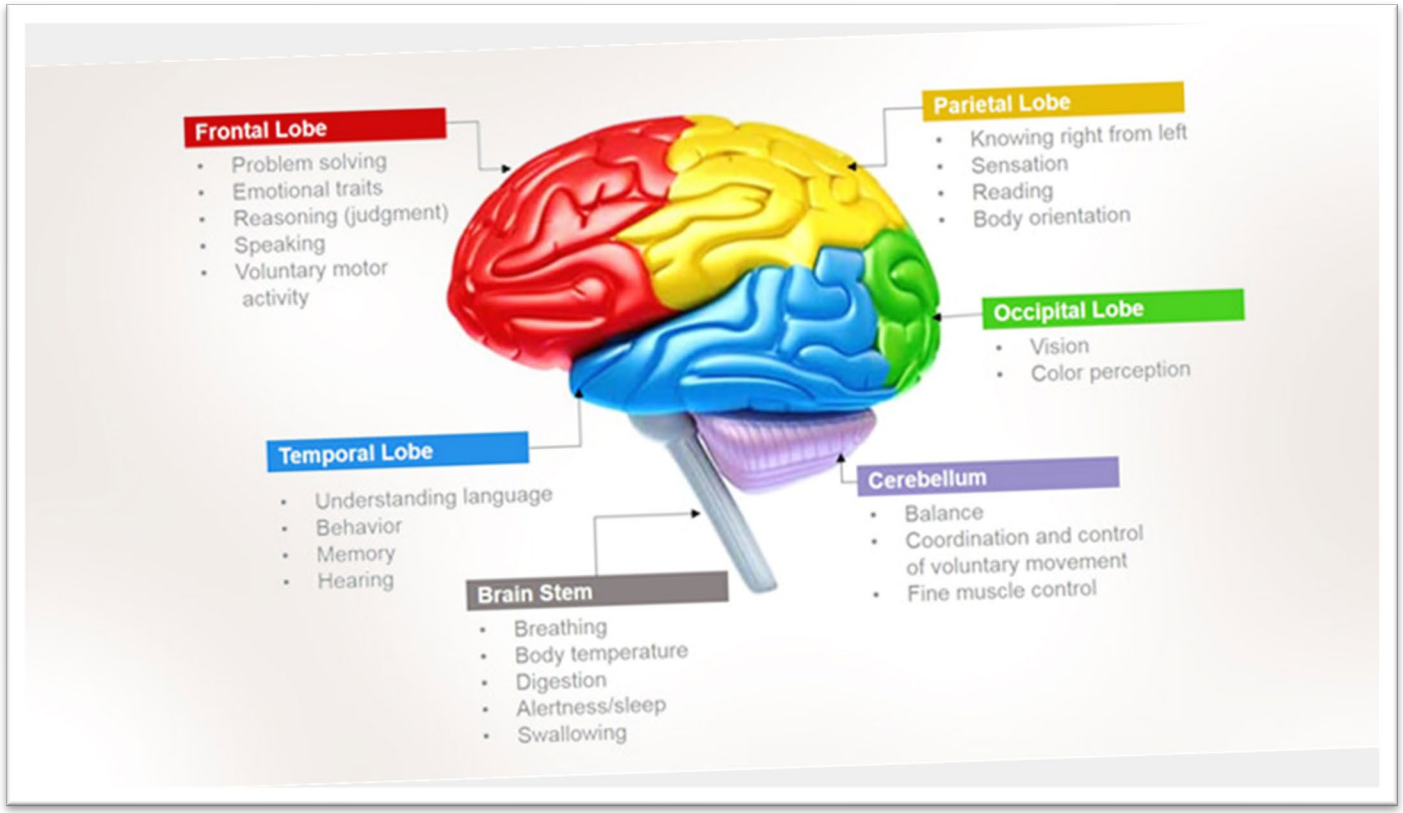
WHAT IS COGNITION?

DEFINED AS THE MENTAL ACTION OR PROCESS OF ACQUIRING KNOWLEDGE AND UNDERSTANDING THROUGH THOUGHT, EXPERIENCE, AND THE SENSES

COGNITIVE DOMAINS



- Processing Speed
- Attention
- Working Memory
- Memory
- Language
- Executive Functioning
- Visuospatial
- Motor

WHY CONSIDER COGNITION IN SUDS TREATMENT?

Multiple Pathways

- Direct acute drug effects
- Withdrawal/sleep disruption
- Repeated heavy exposure
- Nutritional deficiency
- TBI and other injuries
- Polysubstance effects

Treatment Behaviors

- Missed appointments
- Difficulty recalling material
- Poor follow-through
- Impulsivity
- Inconsistent reporting
- Fatigue

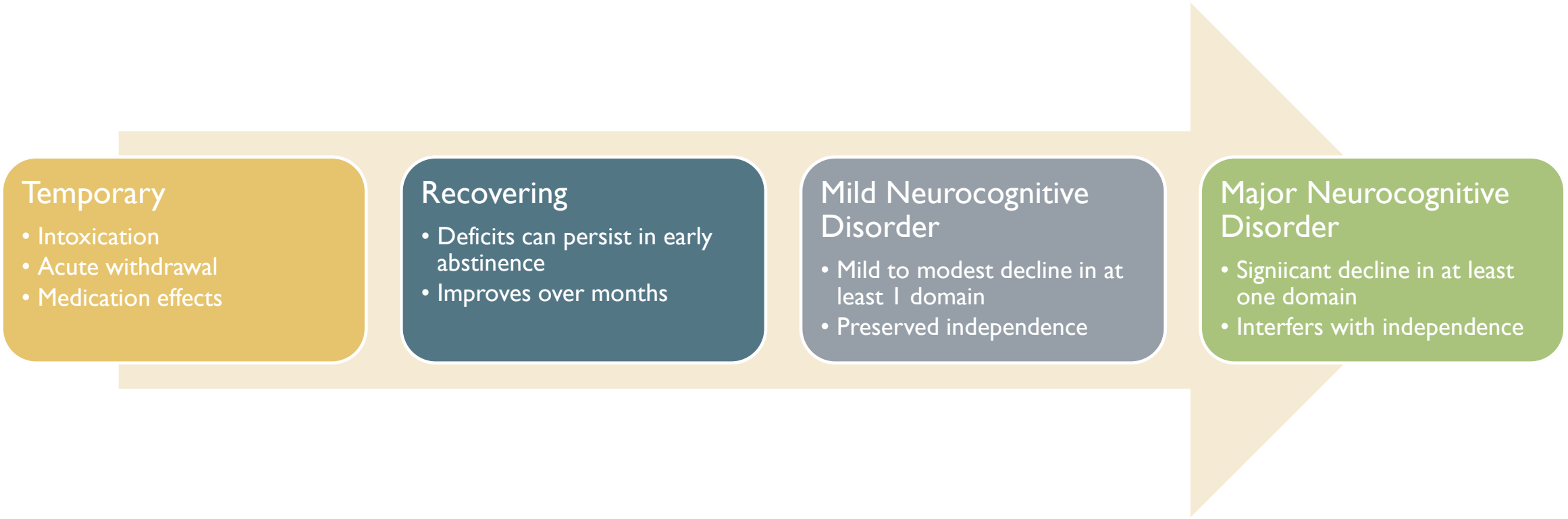
Clinical Reframe

A cognitive problem can look like noncompliance, low motivation, resistance, or poor insight.

Screening helps determine whether the treatment needs to change.

Key question: “Can this person learn, remember, organize, and use what treatment is asking them to do?”

THE SPECTRUM OF COGNITIVE IMPAIRMENT



MILD V MAJOR NEUROCOGNITIVE DISORDER

Feature	Mild NCD	Major NCD
Cognitive changes	Modest decline in ≥1 domain (1.5 SD)	Significant decline in ≥1 domain (2 SD)
Everyday independence	Yes	No
What it can look like	Needs lists, reminders, extra time, routines, and other support; tasks still completed independently	Needs assistance with complex IADLs such as medications, finances, transportation, scheduling, and monitoring safety
Clinical considerations	Compensate + monitor; clarify etiology	Safety, support, maximize independence/activity, decision-making, and rehabilitate
Important exclusions	Not exclusively during delirium; not better explained by another mental disorder	Same exclusions; determine etiology and contributing conditions

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COMMON SUBSTANCES AND CORRESPONDING NEUROPSYCHOLOGICAL EFFECTS

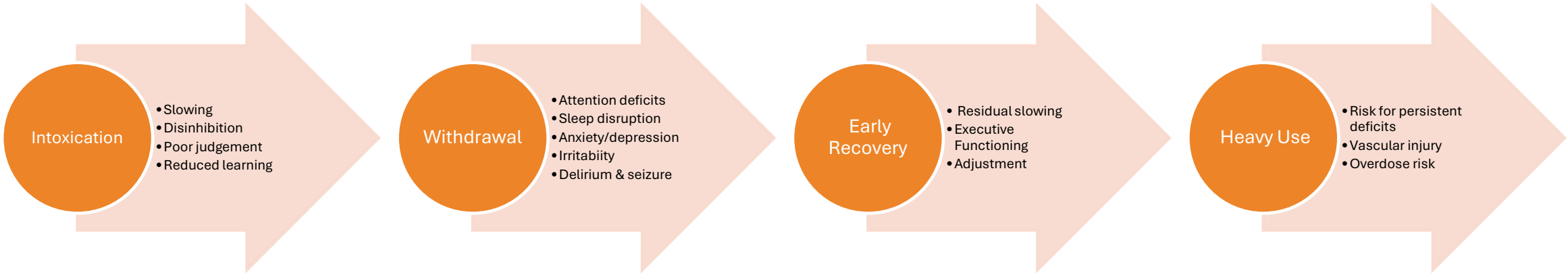
SUBSTANCE, PHASE OF USE, COGNITIVE IMPACTS, CLINICAL CONSIDERATIONS

COMMONLY USED SUBSTANCES

- Alcohol
- Cannabis/Marijuana
- Cocaine
- Methamphetamines
- Opioids
- Other sedatives

COGNITION AND TIME

The same substance can produce a different cognitive picture at different points.



ALCOHOL

Phase	Common cognitive/behavioral effects	Risks
Intoxication	Slowed reaction time, impaired working memory, inattention, poor judgment, disinhibition, impaired learning, and incoordination	Falls, MVC, TBI, other risky decisions
Withdrawal	Poor concentration, sleep disruption, anxiety/agitation; heavy use-withdrawal can cause seizures or delirium	Delirium = acute medical emergency
Prolonged heavy use	Executive dysfunction, learning/memory problems, visuospatial deficits, *Cerebrovascular disease, hepatic encephalopathy, GI impacts	Functional decline; treatment learning can be impaired

RED FLAGS

- Memory
- Executive Functions
- Wernicke's Encephalopathy
- Korsakoff

CANNABIS

Phase	Likely cognitive pattern	Treatment implication
Intoxication	Attention, learning, working memory, reaction time, motor coordination, planning and disinhibition	Avoid high-demand learning or safety-sensitive decisions while intoxicated
Withdrawal/early abstinence	Sleep disturbance, irritability, anxiety and reduced concentration	Normalize state effects; use shorter sessions and repetition
Frequent/prolonged use	Studies most consistently implicate attention, learning/memory, and executive function; severity and persistence vary. Concern for psychosis in male adolescents	Screen function rather than assuming impairment from history
After abstinence	Some deficits improve; evidence for long-lasting deficits is heterogeneous, with greater concern in early-onset/high-frequency use	Reassess as/if needed

COCAINE

Phase		
Intoxication	Increased arousal and vigilance, disinhibition, impulsivity, risk-taking, and poor decision-making; attention may feel enhanced	Keep communication brief, concrete, and calm. Consider impaired judgment and behavioral control.
Withdrawal	Slowed processing, inattention, mental fatigue, decreased initiation, paranoia, executive dysfunction, sleep disruption and mood symptoms can also impact cognition	Reduce cognitive burden. Use shorter sessions, breaks, repetition, written information, and external reminders. Avoid interpreting slowed engagement as lack of motivation.
Frequent/chronic use	Most consistently involves attention, processing speed, working memory, learning/memory; particularly visual, inhibition, cognitive flexibility, and decision-making *increased risk of seizures, CVA, MI	Increase structure and repetition. Break goals into smaller steps, use written plans/checklists, rehearse coping strategies, and use teach-back. Screen for cognitive impairment when difficulties persist.
After abstinence	Cognition can improve with sustained abstinence, although recovery varies. Executive functioning, attention, memory, and processing efficiency may remain reduced in some individuals, particularly after heavy use or neurologic complications.	Reassess over time. Continue compensatory strategies during early recovery. Persistent or functionally significant problems should prompt consideration of neuropsychological evaluation and cognitive rehabilitation.

METHAMPHETAMINE

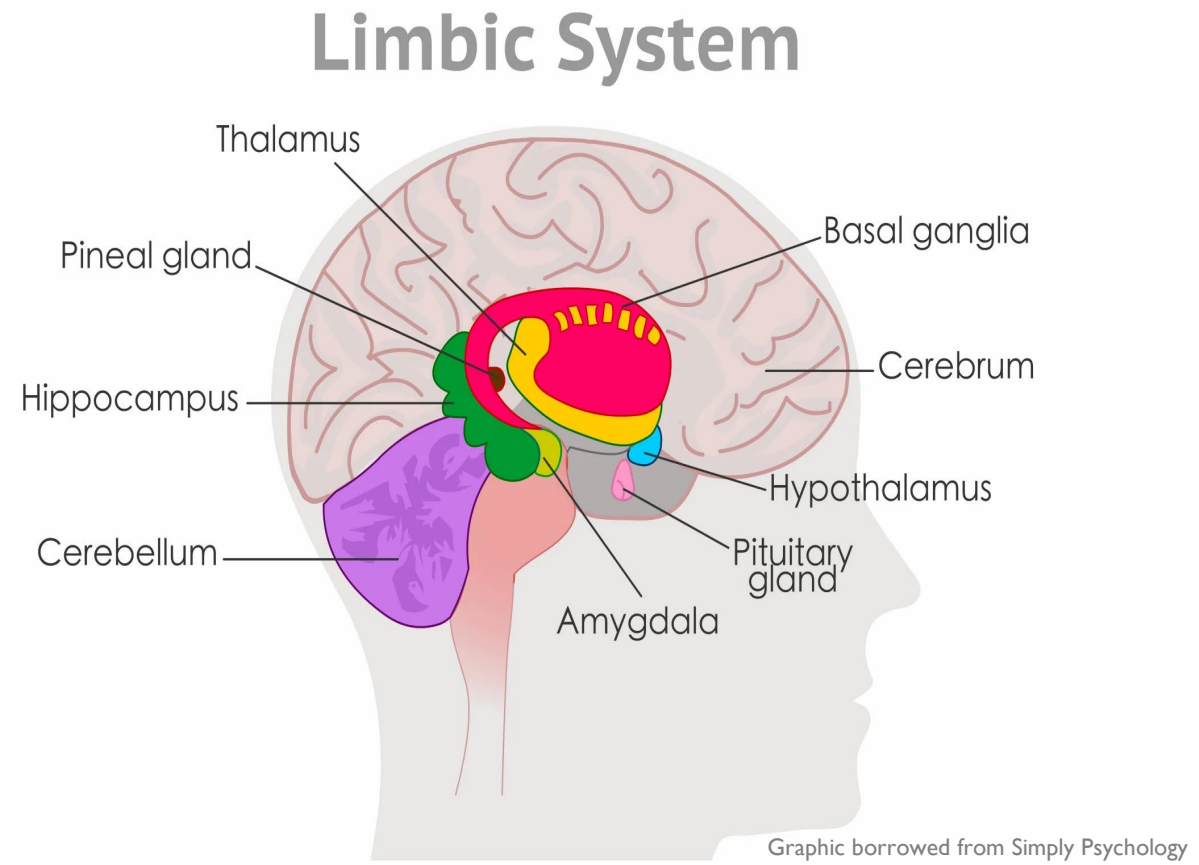
Stage	Likely Cognitive Pattern	Treatment Implications
Intoxication	Increased arousal and wakefulness, impulsivity, disinhibition, cognitive rigidity, risk-taking, and impaired decision-making. High doses may cause agitation, paranoia, or disorganized thinking.	Use brief, concrete, calm communication. Reduce environmental stimulation if agitation or overstimulation is present.
Withdrawal/“crash”	Mental slowing, poor concentration, fatigue, reduced initiation/motivation, and executive inefficiency. Sleep and mood disturbance also impact cognition.	Use short sessions, breaks, repetition, written information, and reminders. Do not assume reduced initiation or engagement reflects poor motivation.
Frequent/chronic use	Difficulties may occur in processing speed, attention, working memory, learning/memory (visual and verbal), disinhibition, cognitive flexibility, planning, increased paranoia, impaired social cognition, limited reward learning, and poor decision-making.	Increase structure, repetition, cueing, and behavioral rehearsal. Break multistep goals into smaller steps. Use calendars, checklists, and written recovery plan
After abstinence	Cognition improves with sustained abstinence, although recovery varies. Attention, memory, processing speed, and executive weaknesses may persist in some individuals	Continue accommodations during early recovery and reassess over time. Persistent functional impairment may warrant neuropsychological evaluation and cognitive rehabilitation.

OPIOIDS

Stage	Likely Cognitive Pattern	Treatment Implications
Intoxication	Sedation, slowed processing speed, reduced vigilance, impaired working memory, decreased psychomotor speed, and impaired judgment.	Keep information brief and concrete. Avoid complex teaching or important decisions when significantly intoxicated or sedated. Safety and medical stabilization take priority.
Withdrawal	Poor concentration, distractibility, reduced cognitive efficiency, sleep disruption, GI problems, depression, and difficulty learning or retaining information. Pain, anxiety, and physical distress may further reduce attention.	Reduce cognitive demands. Use repetition, written information, reminders, shorter sessions, and breaks. Revisit important education after acute withdrawal improves.
Frequent/chronic use	Possible difficulties with attention, processing speed, working memory, learning/memory, and executive functioning. Presentation may be complicated by polysubstance use, medications, medical conditions, and previous overdose.	Screen for cognitive concerns and specifically ask about overdose history. Use structured treatment, memory supports, repetition, teach-back, and concrete behavioral goals.
After abstinence	Some cognitive difficulties may improve with recovery. Persistent impairment raises concern for overdose-related hypoxia/anoxia, TBI, polysubstance exposure, psychiatric symptoms, or medical illness.	Reassess cognition rather than assuming impairment is permanent. Persistent functional impairment may warrant neuropsychological/neurologic evaluation and cognitive rehabilitation.

HYPOXIA & ANOXIA

- Memory
- Executive Function
- Processing Speed
- Motor
- Behavior



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SEDATIVES/BENZODIAZEPINES

Acute

- Sedation, slowed processing speed, impaired attention, psychomotor slowing, and anterograde memory problems.

Withdrawal

- Anxiety, insomnia, autonomic symptoms, perceptual changes, poor concentration; severe withdrawal can cause seizures or delirium. Abrupt discontinuation after regular use can be dangerous.

Clinical Implications

- Do not interpret fluctuating cognition during sedative withdrawal as a stable neurocognitive baseline. Coordinate medically supervised tapering when indicated.
- Long-term impacts to memory and motor functioning

POLYSUBSTANCE USE

- Real-world cognitive impairment is often additive, interactive, and medically complicated
- Additive burden
- Competing explanations
- The cognitive question?

SUDS AND ABI: BIDIRECTIONAL RISKS

SUDS CAUSES BI

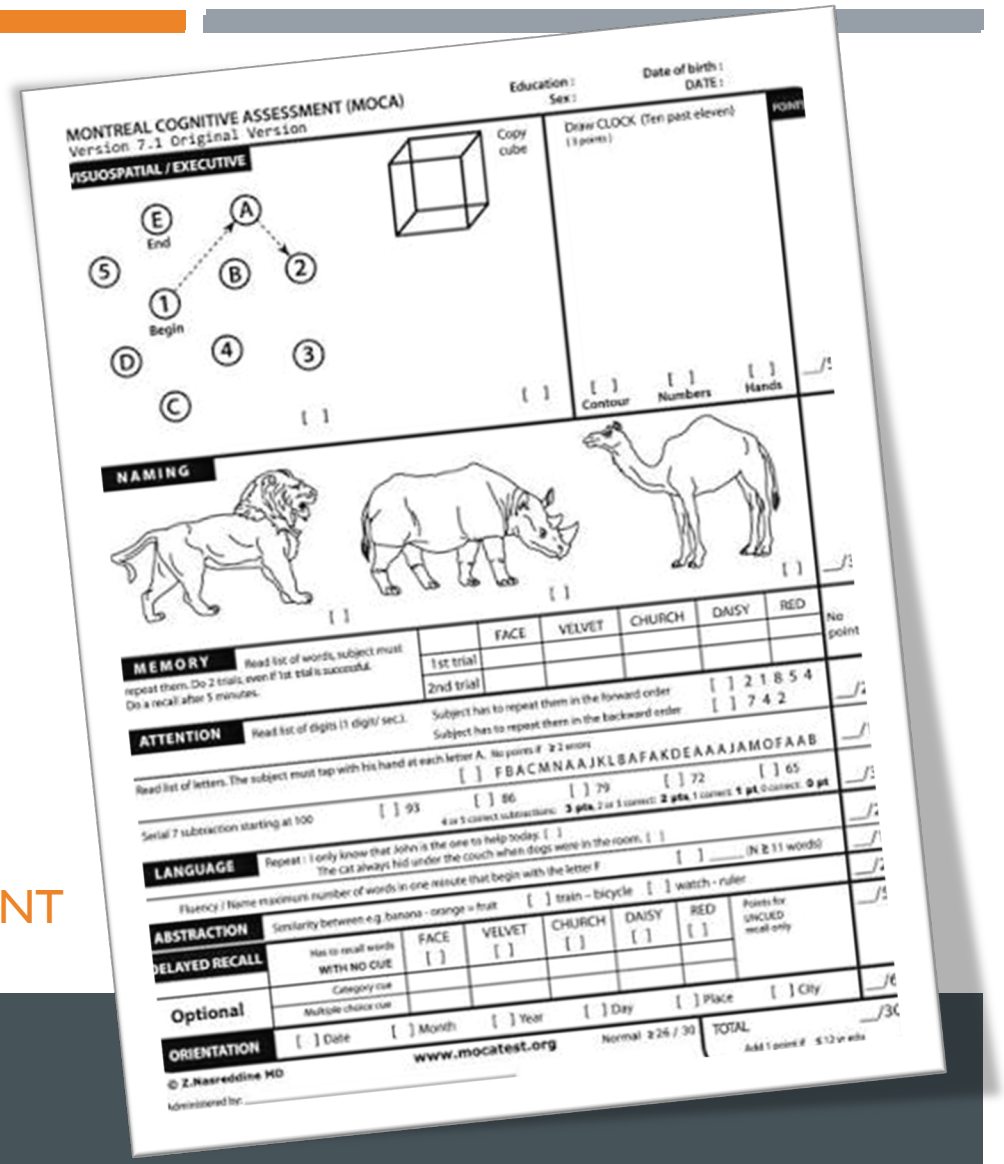
- Intoxication increases risk for falls, MVA, assault, and TBI
- Stimulants can contribute to ischemic/hemorrhagic stroke
- Opioid overdose can cause hypoxic brain injury
- Alcohol-related malnutrition can cause Wernicke–Korsakoff syndrome
- Seizures, infections, and medical instability can add neurologic burden

BI CAUSES VULNERABILITIES

- Executive dysfunction can increase impulsive/risky behavior
- Memory impairment reduces retention of relapse-prevention plans
- Reduced insight can affect risk appraisal
- Cognitive fatigue can reduce group tolerance

SCREENING

EASY TO INTEGRATE STRATEGIES FOR SCREENING & ASSESSMENT



FIVE INTAKE QUESTIONS

- 1. Have you noticed changes in your memory?
- 2. Is it harder to focus?
- 3. Do you feel slower when thinking or responding?
- 4. Is it harder to organize appointments, medications, money, or daily tasks?
- 5. Has anyone close to you noticed changes in your thinking, judgment, or ability to manage things?

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The Alcohol and Drug Cognitive Enhancement (ACE) Screening Tool: A simple and brief questionnaire to screen for cognitive impairment in substance use disorder treatment services

Jamie Berry, E. Arthur Shores, Jo Lunn, Antoinette Sedwell, Talia Nardo, Ashleigh Wesseling & Jennifer Batchelor

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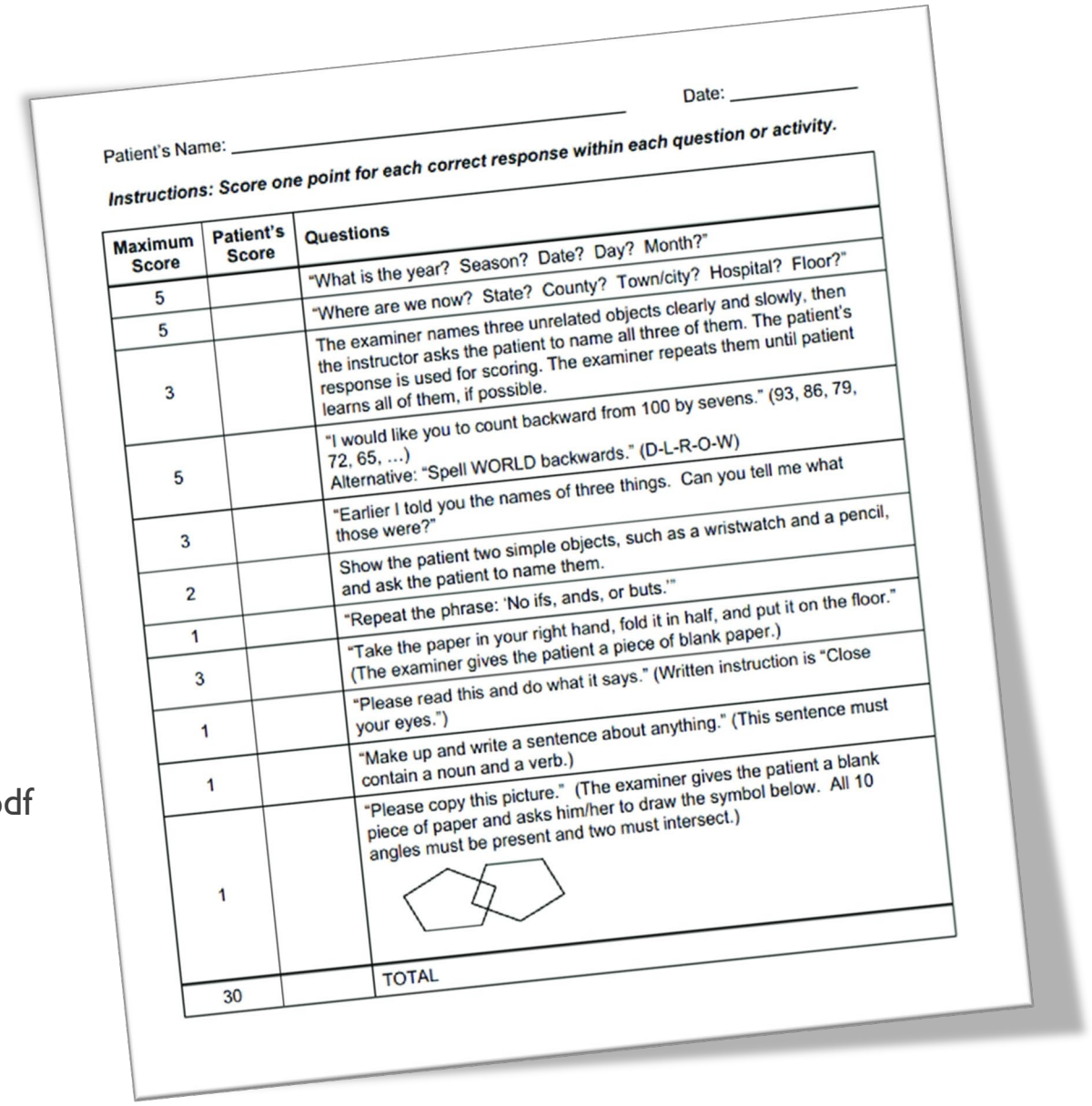
EXPAND YOUR CLINICAL INTERVIEW

- Recent intoxication/withdrawal?
- Overdose or naloxone use? How many/when?
- Loss of consciousness /TBI/falls?
- Family Neurologic History?
- Stroke, seizure, infection, ICU stay?
- Heavy alcohol use>
- Nutrition concerns/food insecurity?
- Neurodevelopmental diagnoses?
- Level of Education?
- Independence in daily tasks?
- Collateral available?

BRIEF COGNITIVE SCREENING

- When to screen?
- Interpretation
- MoCA
  - https://mocacognition.com/
- MMSE
  - https://cgatoolkit.ca/Uploads/ContentDocuments/MMSE.pdf



Patient's Name: _____ Date: _____

***Instructions:** Score one point for each correct response within each question or activity.*

Maximum Score	Patient's Score	Questions
5		"What is the year? Season? Date? Day? Month?"
5		"Where are we now? State? County? Town/city? Hospital? Floor?"
3		The examiner names three unrelated objects clearly and slowly, then the instructor asks the patient to name all three of them. The patient's response is used for scoring. The examiner repeats them until patient learns all of them, if possible.
5		"I would like you to count backward from 100 by sevens." (93, 86, 79, 72, 65, ...) Alternative: "Spell WORLD backwards." (D-L-R-O-W)
3		"Earlier I told you the names of three things. Can you tell me what those were?"
2		Show the patient two simple objects, such as a wristwatch and a pencil, and ask the patient to name them.
1		"Repeat the phrase: 'No ifs, ands, or buts.'"
3		"Take the paper in your right hand, fold it in half, and put it on the floor." (The examiner gives the patient a piece of blank paper.)
1		"Please read this and do what it says." (Written instruction is "Close your eyes.")
1		"Make up and write a sentence about anything." (This sentence must contain a noun and a verb.)
1		"Please copy this picture." (The examiner gives the patient a blank piece of paper and asks him/her to draw the symbol below. All 10 angles must be present and two must intersect.)
30		TOTAL

WHEN TO REFER FOR NEUROPSYCHOLOGICAL EVALUATION

- Persistent cognitive symptoms after reasonable stabilization/abstinence
- History of overdose with suspected hypoxia, TBI, stroke, seizure, or other neurologic event
- Discrepancy between apparent ability and real-world follow-through
- Repeated treatment failure despite motivation and adequate access
- Questions about mild vs major NCD, etiology, prognosis, or decision-making capacity
- Return-to-work, school, driving, or independent-living questions
- Need for individualized cognitive rehabilitation recommendations

COGNITIVE REHABILITATION AND ACCOMODATIONS

TREATMENT CONSIDERATIONS

WHAT IS COGNITIVE REHABILITATION

- An intervention
- Goal: Improve cognitive abilities after brain injury, stroke, neurological insults
- Focus: Functional independence
- Targets: Attention, memory, executive functions, language, visuospatial skills
- Easy-to-integrate into existing treatment models
- Refer
- Start with manualized treatment and consult

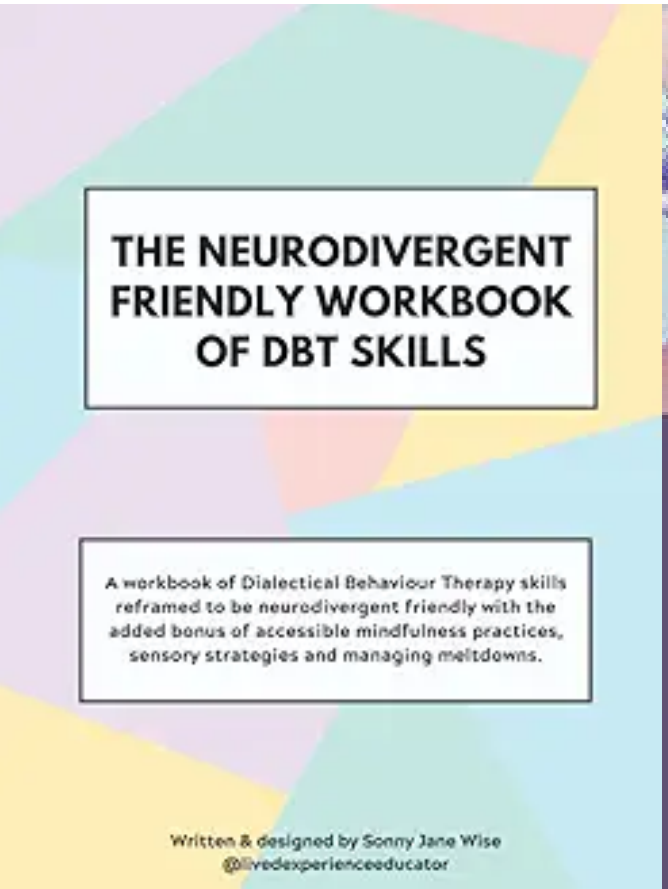
TYPES OF COG REHAB

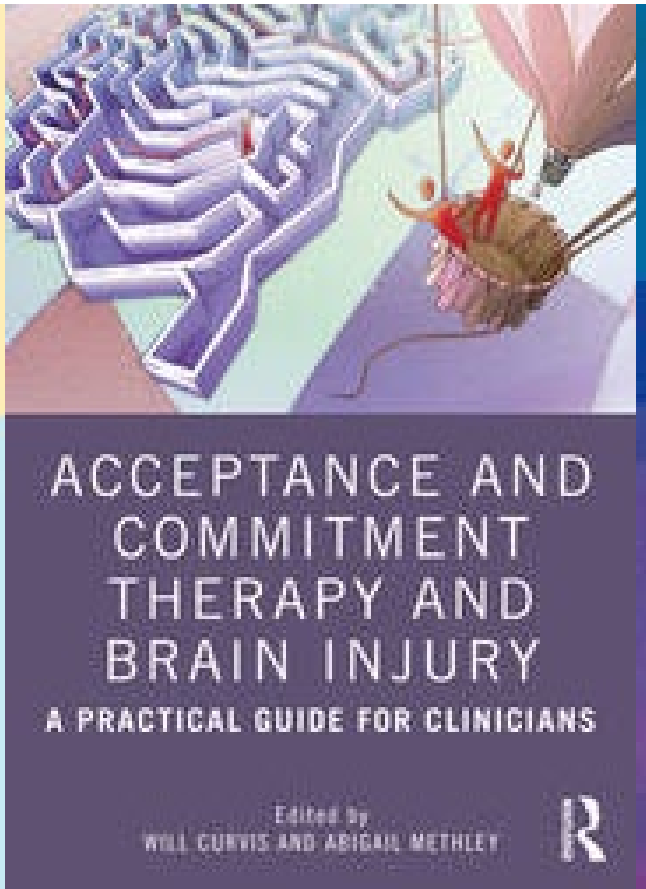
- **Restorative:** Rehabilitation to restore cognitive functioning to improve daily living skills
- **Compensatory:** Rehabilitation aimed at compensating for deficits resulting from an injury or insult to the brain
- **Metacognitive:** Rehabilitation aimed at increasing awareness of thinking processes to monitor, regulate, and adapt in the moment
- **Functional:** Rehabilitation aimed at improving cognition during real-life activities through graduated independence

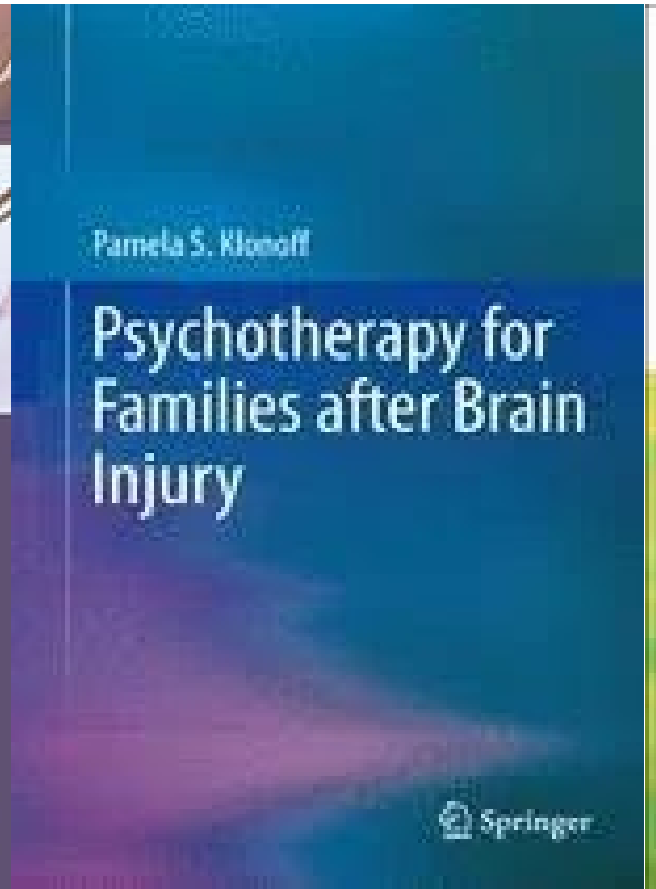
SMALL ACCOMODATIONS

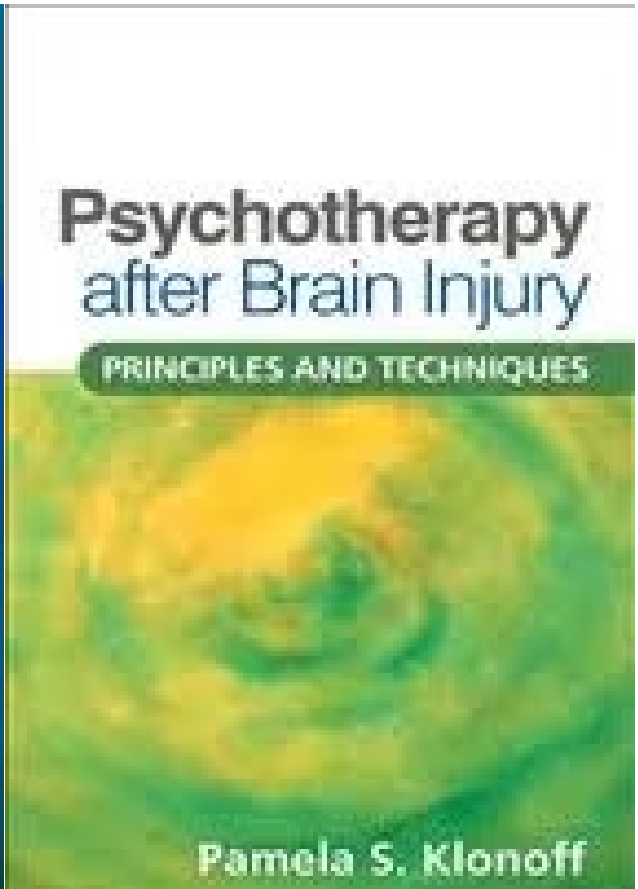
If the problem is…	Try…	Example
Attention/fatigue	Present one idea at a time, incorporate mindfulness, consider multimodal activities, vary session length	20-minute teaching block → 5-minute break → recap
Slow processing	Ask for feedback, keep language simple, follow an agenda	Ask one question; wait before rephrasing
Memory	Provide cues, consider collaboration, bookending sessions	End with 3 written takeaways + next appointment in phone
Executive dysfunction	Break goals into steps; concrete deadlines; visual plan	"Call sponsor" becomes who / when / where / backup plan
Poor generalization	Practice in context; role-play; repeat across sessions	Rehearse high-risk scenarios
Reduced insight	Use neutral feedback, observable examples, collaborative experiments, summarize what you heard, avoid analogies	Use birds-eye view exercises, emotional wheel, social cognition exercises

THERAPY BOOKS/WORKBOOKS









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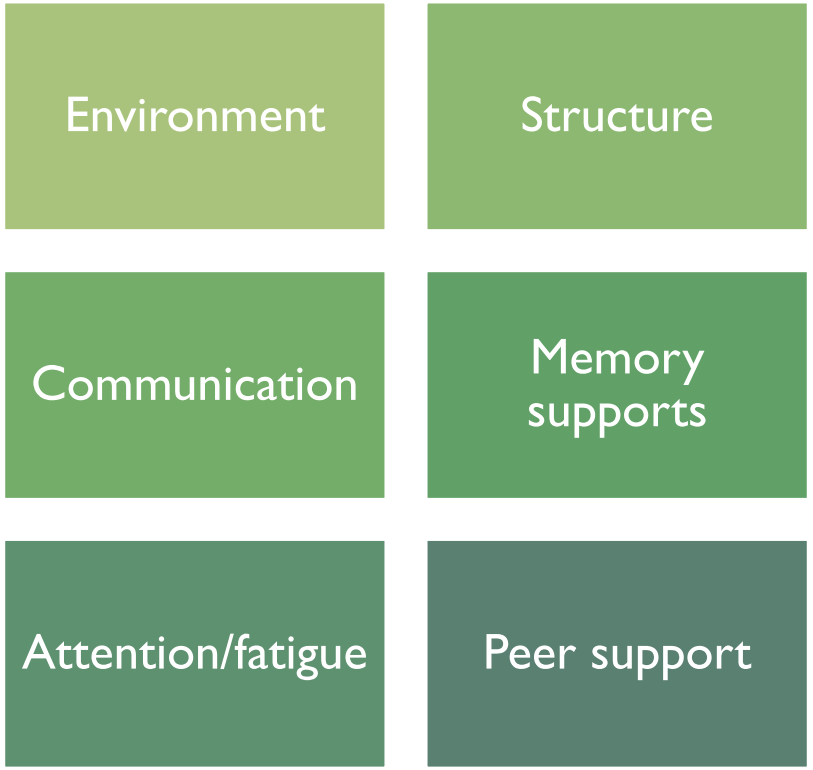

THANK YOU

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