



# Cognitive Impairment and Rehabilitation Strategies to Improve Work Functioning

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# What you can expect today

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▶ We will summarize the current knowledge of various cognitive rehabilitation training strategies and present information about Homewood's approach to improving attention as well as memory deficits and problem-solving training that improves functioning and ability to manage work tasks.





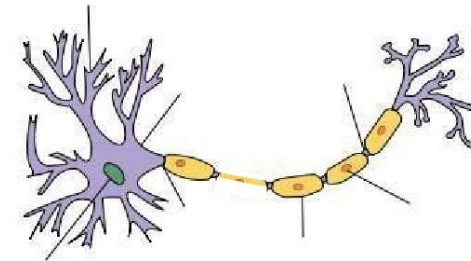
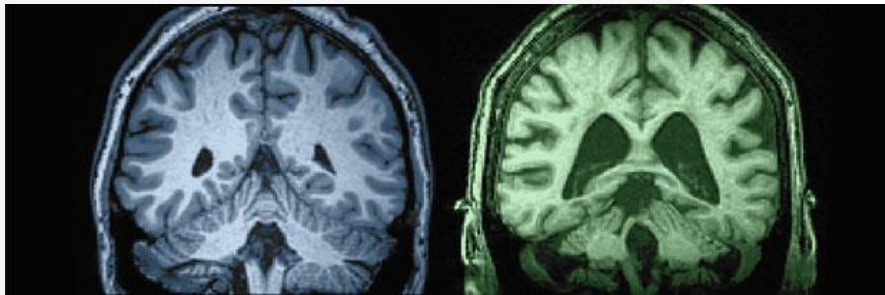
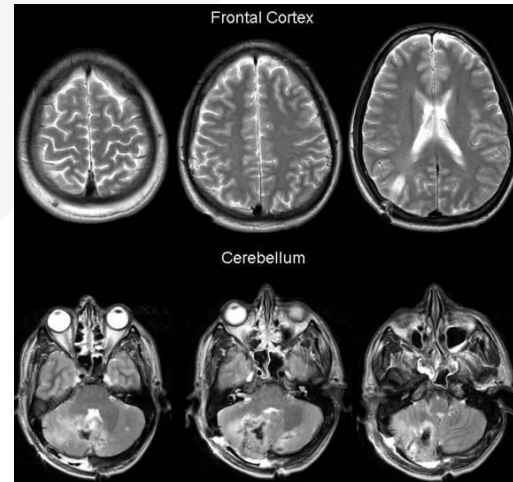
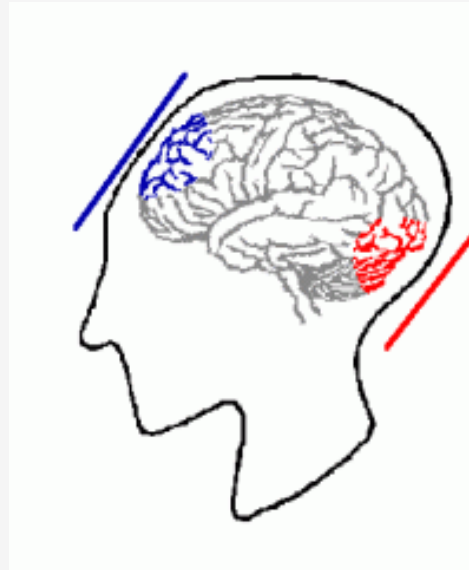
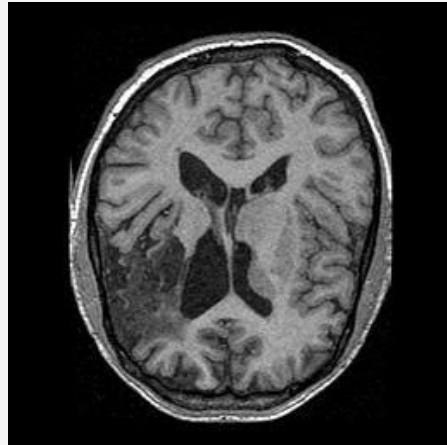
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But first,

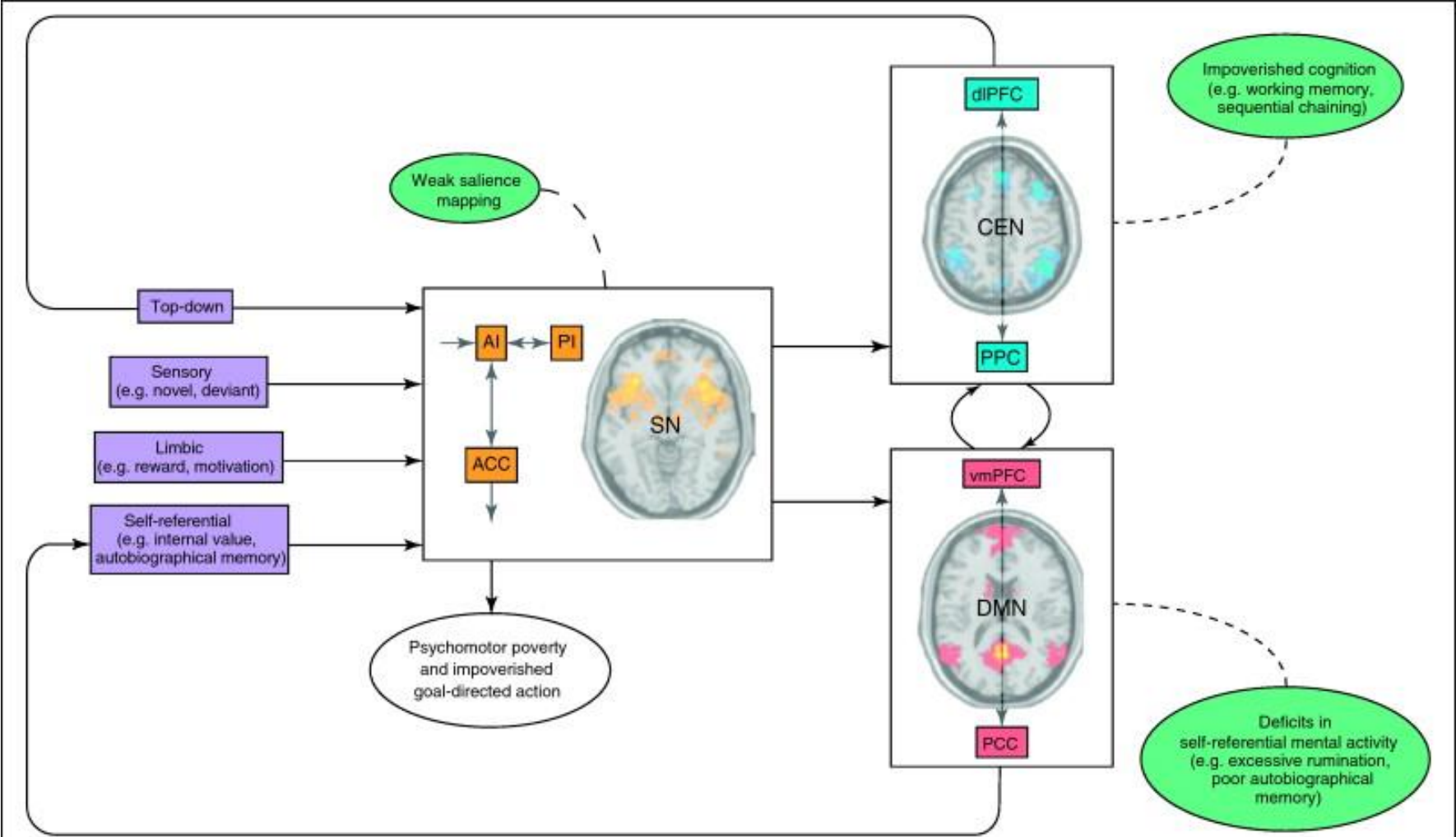
**Let's talk about our brains**



# Cognitive Dysfunction with Neurological Origins

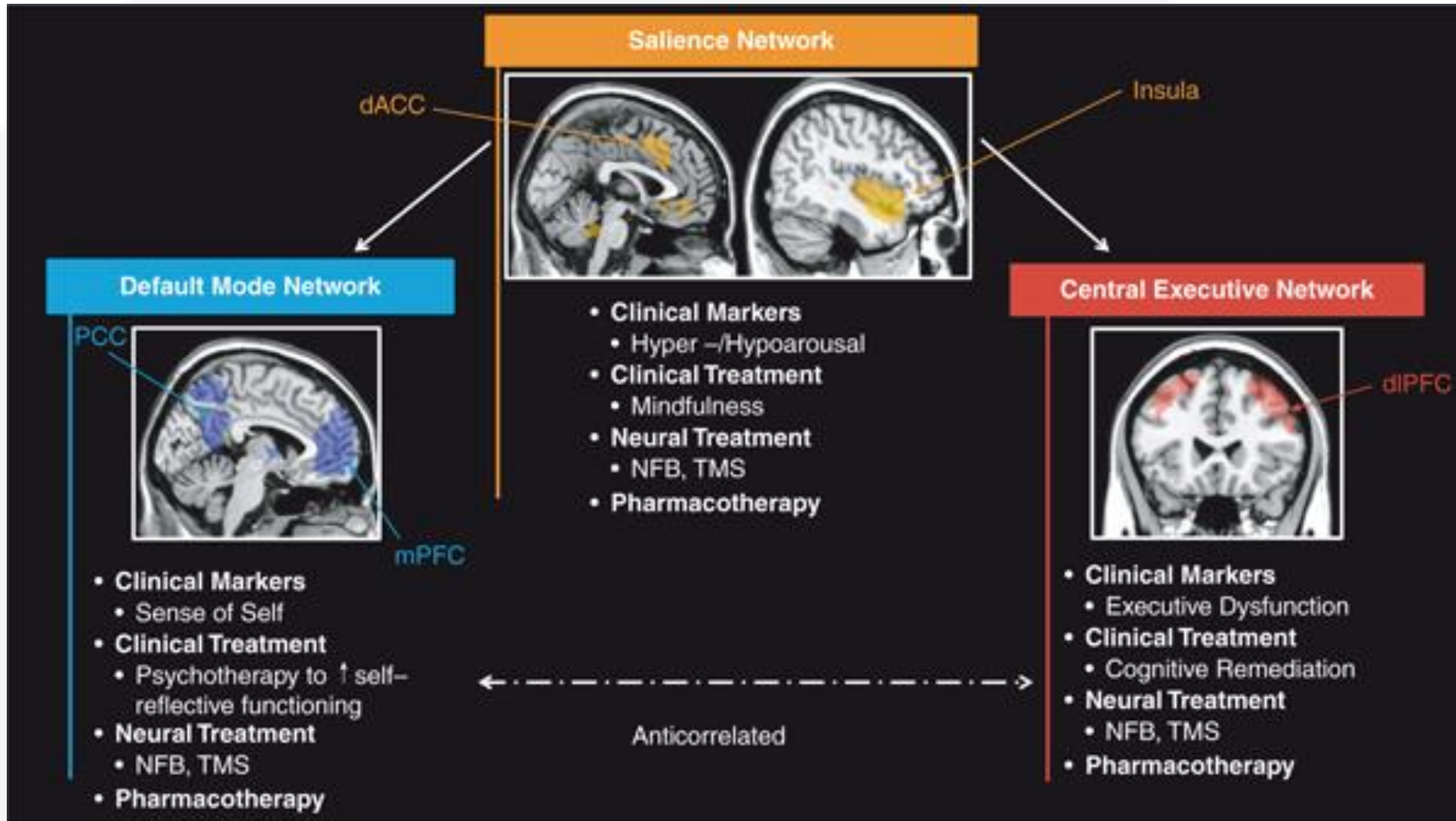


# Neural Networks of Psychopathology



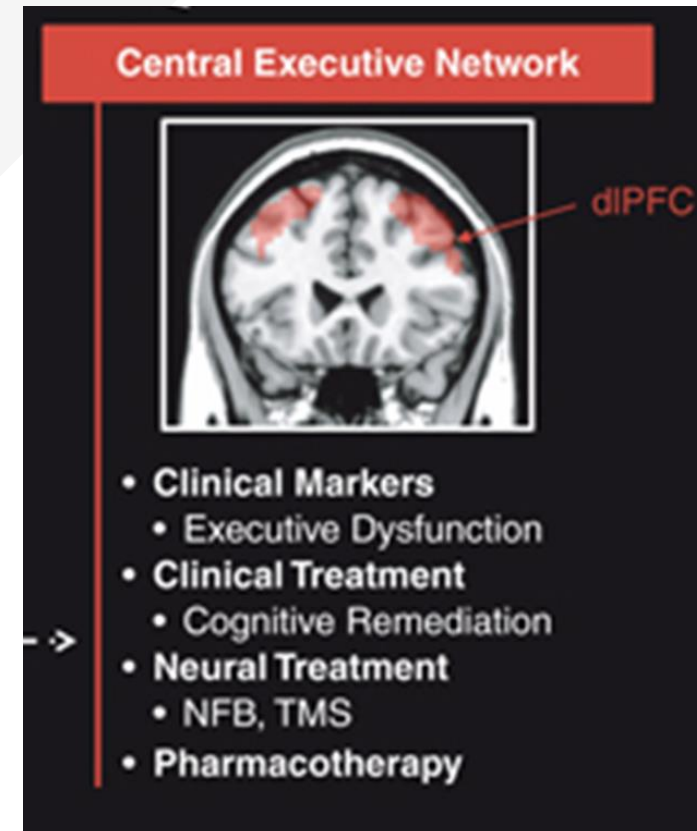
Menon (2011). *Trends in Cognitive Sciences*, 15: 483.

# Neural Network Targets in PTSD



# The Central Executive Network (CEN)

- Stimulus-driven Cognitive Tasks
- Attentional Control
- Decision Making
- Working Memory
- Rule-based Problem Solving
- Goal-directed Behaviour



# Executive Functions

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“Integrative cognitive functions that determine goal-directed and purposeful behaviour and are superordinate in the orderly execution of daily life functions.”

Cicerone et al., 2002



# Cognitive Impairment in PTSD

Executive Function;  
Effect size (d) = -0.45

Verbal Memory;  
d = -0.46

Visual Learning/Memory;  
d = -0.27- -0.32

PTSD

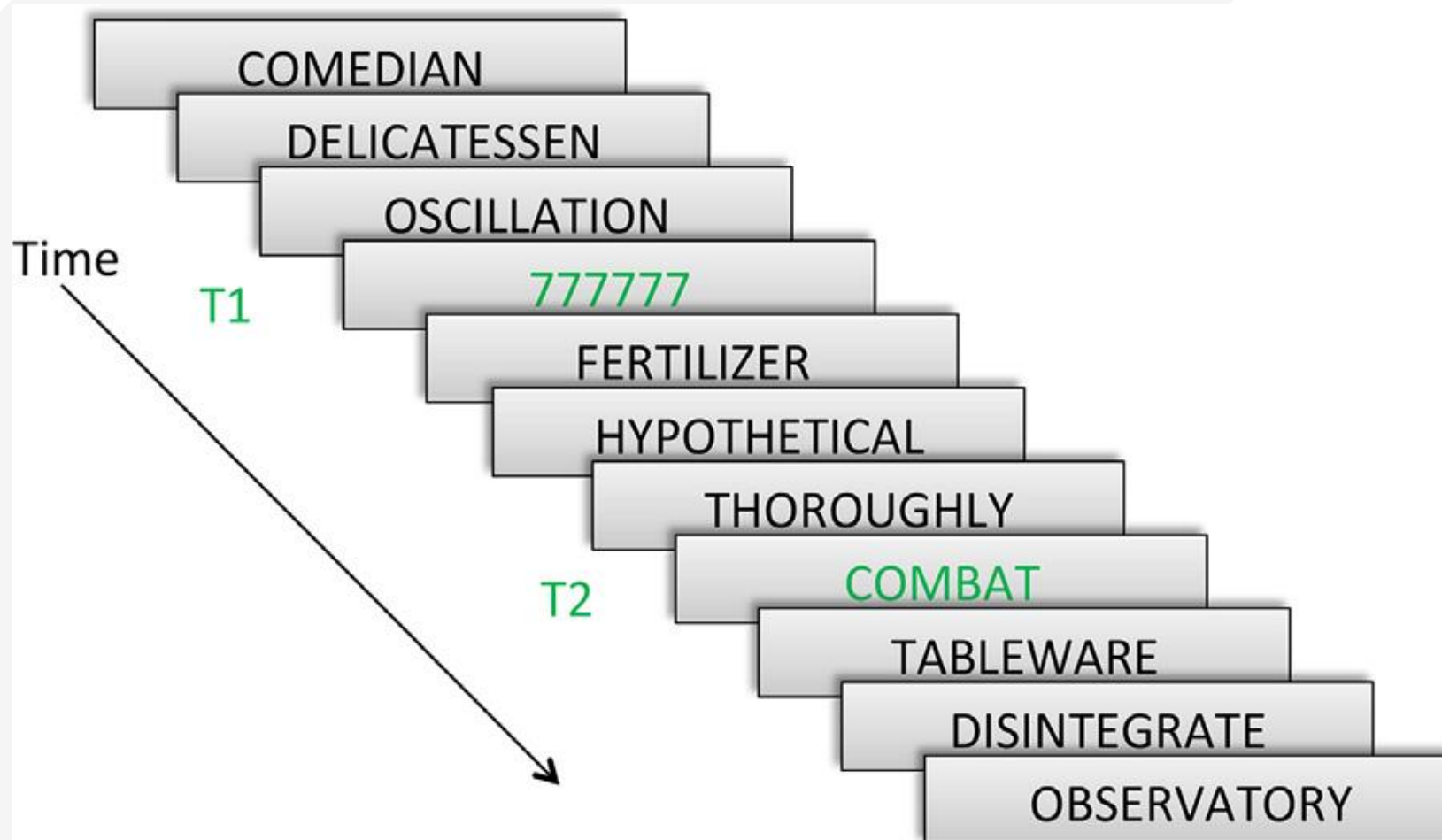


Verbal Learning;  
Effect size (d) = -0.63

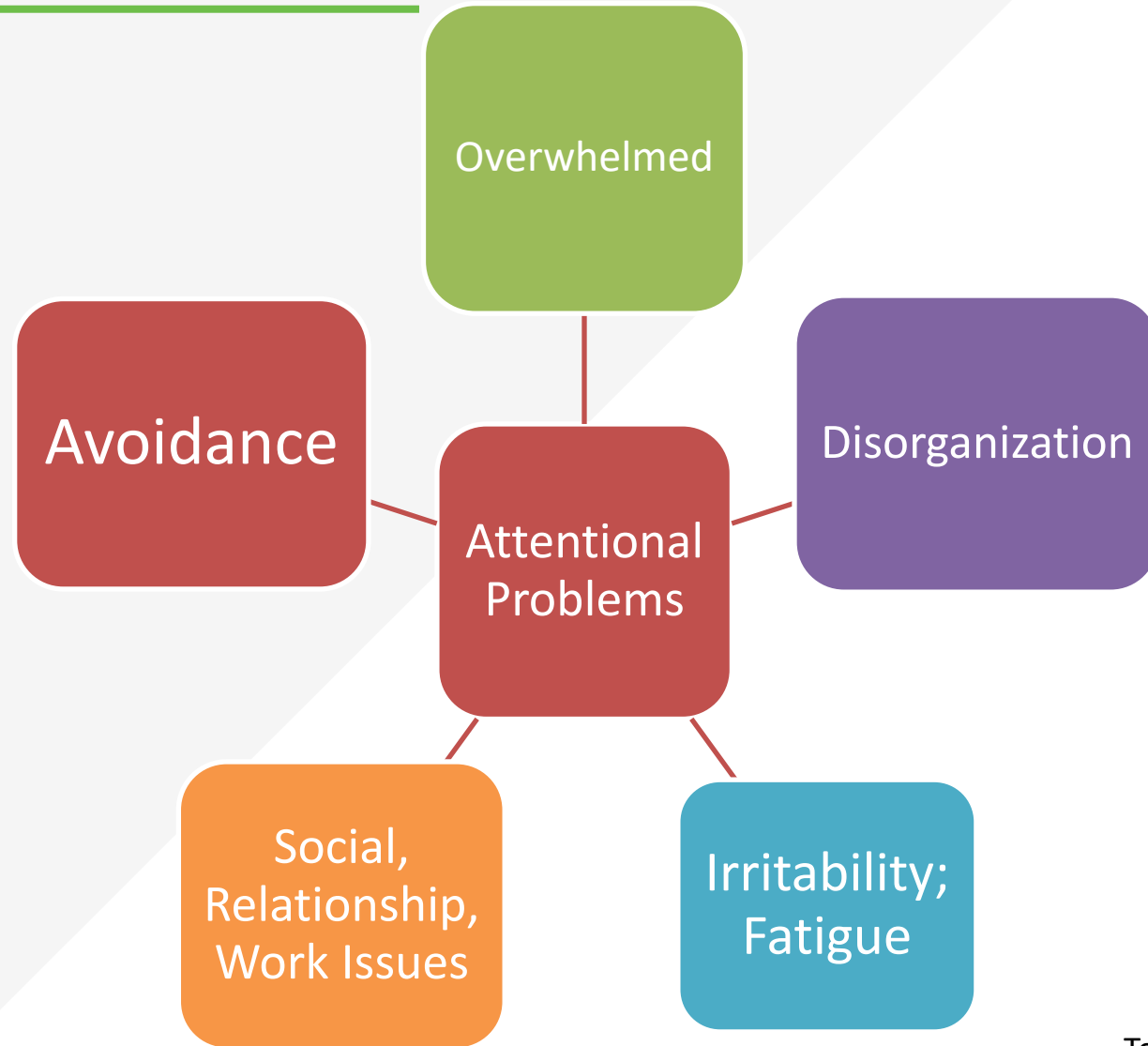
Information Processing  
Speed; d = -0.59

Attention and Working  
Memory; d = -0.50

# Attention bias in PTSD



# Attentional problems in daily life



# Significance of Cognitive Problems in PTSD

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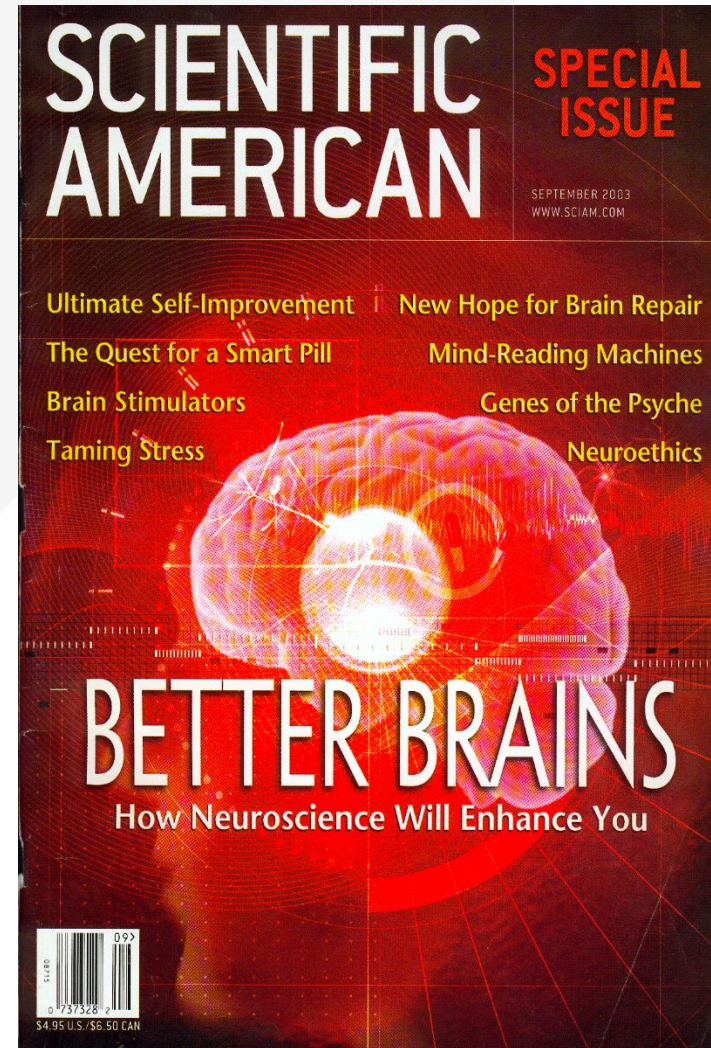
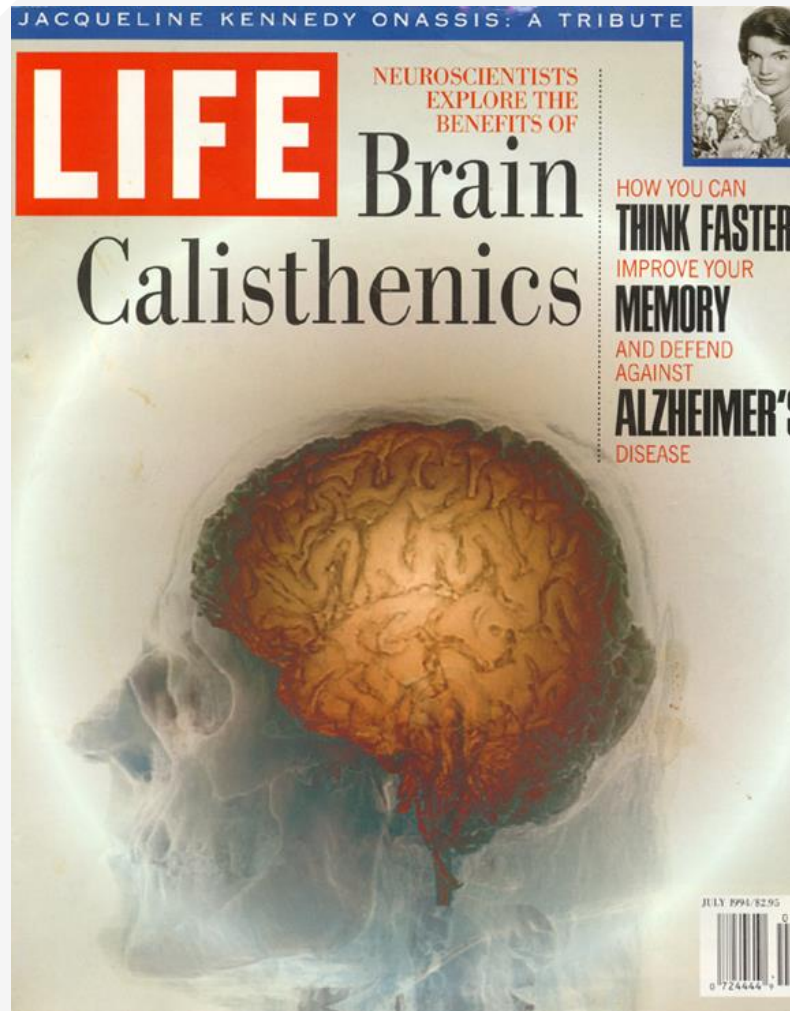
# What can be done to improve cognitive functioning?

# Cognitive Remediation Therapy

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CRT targets cognitive deficits, and generally includes tasks that provide training focused on functional adaptation for every-day activities, including non-specific training involving multiple cognitive abilities, or process-specific approaches that focus on direct strengthening of a specific cognitive skill.

# Brain training



# Mindfulness meditation training

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- Attention Lapses = Absentmindedness
- Train to be in the present
- Train to control attention through repeated practice in focusing on breathing





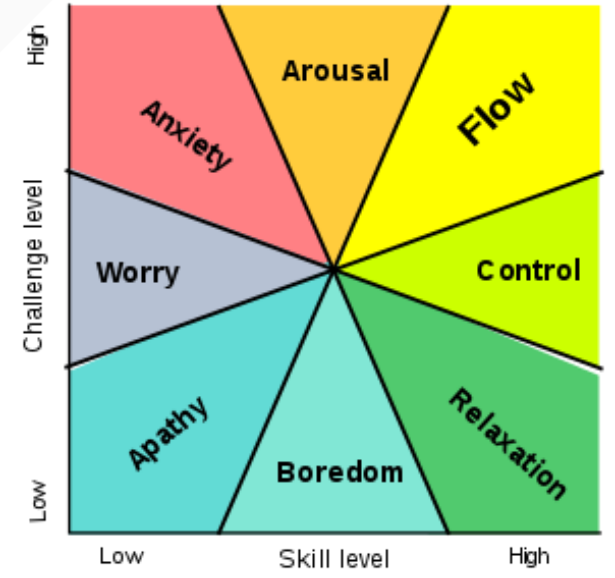
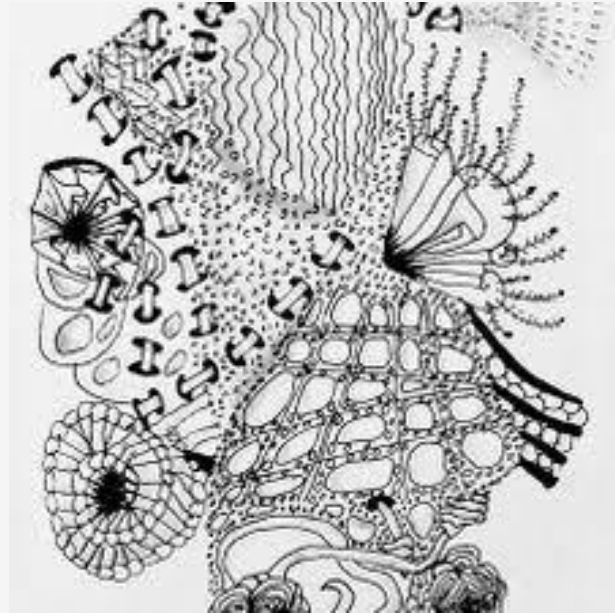
# Mindfulness mediation training

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Attention AWARENESS – noticing when your mind is “wandering” and you are not focused on what you were trying to do



Attention CONTROL – learning to bring your focus back to what it is you were trying to do





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One example of CRT  
**Goal Management  
Training™ (GMT)**



# What is Goal Management Training™ (GMT)?

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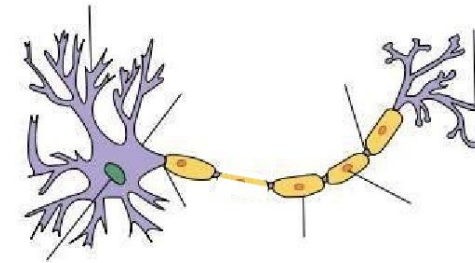
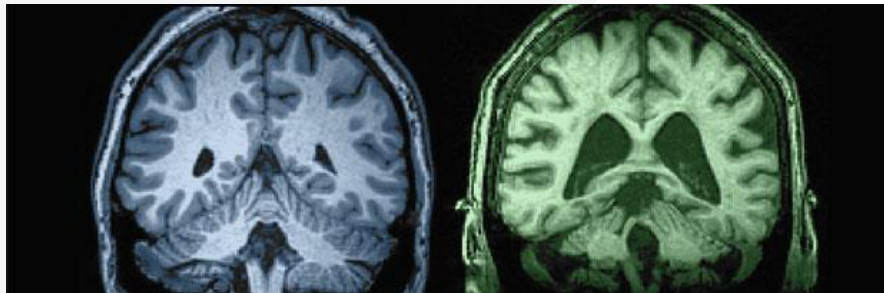
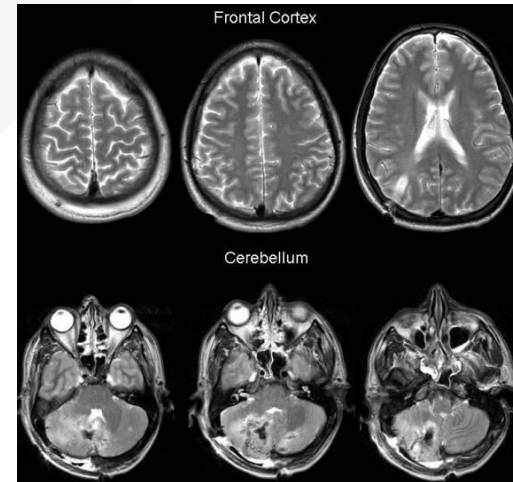
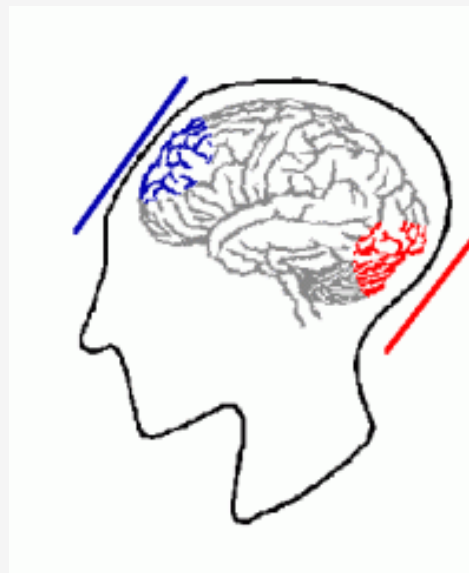
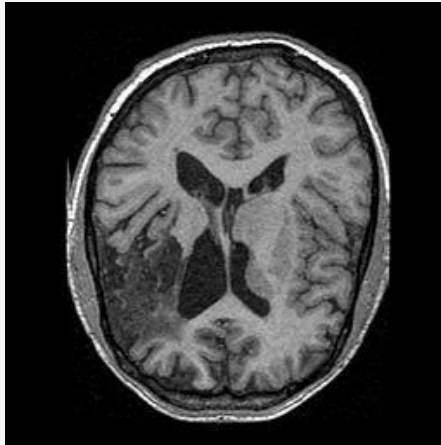
- an intervention to the rehabilitation of executive dysfunction, addressing cognitive impairment associated with mental health disorders

# Goal Management Training™ (GMT)

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- Goal Management Training™ (GMT) is a nine-week program that aims to improve attention, memory, and executive functioning in individuals with cognitive and mental health challenges.
- As a cognitive remediation approach, GMT targets cognitive performance and daily function, at work, school and home.

# Goal-Management Training (GMT)



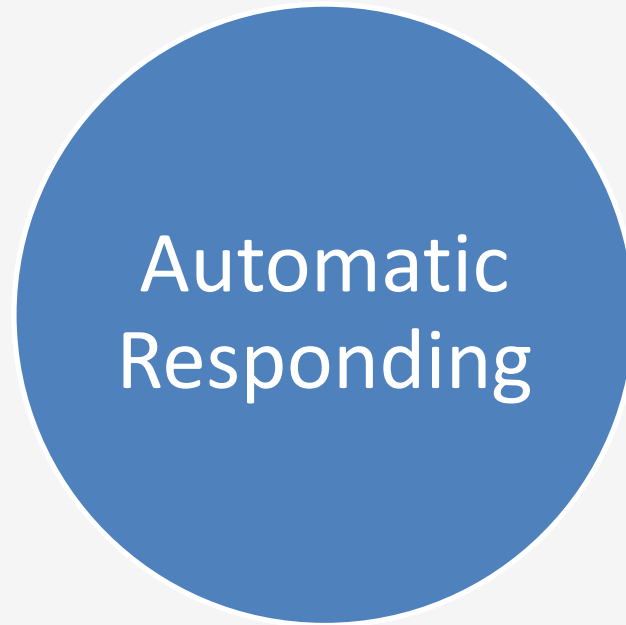
# Goal, Plan, Do, Check

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“To self-regulate, individuals need to identify an appropriate goal and predict their performance in advance of the activity (GOAL), identify possible solutions based on their general predictions (PLAN), (DO), self-monitor or assess their performance during an activity and change behaviour by choosing a strategy if, through self-assessment, the goal has not been met. (CHECK)”.

# GMT: Overcoming Automaticity

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Failure of executive processing results in lapse into automatic responding



Resumption of self-regulation



Interruption:  
Opportunity for the goal to be reinstated



# Stop: The key to overcoming automaticity

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# Mental Health Symptoms Addressed By GMT

Mental Health Symptom	Executive Function
Impulsivity, Risk-taking (addiction/PTSD)	Inhibitory Control
Poor judgment, Procrastination	Decision-making
Disorganization, Poor Performance, Intrusions, Dissociation	Monitoring
Avoidance	Planning
Frustration, Easily Overwhelmed	Multi-tasking, Sequencing
Performance on Complex Tasks	Working Memory
Persistent Negative Thoughts, Performance on complex, non-routine tasks	Mental Flexibility

# Research Findings: GMT for MDD

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- Boyd et al, in prep: GMT group reported significant improvement on subjective cognitive difficulties, while the waitlist group did not
- The GMT group improved on measures of social and family functioning while the waitlist group did not
- GMT group reported reduced depressive symptoms while waitlist group did not
- GMT group improved on a working memory task, waitlist group did not

# Research Findings: GMT for PTSD

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- Pilot study from Boyd et al. (2019), found that participating in GMT was associated with improvements on measures of:
  - Executive functioning
  - Processing speed
  - Attention
  - Verbal memory
- Patients receiving GMT also experienced an improvement in their ability to engage in goal-directed behaviours while experiencing difficulties with emotion regulation

# Research Findings: Waitlist controlled RCT, Public Safety Personnel (PSP)

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- Protopopescu et al., in prep: significant improvements on **objective measures of cognition** for PSP who received the GMT intervention (verbal fluency, planning, impulsivity, attention, cognitive shifting & discrimination)
- Significant **improvements** from pre- to post-testing on measures of **subjective cognition, functioning, and self-report symptom measures (PTSD symptoms, difficulties with emotion regulation, dissociation, depression symptoms, anxiety symptoms)** relative to those in the WL condition.
- Overall, these were **medium to large effects**, suggesting that these findings may be replicated in a larger trial.



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# Cognitive Remediation & Work Function



# Executive Functions & Work

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- Required during novel situations, less so during routine tasks
- Act to formulate goals, develop plans to achieve the goals, execute the plans, and check progress/modify as necessary
- Therefore, executive functions are critical for work functioning



# Impairment & Impact on Work

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- Health conditions such as depression, PTSD, and anxiety disorders can negatively affect executive functions, interfering with our ability to attend to work activities effectively. In short, our ability to get things done is compromised.





# Cognitive Rehabilitation & Work Functioning

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- Intact executive functioning can compensate for deficits in other cognitive domains and mitigate the negative impact of psychiatric symptoms on work performance
- Deficits in executive functioning limit the ability to successfully engage in work activities
  - self-monitor & regulate behaviour
  - set goals & plan
  - self-initiate
  - adjust to changing conditions
- In a mixed sample of individuals with neurological and psychiatric disorders, executive function predicted employment status (RTW: Y or N)

(Mitrushina & Tomaszewski, 2019)
- Cognitive functioning (memory performance) predicts occupational and social functioning as well as health-related quality of life among veterans with PTSD

# Cognitive Rehabilitation at Homewood

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- Providing services to improve impairment using evidence based treatment
- Develop the individualized **cognitive rehabilitation** plans
- Goal Oriented with focus on improving capacity to work
  - Education
  - Training
    - Strategy training
    - Functional activities training
    - Simulation of work activities
    - Skill acquisition
    - Identification of compensatory strategies

# Questions?

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