Neuropsychological Rehabilitation

Rehabilitation requires a team approach
Design evaluations to aid treatment team
Identify breadth and depth of deficits
Identify remaining strengths

Neuropsych Assessment

- Must be creative
- Range and severity of deficits is huge
- Treatments must be tailored to the individual
- Supplement standardized testing with Applied Behavioral Analysis
- Recovery timeline is important
Neuropsych Assessment

- Ecological Validity
  - Neuropsychological tests may not "transfer" or relate to the "real world"
  - Behavioral and Task analysis can bridge the gap
  - Develop more ecologically valid tests
    - Rivermead Behavioural Memory Test

Approaches to Rehabilitation

- Function (Restitution)
  - Focus on underlying impairment
- Performance (Substitution)
  - Focus on compensation

1. Restitution of Function

- Assumption 1: Damaged cognitive processes can be repaired
  - Stimulation/activation paradigms
  - Example: Memory retraining
- Assumption 2: Exercises will result in neural changes as well
  - Plasticity in the CNS noted
  - Not well correlated with cognition
2. Optimization of Residual Function

- Assumption: Cognitive ability isn’t lost, but only inefficient
  - Normal aging or mTBI
  - Process-oriented assessment can help identify inefficiencies
  - Involves training specific strategies
    - Mnemonic strategies
    - Skills available premorbidly

3. Compensation for Lost Function

- Assumption: Cognitive and neural processes cannot be restored
- Makes use of external supports
  - Environmental restructuring
  - Compensatory devices
- Sometimes it’s the ONLY option
  - Severe brain damage

4. Substitution of Intact Function

- Assumption: Other intact processes may be recruited
- Improve functional outcome and possibly alter underlying neural processes
- Best for severe cognitive problems but minimal functional loss
Specific Strategies: APT

- Attention Process Training (APT)
- Sohlberg and Mateer
- Sustained attention
- Selective Attention
- Alternating Attention
- Divided Attention

Specific Strategies: Memory

- Practice and Rehearsal
  - Repeated practice and drills
  - Spaced retrieval (Landauer & Bjork, 1978)
    - Retrieve information
    - Gradually increase time intervals
    - Capitalizing on implicit memory?

Specific Strategies: Memory

- Mnemonic Strategies
  - Typical mnemonics (e.g., imagery)
    - Effective only in special circumstances
  - Limited generalizability
  - Encoding versus Retrieval training
Specific Strategies: Memory

- External Aids (e.g., Sohlberg & Mateer, 1989)
  - Memory notebooks, diaries, alarms, calendars, etc.
  - Considerable training necessary
  - Best for mild impairments
  - BUT: Pagers/voice organizers helpful for more severe problems

Specific Strategies: Memory

- Vanishing Cues (Glisky & Schachter, 1987)
  - Teaches large amount of complex knowledge
  - Example: Job skills
  - Provide structured cues, gradually withdrawn as learning progresses
  - Possibly taps into implicit memory systems

Specific Strategies: Memory

- Errorless learning (Baddeley & Wilson, 1994)
  - Explicit memory is needed to learn from mistakes
  - Preventing mistakes capitalizes on intact implicit memory
Errorless Learning

- I'm thinking of a 5-letter word beginning with QU. Can you guess?
- No, but good guess. The correct word is...
- Test: One word began with QU. ?

Errorful Learning

- I'm thinking of a 5-letter word beginning with QU and the word is QU _ _ _. Write that down.
- Test: One word began with QU. ?

Errorful Learning

- Young Controls
- Elderly Controls
- Atypical Subjects

Errorless Learning

- Young Controls
- Elderly Controls
- Atypical Subjects
Errorless Learning: Applications

- Teaching new skills
  - Typing
  - Meal preparation

Assessing Success

- Task Improvement
  - Did performance improve?
- Generalization to Neuropsych Testing
  - Do we see gains on related tests?
- Generalization to Daily Functioning
  - Do the gains transfer to daily life?
  - HERE is the biggest problem