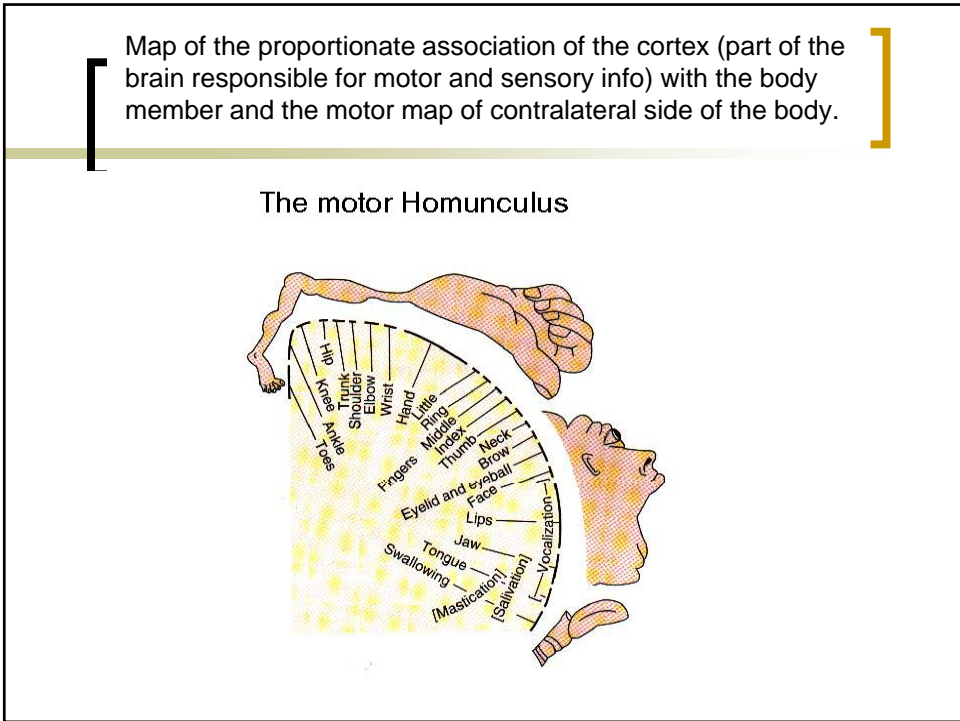
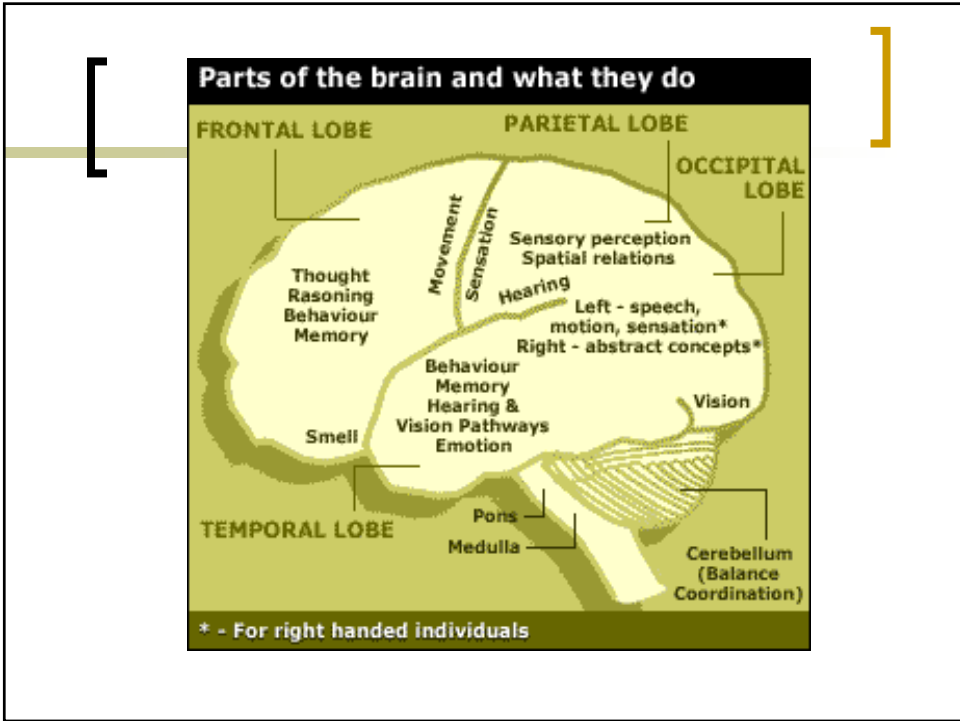


Cognitive-Linguistic Disabilities

Melissa A. Simonian, M.Ed.
Director of Speech-Language Pathology
Braintree Rehabilitation Hospital
msimonian@5sqc.com

Communication Disabilities

- Approximately 49 million Americans live with a communication disability.



Changes after Frontal Lobe Damage

- Difficulty sequencing
- Perseveration
- Decreased attention
- Change in personality
- Decreased mental flexibility
- Difficulty with problem solving
- Limited initiation
- Emotional lability

Changes after Occipital Lobe Damage

- Visual deficits (i.e. field cut)
- Limited processing of visual information
- Difficulty reading and writing

Changes after Temporal Lobe Damage

- Difficulty understanding spoken words
- Difficulty with attention
- Decreased short term memory
- Difficulty identifying objects
- Meaningless speech

Changes after Parietal Lobe Damage

- Difficulty naming objects
- R/L confusion
- Decreased attention
- Impaired spatial orientation

Changes after Cerebellum Damage

- Poor motor coordination
- Impaired gross/fine motor coordination
- Slurred speech (Dysarthria)

Changes after Brain Stem Damage

- Difficulty swallowing (Dysphagia)
- Balance disorder
- Vertigo
- Impaired sleep/wake cycle

Causes

- Cerebrovascular Accident (CVA (Stroke))
- Traumatic Brain Injury (TBI, CHI)
- Progressive Neurologic Disease (PD, AD, ALS, MS)

Incidence of Adult onset Brain Disorders in the US

■ Diagnosis	■ Annually
CVA	600,000
Alzheimer's Disease	350,000
Traumatic Brain Injury	1.4 million
Parkinson's Disease	550,000
Spinal Cord Injury	11,000

Aphasia

- A failure to understand and/or produce language
- Primary Cause: L-CVA
- Incidence: over 1 million people living in the US with Aphasia

Right Hemisphere Syndrome

- Cognitive, Visual, Communication, Emotional difficulties
- Primary Cause: TBI, CHI, R-CVA
- 5 million living with a disability relating to an acquired brain injury

Dementia

- Progressive decline in cognitive function due to damage or disease in the brain beyond what might be expected for normal aging
- Cause: Unknown
- Incidence: 1 in 10 adults over 65 y/o
- 4 million currently living with the disease

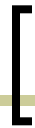
Motor Speech Disorders

- Dysarthria: A group of neurologic speech disorders resulting from abnormalities in the strength, speed, range, steadiness, tone or accuracy of movements required for control of the respiratory, phonatory, resonatory, articulatory, and prosodic aspects of speech production.
- Apraxia: A neurologic speech disorder reflecting an impaired capacity to plan or program sensorimotor commands necessary for directing movements that result in phonetically and prosodically normal speech.



People with **Aphasia** primarily experience difficulty with:

- Verbal Expression
- Auditory Comprehension
- Reading
- Writing
- Visual Acuity



People with **Right Hemisphere Dysfunction** experience difficulty with:

- Orientation
- Memory
- Attention
- Problem Solving
- Reasoning
- Judgment
- Visual acuity

[

]

People with **Motor Speech Disorders** experience difficulty with speech intelligibility.

- Rate
- Vocal Quality
- Articulator Precision
- Respiratory Coordination

[

]

Assistive Technology for people with communication disabilities may be referred to in the literature as:

**Augmentative/Alternative
Communication (AAC)**

Technology

The increasing use of technology to help individuals compensate for cognitive-linguistic impairments is the most notable advance in neuro rehabilitation in recent years.

Success ?

The most important predictor of long term success with assistive technology is careful selection of external aides to ensure they are well matched to the user and their environment.

(Scherer et al.)

Tools for Selection

- Matching Person and Technology Assessment (MPT Scherer, M. et al. Disability and Rehabilitation: Assistive Technology 2 (1) 1-8. 2007)
- TechMatch (www.coglink.com/techmatch)
- Compensation Techniques Questionnaire (CTQ) (Sohlberg and Turkstra in press)

Individual Needs Assessment

- Cognitive-Linguistic Profile
- Physical abilities
- Personal and Caregiver goals
- Preferences for tool use
- Financial resources
- Client motivation

Currently Available

- Low Tech
- High (er) Tech: Smartphone, Ipad, GPS, Data Watches, Chattervox, Auto Med, Lifeline...
- AAC Companies: Tobii, Lingraphica, Dynovox...
- Is there an app for that?
(ie; proloquo2go, assistivechat)

Technology needs to be...

- Usable (easy)
- Adaptable (people change)
- Affordable (health insurance often does not cover the cost of the device; may incur cost of evaluation and treatment to learn the device).

Disability

- Does not distinguish by race, creed, education level, geographic location, or financial status.
- May be physical, cognitive-linguistic or both
- May be sudden or gradual
- May happen to anyone at any time
- May be short term or long term
- May be overcome...with assistance

References

- *Brain Based Communication Disorders*
Leonard LaPoint et al. 2010
- *Mobile Devices and Communication Apps:
AN AAC-RERC White Paper.*
The Rehabilitation Engineering Research
Center on Communicate Enhancement
(NIDDR Grant Supported) 2011
- American Speech-Language Hearing Association www.ASHA.org
- *Disability and Rehabilitation: Assistive Technology*
Mark Scherer et al. 2007