

Ogden Chapter 1 : Clinical Neuropsychology

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

1

Aims of Clinical Neuropsychology

- Applied
 - diagnose, treat, rehabilitate people with neurological disorders
 - prevention
- Academic
 - how does the “normal” brain work by studying the damaged brain
- Training:
 - Subfield of Clinical Psychology

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

2

Assumptions of Clinical Neuropsychology


- Similarity of human brains
 - in adult brains, functions are generally localized the same places
 - Is this a good assumption with children?
- Formal Assessment & Tests can be better than casual/informal observation
 - example: NP Testing can detect Alzheimer’s disease before behaviors are obvious

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

3

Related Disciplines

Discipline	Focus	Subjects	Tests & Measures
Cognitive Psychology	Mind	Healthy Undergrads	Computerized Reaction Time (RT)
Clinical Neuropsychology			
Behavioral Neurology			
Neurology	Brain	Patients with Disease	Informal, behavioral

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

4

Brain Anatomy Notes

- Ogden calls the Secondary zones “Association cortex” whereas KW calls the Tertiary zones “Association cortex”

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

5

NP Terms 1

- Deficit, Dysfunction, Impairment, Disorder
 - often used as synonyms
- Syndrome
 - group of related symptoms

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

6

NP Terms : Lesions

- Lesion
 - damaged area
 - focal or diffuse
- Infarct, Infarction
 - area of dead brain tissue
- Atrophy
 - reduction in size/health. shriveled / shrunken

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

7

NP Terms : Causes of Lesions

- Physical Injury / Trauma
 - open, closed head injury
- Stroke - blood flow interruption
 - ischemic
 - blockage (temporary or permanent)
 - hemorrhagic
 - bleed / burst vessel
- Infections
 - bacteria
 - viruses
 - herpes simplex encephalitis

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

8

NP Terms : Causes of Lesions

- Hematoma
 - pool of blood
- Edema : swelling due to fluid, injury, inflammation
- Mass effects
 - shifting of brain tissue causes pressure
 - death if brain stem is affected

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

9

NP Terms - Prefix, Roots, Suffixes

- Roots:
 - -phasia : speech
 - -graphia : writing
 - -lexia : reading
 - -praxia : purposeful motor actions
 - -gnosia : to know
- Prefixes:
 - a-, ano- : lack of (or impairment in)
 - dys- : diminished, malfunctioning
- Suffixes :
 - -itis : inflammation
 - -ectomy : removal of
 - -otomy : cut into

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

10

NP Terms 3 : Examples

- Modifiers
 - visual : sight
 - tactile : touch
 - prosopos : face
 - motor : movement
 - olfactory : smell
- Examples:
 - Prosopagnosia
 - Anagnosia
 - Visual Agnosia
 - Visual Anagnosia

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

11

O1 : Cerebral Lateralization

- Historical
 - Broca's Area (1861)
 - Wernicke's Area (1874)
- Data from Split-brain studies
- Normal Language dominance (left hemisphere):
 - 92% of right handers
 - 69% of left handers

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

12

O1 : Cerebral Dominance Myths

- LH was considered “dominant”
 - Consciousness
- RH considered specialized for “creativity”
 - Subconscious
- People : either “Right-brained” vs. “Left-brained”
- Problems
 - data from split brain patients
 - unfair importance of language
- Modern understanding
 - both hemispheres participate in most tasks
 - LH and RH are more specialized for certain tasks

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

13

Plasticity

- Brain can recover from big injuries in childhood
 - example: hemispherectomy
 - up to age 12, perhaps 15 - yes
 - adults : ? not clear ?

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

14

Dissociation

- Single or simple dissociation:
 - Lesion to brain area L1 causes behavior problem B1
 - Lesion to other area L2 does not cause B1
- Double Dissociation:
 - Lesion to brain area L1 causes B1 but not B2
 - Lesion to other area L2 causes B2 but not B1
- Reality:
 - due to high interconnection between brain systems, may not be this simple.
 - dysfunction in another area (L3) may cause both patterns

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

15

Neuropsychology as Scientist-Practitioners

- Interplay of Research vs. Clinical Practice
- Finding (double) dissociations is hard
 - Research is limited by
 - lack of lesions
 - unclear lesions
 - (easier now with neuroimaging)
 - patients able to participate in research
 - patients willing to participate
 - etc.

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

16

Roles of Neuropsychologists

- Clinical
 - seeing patients
 - diagnosing disorders
 - recommending treatments
 - tracking progress
- Consulting
 - e.g. assessment prior to surgery
- Forensic
 - competency hearings / ability to stand trial
 - lawsuits, damages due to accidents/injuries
- Research
 - drug research
 - epidemiological
 - ...

Psychology 465 Human Neuropsychology Fall 2012

Tuesday, October 2, 2012

17