neurophysiology

- The objective of the course is to make obvious the importance of physio- and physiko- therapeutical work in the general bio-psycho-social health
- By pointing at the role of neuropsychology
- The functioning of the nervous system (as related to the anatomy and in the context of behavior).

- We shall get to know the structure of the nervous system in relation to its function with a special emphasys on the „higher mental functions”
- The „traditional” view of neuropsychology is centered around the cerebral cortex
- Stating that this makes us human
- Since humans are „thinking animals” (rational beings)
- And thinking (rationality, planning) is the function of the cerebral cortex

- We try to argue, and a lot of recent results from the field of neuroscience supports us
- That the so called higher order functions
- Aren’t solely confined to the functioning of the cortex as the most complex structure situated on top of the nervous system hyerarchy
- But they are the results of an integrated complex processing of the whole network of the system

- We’ll take a look at the central nervous system
- And at the different parts of the central (and peripheral) nervous system
- From this perspective

- The core material of the course will be

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Implications for Neuropsychological Assessment

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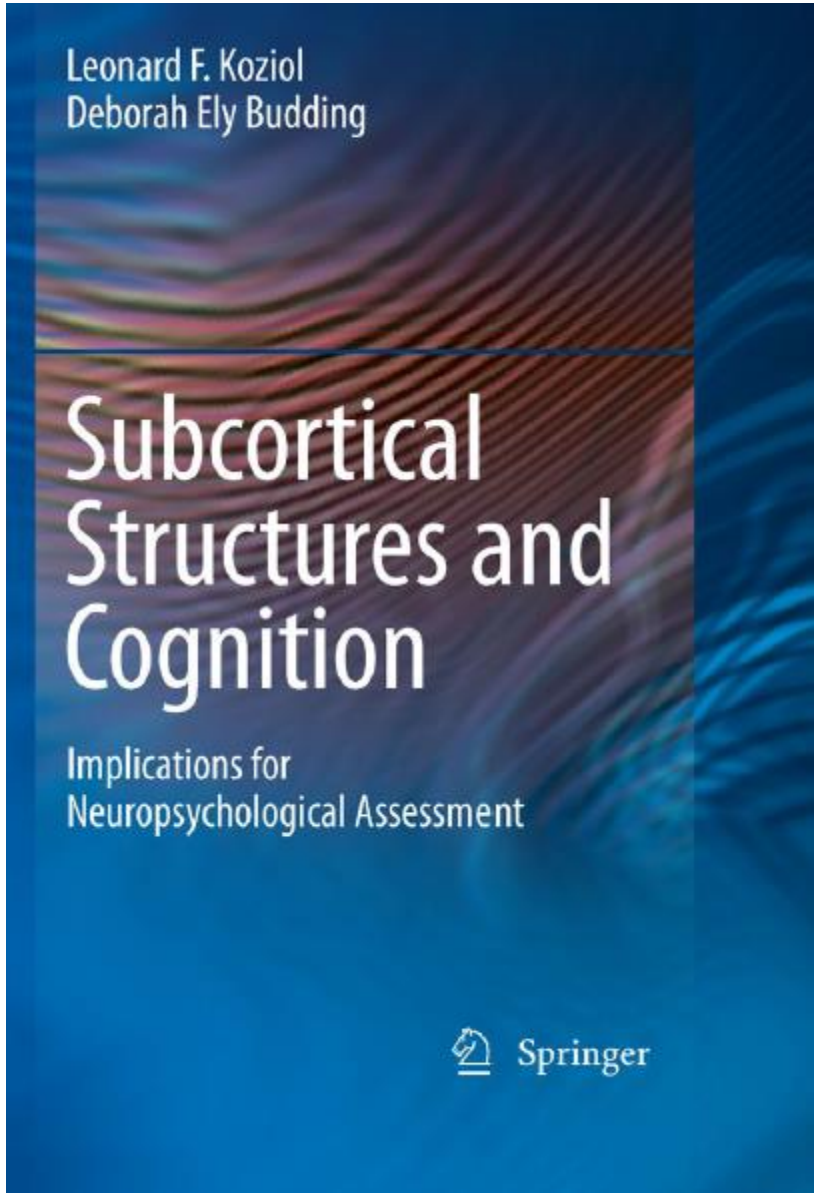
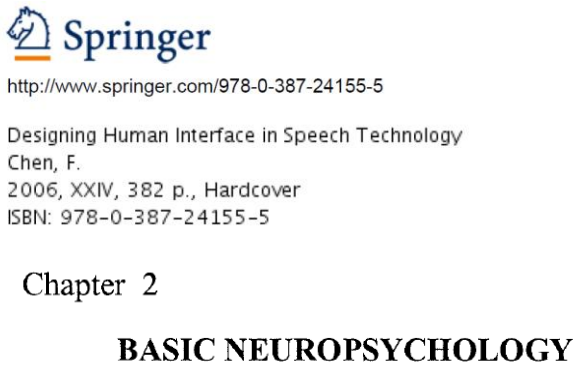


- But of course we will use a lot of complementary materials to understand the main claims



- Thematics
- -- the structure of the cerebral cortex
- -- the local (layered, columnar, cellular) structure
- -- the notion of the areas (of the cerebral cortex)
    - Functional areas
- -- hemispheres, asymmetries
- -- pathways in the central nervous system
- -- neurotransmitter systems
    - Transmitters and receptors
        - Excitation and inhibition
    - Transmitter systems
    - Neuromodulators
    - Transmitters, modulators, pathways, functions
    - Connections between the cortex and subcortical areas

- „vertically organized brain systems”
    - Vs the corticocentric view

Basal Ganglia

- Structures and subdivisions
- The notion and examples of the circuit
  - Direct and indirect pathways
- Motor behavior and cognition
- Motor and cognitive deficits, parallels
- Basal Ganglia and learning
- Learning and Memory
- Behavioral selection
- Frontal circuits

Cerebellum

- Surface anatomy
- Cortex and Cerebellum
- Cerebellum and non-motor functions
- Cerebellum and (procedural) learning
- Cerebellum in the cognitive functions

Memory and learning

Language and social functions

Psychiatric disorders

- Obsessive-compulsive disorder
- Attention deficit Hyperactivity disorder
- Schizophrenia spectra
  - Basal Ganglia
  - Cerebellum
  - Anatomy and symptomology
- Autism spectrum disorders
- Mood disorders
- Personality disorders

Familiarity and novelty

Thought in Action

Neuropsychological testing

- Neuropsychological tests
- Basal ganglia
- cerebellum

The integrated brain