Neurobiological assessment

**Brain imaging: ‘seeing’ the brain**

* CT or CAT scan
* Magnetic resonance imaging MRI
* Functional MRI
* Position emission tomography (PET)

**Neurotransmitter assessment**

Metabolite: produced when a neurotransmitter is deactivated  
A high level of a particular metabolite presumably indicated a high level of a neurotransmitter

* (Measuring from urine) do not direct refections of levels of neurotransmitter in the brain
* Correlational

To provide more experimental data, one strategy is to administer drugs that increase or decrease levels of neurotransmitters.

* Ethical?
* Drugs that change levels of one neurotransmitter often tend to influence other neurotransmitter systems.

**Neuropsychological assessment**

Neurologist: a physician who specialized in diseases or problems that affect the nervous system.  
Neuopsychologists: a psychologists who studies how dysfunctions of the brain affect the way we think, feel, and behave.

Neuropsychological test are often used in conjunction with the brain imaging techniques just described. Both to detect brain dysfunction and to help pinpoint specific areas of behavior that are impacted by problems in the brain.

* Tactile performance test-time.  
  While blindfolded, the patient tries to fit variously shaped blocks into spaces of a form board, first using the preferred hand, then the other, and finally both.
* Tactile performance test-memory  
  After completing the timed test, the participant is asked to draw the form board from memory, showing the blocks in their proper location. Both this and the timed test are sensitive to damage in the right partietal lobe.
* Speech sound perception test  
  Participants listen to a series of nonsense words, each comprising of two consonants with a long-e sound in the middle. They then select the ‘word’ they heard from a set of alternatives. This test measures left-hemisphere function, especially temporal and parietal areas.

**Psychophysiological assessment**

Psychophysiology: concerned with the bodily changes that are associated with psychological events.  
Assessment are not sensitive enough to be used for diagnosis. But they can provide important information about a person’s reactivity and can be used to compare individuals.

The activities of the autonomic nervous system are often assessed by electrical and chemical measures to understand aspects of emotions.

* Heart rate  
  Each heartbeat generates electrical changes, which can be recorded by electrodes placed on the chest that convey signals to an electrocardiograph.  
  The signal is graphically depicted in an electrocardiogram (EKG), which may be seen as waves on a computer screen or on a roll of graph paper.
* Electrodermal responding of skin conductance.
* EEG

**A cautionary note about neurobiological assessment**

* Many of the measurements do not differentiate clearly among emotional states.
* Brain-imaging techniques do not allow us to manipulate brain activity and then measure a change in behavior.
* There is no one-to-one relationship between a score on a give neuropsychological test on the one hand and psychological dysfunction on the other.
* In attempting to understand the neurocognitive consequences of any brain dysfunction, one must understand the preexisting abilities that the patient had prior to diagnosis with a mental disorder.

Cultural and ethnic diversity and assessment

There are typically more differences within cultural, ethnic, and racial groups than there are between them.

**Cultural bias in assessment**

Cultural bias in assessment: a measure developed for one culture or ethnic group may not be equally reliably and valid with a different cultural or ethnic group.

Several steps in the translation process, including working with multiple translators, back-translating, and testing with multiple native speakers, can help to ensure that the test is similar in different languages.

Cultural factors may affect assessment in various ways

* Language differences
* Differing religions and spiritual beliefs
* The alienation or timidity of members of ethnic groups when being assessed by clinicians of the European American culture.

**Strategies for avoiding cultural bias assessment**

* Graduate training programs
  + Students must learn about basic issues in assessment
  + Students must become informed about the specific ways in which culture or ethnicity may impact assessment rather than relying on more global stereotypes about a particular cultural or ethnic group.
  + Students must consider that culture or ethnicity may not impact assessment in every individual case.
* Assessment procedures can be modified to ensure that the person truly understands the requirements of the task
* When the examiner and client have different ethnic backgrounds, the examiner may need to make an extra effort to establish a rapport that will result in the person’s best performance.