

## Ch. 15: New directions

- New Theory
  - Cognitive-behavioral
- New Computerized & Tools
  - Psychophysiology
  - Traditional Test administration
    - Computer-Aided Interview
    - Computer-Administered test
  - Test scoring
  - Internet/web-based tools

## Clinical Example

- 7 year old boy presents with weight loss secondary to reluctance to eat other than a few foods (cereal, PB&J, plain spaghetti)
- At age 4 he had illness for 25 days during which he could not swallow solid food
- Parents are desperate "Isn't there some test you can give him to determine what's wrong?"
- IQ test - high average
- Interview & projective tests suggest eating disorder is related to trauma re: illness

## Clinical Example 2

- Medical model:
  - reluctance to eat is a symptom of deeper problem
  - find the cause and treat it, and the symptom(s) will get better
- Cognitive-behavioral model:
  - the original causes (if any) are in the past and can't be changed.
  - the eating behavior itself is the problem, and the focus of treatment.
  - the symptom IS the disorder

## Clinical Example 3

- CBT set up a treatment regimen:
  - mother would monitor eating behavior
  - point system
  - rewards (toys, etc.) given for points
- Results:
  - problems greatly reduced in a few weeks.
  - treatment stopped but new (proper) eating behavior persisted

## Traditional vs. CBT

- Traditional assessment & testing are focused on finding patterns of psychopathology with a goal of diagnosis -- finding the cause of the illness.
- Diagnosis may lead to treatment, which may lead to cure, but this is indirect.
- In CBT, the test is a measure of the problem and also is a measure of the treatment.

## Psychophysiology

- Under CBT, physical measures are considered to be more "objective" or "observable"
- Examples:
  - GSR (galvanic skin response) -- sweating
  - heart rate (pulse)
  - blood pressure
  - sexual response / arousal
  - pupil dilation
- These measures can be correlated with various cognitive & emotional processes

## State of the art?

- Clinical Psychology has lagged in embracing computerized tests and assessment
- In 2007, most major tests are still widely given using paper & pencil versions with hand-calculated scoring
- Few standards exist for sharing clinical / research data.
- Most psychological tests are based on theories that pre-date the cognitive revolution (1960s)
- Why the slow adoption?

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581

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## Slow adoption of technology...

- Clinical Psychology is not a medical discipline -- thus pressures for standardization and cost-cutting (as per HMOs) have not taken hold
- Computer phobia? (Perhaps in researchers, but probably not in patients)
- Generational?
- Intellectual Property / profit concerns?
- Field is still young -- hasn't had breakthroughs similar to other fields (genetics, physics etc.)

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## Aided- or Administered-

- Computer-aided tests are traditional tests given by a clinician with the computer helping sequence items and phrase questions.
- Computer-administered tests are traditional tests given entirely by computer.
- Both generally show reliability & validity equal to that of the paper & pencil tests they are based on.
- Computer-administered tests often show reduced defensiveness -- people are more willing to admit embarrassing symptoms.

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## New computer tests

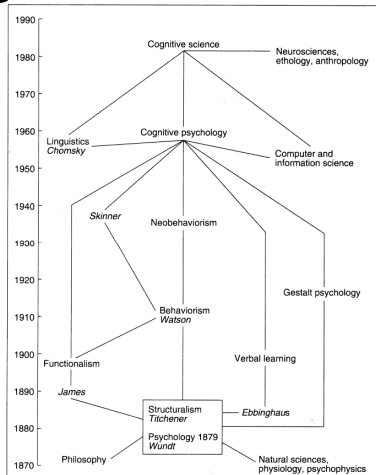
- New theories being applied:
  - cognitive / neuroscience
  - non-human animal research
  - computer science / cognitive science / AI
- New methods being used:
  - fast presentation of stimuli
  - accurate measurement of responses
  - scoring
  - adaptive tests

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584

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## Cognitive Science History

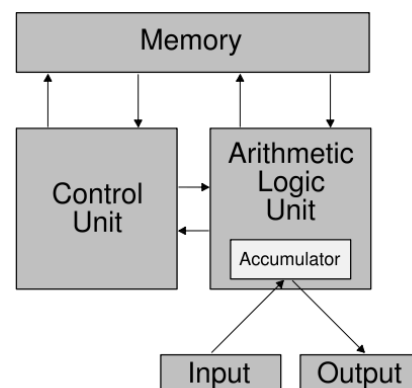


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## Von Neumann Architecture



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# Cognitive Psychology Theory

- Mental processes exist!
- Mental processes can be studied scientifically (by using speed or accuracy as DV's).
- Human beings are active information processors.
- Humans are not necessarily special :
  - it should be possible to deconstruct and reconstruct mental processes in other substrates (e.g. a computer)
  - non-human primates and lower animals are on a continuum with humans

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# Tools & Techniques

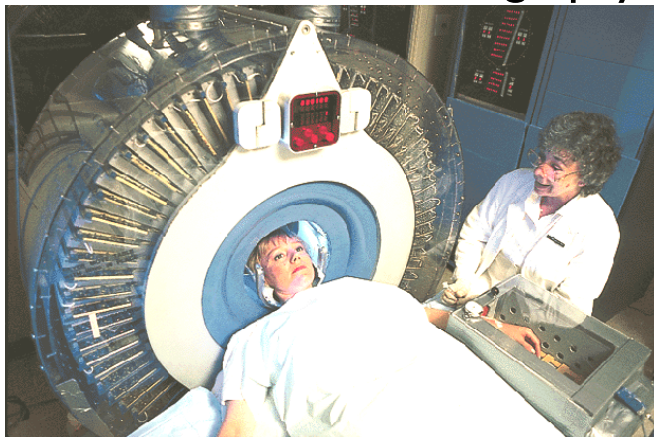
- Brain Imaging
  - Structural
    - CAT, MRI
  - Functional
    - PET, fMRI
- Electrophysiology
  - EEG
  - ERP

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## Positron Emission Tomography

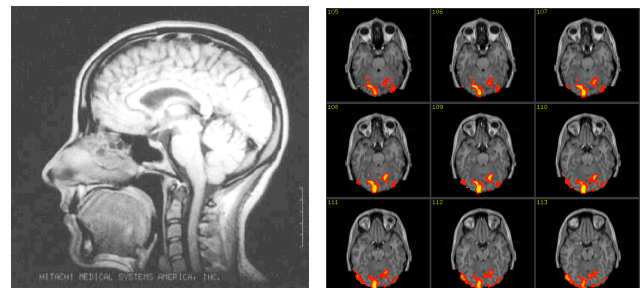


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## MRI and fMRI



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590

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## EEG and ERP



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591

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