Vygotsky (1896-1934)

- Indirect effects of **culture** on behavior.
- Because the ultimate goal is for children to be: "productive members of society"
- We have to consider how society can impact children's development.

Vygotsky's Theory of Cognitive Development

- **Zone of proximal development** - what you can do with help.
- **Scaffolding** -the help
- **Private speech** - the help you give yourself.

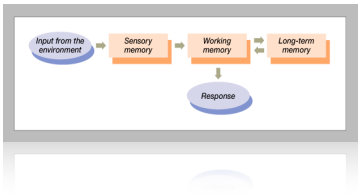
Basic Features of the Information-Processing Approach

- People and computers are both symbol processors with hardware and software.
- Hardware includes sensory, working, and long-term memory.
- Software is task-specific (and let's face it the implementation is for one kind of hardware).

Basic Features (cont)

- Not stages! Our operating system works continuously and develops gradually, piece-by-piece. There are no abrupt changes in thought. Even though behavior might be.
- Piaget talked of insight, but information processing people talk of **continual, gradual** change and learning.

Hardware looks like this



Information Flow

- **Sensory store** holds raw sensory input.
- **Short-term store** processes and holds information for several seconds.
  - Primary memory and working memory are other names for short-term store.
- **Long-term store** (vast and relatively permanent storehouse of information)
- Executive control processes (**metacognition**) are involved in planning and monitoring what is attended to and what is done with the input.

Short Term is Short

- ***Short term memory*** is the mental scratch pad that lets us organize and find a system to store things in Long-Term memory.
- The *advantage* is it can hold a lot, the *disadvantage* is that it is temporary.

5 Changes in Processing

+Strategies & +Experience
+Capacity
+Inhibition & +Executive Control
+Automatic Processing
+Speed of Processing

Short term gets more experienced with age

- The development of *strategies* (deliberately implemented, goal-directed operations used to aid task performance)
- Think of a network of lots of facts.
- Early: fewer facts and fewer connections.
- Later: lots of facts lots of connections.

Short term memory gets larger with age

- Development of the short-term store
  - Span of apprehension (number of items that people can keep in mind at any one time)
  - First graders: 2.5 digits
  - Fourth graders: 3 digits
  - Adults: 3.5 digits

+Inhibition & Executive Control

- Can ***inhibit*** distractions.
- Better at planning and flexibly implementing problem solving (**Executive Control**).
- All linked to development of the **Frontal Lobe**.
- What children know about thinking, ***meta-cognitive awareness***, develops gradually during childhood.

+Automatic Processing

- Older children execute more processes **automatically**.
- **Implicit** memory - don't have to think about it.
  - E.g. don't have to worry about reading the words, just thinks about their meaning.

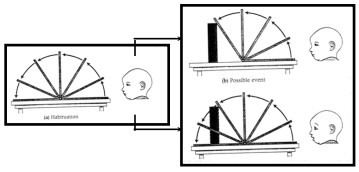
+Processing Speed

- Changes in processing speed
- 4 year olds are 1/3 as fast as us.
- 8 year olds are 1/2 as fast.
- Biological maturation is primarily responsible for age-related differences.
  - Increased myelination in the associative areas of brain
- Although past experiences can influence processing speed within particular domain.

Core-Knowledge Approaches to Cognitive Development

- Each child develops distinct domain-specific conceptual structures reflecting experience: Physics, Biology, Psychology, etc.
- Their are core modules -- specialized parts of the brian that help us process specific types of information.

Physics 101! For infants!



Physics Phacts!

- Objects can't go through walls! (Spelke)
- One object hitting another will make it go! (Kotovsky)
- Objects can't float in mid air! (Baillargeon)

Biology 101

- Animals can grow! (Rosengren)
- Animals have blood in `em!
- Animals have parents!
- Animals can be healed!
- Animals move on their own! (Gottfried)

Psychology 101: Mind reading for infants!

- **Theory of mind (2-5yrs).**
  - 2yrs - desire.
  - 3yrs - mental worlds.
  - 4yrs - **False Belief tasks**.