

How do people process information over the life span?

Chapter 7
Information Processing

Class Objectives


- What is the Information-Processing Approach?
- What is attention...and how it is effected by age?
- Changes in Memory

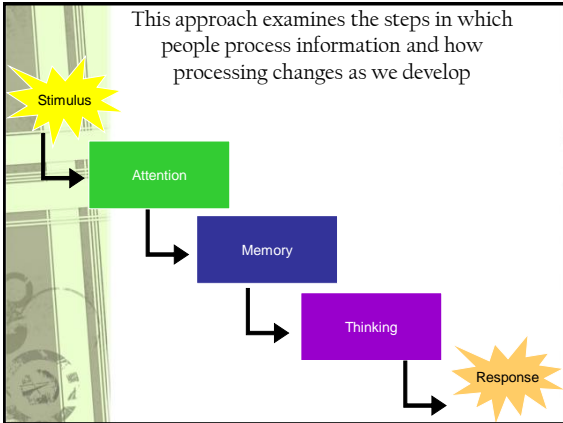
What is Information Processing?

- This approach focuses on the ways individuals process information about their world.
- The information-processing approach analyzes how people:
 - Manipulate information
 - Monitor information
 - Create strategies for handling information

Information-Processing
Approach answers questions
like:


What do we pay attention to?
How do we remember things?
How do we use this information?





Information processing in
humans is often compared to
the processing of a computer

The physical brain is analogous to a computer's
hardware and cognition is analogous to a computer's
software





“Pay Attention!”

We have all heard that screamed at us from one time or another...but what does it mean to *pay attention*?



Attention refers to the focusing of mental resources

Attention helps improve cognitive processing, but at any one time people have limited amounts of attention

Have you ever been in a class where you knew you should be listening and taking notes but the lecture was so **BORING** that you started to notice other things?

Your focus still exists...but now it has changed direction!

Attention

- *Sustained attention*: The ability to maintain attention to a selected stimulus for a prolonged period of time
- *Selective attention*: Focusing on a specific aspect of experience that is relevant while ignoring others that are irrelevant
- *Divided attention*: Concentrating on more than one activity at a time

How Does Our Attention Change As We Age?



Think on your own...

Think about an infant's ability to focus and someone your age or older...what differences would you suspect?

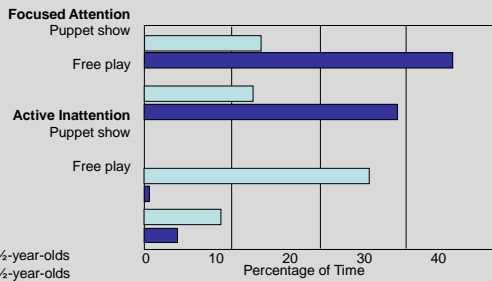
Developmental Changes in Attention

- During infancy:
 - Infants as young as 4 months of age can selectively attend to an object
 - Infants' attention is governed by novelty and habituation so when objects become familiar attention becomes shorter making infants more vulnerable to distraction

Research on attention in children

- Ruff, Capozzoli, and Weissberg (1998) observed preschoolers in several settings (watching puppet show, free play with toys)
 - Children who were actively engaged in the puppet show or free play exhibited focus attention (posture, facial expressions, spontaneous comments)
 - children who left the table exhibited inattention

Ruff, Capozzoli, and Weissberg (1998)



What does this suggest?

- This study found that attention improves between 2 ½ years to 4 ½ years
 - Overall 4 ½ year olds spent more time in focused attention and much less time in active inattention
 - BUT even though there is an improvement in focused attention they are still spending less than half their time in focused attention
- Maintaining focused attention is a demanding skill – one that emerges beyond the preschool and school-age years

Control over attention shows important changes in childhood

- During childhood *selective attention* changes:
- Preschool children have less cognitive control of attention and what is external is more likely to get their attention.
 - What is salient grabs their attention

For example, if an attractive clown is used to present the directions for solving problem, the preschool children are more likely to ignore the directions and pay attention to the clown.

Elementary-school children have more cognitive control of attention and can attend more effectively to the dimensions of the task that are relevant to solving the problem or performing the task.



This improvement in cognitive control allows school-age child to pay better attention to relevant information and act less impulsively.

Increase in attention to relevant information increases steadily through the elementary and secondary school years.

Processing of irrelevant information decreases in adolescence

Changes in Attention during Adulthood

- During early adulthood attention skills are excellent but during older adulthood selective attention skills often decrease.
- Older adults may not be able to focus on relevant information as easily as younger adults

Changes in attention during late adulthood

- Older adults as good as young and middle-age adults on sustained attention
- Less adept at focusing on specific aspects of an experience while ignoring others
 - As demands on attention increase – the performance of adults declines
 - Older adults are less effective at performing more than one task at a time (divided attention)

Think on your own... Apply your knowledge

Imagine that you are a teacher – what strategies can you come up with to help children pay attention in class?

Do your strategies differ if you are a kindergarten teacher or a fifth-grade teacher? What if you are a high-school teacher?

Think on your own... How Good Are Your Attention Skills?

'What 'real life' situations are likely to require you to pay attention, simultaneously, to more than one piece of information in the same sense modality? How well do you think you can attend to all inputs in these situations? What could improve your ability to attend to the inputs in these situations?

Try to test this on your own...

Play a well-known song while someone reads you a story or section of this textbook...after the song ends have your story-reader test you on the information read out loud.

OK... Let's Discuss the Next Step in the Information-Processing Approach

MEMORY
