ATTENTION

IN EARLY DEVELOPMENT 0 - 6

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Introduction

- Attention is essential for perception and learning

Introduction

- Effective attention requires interplay of:
  - Intense concentration
  - Inhibition of distractibility
  - Ability to shift awareness from one focus to another

Characteristics of Normal 0-3 Attention Development

- 1 – 2 months
  - Engage and focus
    - When awake, look around
    - Focus on big and bright
  - Can't shift focus

0-3 Attention Development

- 2 – 3 months Major developmental transition
  - Notice smaller discrepancies
  - Recognize mother at 6 – 9 weeks

0-3 Attention Development

- 2 – 3 months Major developmental transition
  - Visual acuity increases
  - Visual orienting is coordinated with attention
  - Mutual face to face attention with adults

0-3 Attention Development

- 2 – 3 months
  - When awake, look around
  - Focus on big and bright
  - Can't shift focus

0-3 Attention Development

- 4 months
  - Can control the shift of attention
  - More flexible attention

0-3 Attention Development

- 3 – 9 months
  - Visual attention is influenced by the novelty of events/objects
  - Visual acuity and binocular vision reach adult levels by 6 to 7 months

0-3 Attention Development

- 3 – 9 months
  - The “where” system is in place (parietal)
  - Then the “what” system is complete – ability to recognize objects (temporal)
  - Has difficulty remembering and inhibiting actions

0-3 Attention Development

- 9 – 12 months
  - Begin to reach and grasp toward an inanimate object
  - Begin to imitate the action of others – after a delay
  - Begin to anticipate the future based on the past
  - Means to end processing begins

0-3 Attention Development

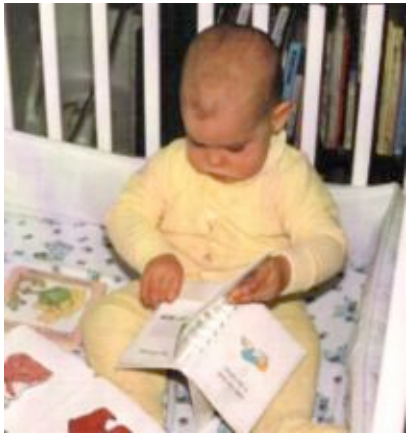
- 9 – 12 months
  - Duration of looking decreases due to:
    - An increase of learning speed
    - Development of memory
    - Can control actions

0-3 Attention Development

- 9 – 12 months
  - Social referencing begins. Can attend to mother when she is far away
  - Fear of strangers begins (memory is up)

0-3 Attention Development

- 9 – 12 months
  - Motor skills are emerging



  - Crawling begins which alters the child's perspective and brings new aspects of physical and social awareness

0-3 Attention Development

- 9 – 12 months (cont.)
  - Behavior is more flexible and coordinated
  - Can share attention with adults and toys
  - Beginning of higher level attention (executive control)

TV carries messages that influence the behavior of infants as young as 12 months old, report Tufts researchers.

0-3 Attention Development

- 1st year
  - Orient to new, important events for the purpose of exploring and learning
  - Spatial orienting and questioning system becomes functional and controls the first year of attention
  - Becomes aware of locations and objects in the environment (temporal + parietal)

0-3 Attention Development

- End of first year
  - Ability to plan goal directed activity increases – dependent upon social input(frontal lobe begins)
  - Underpinnings of new, controlled attention system begins
    - Can follow directions
    - Can focus on objects and adults

0-3 Attention Development

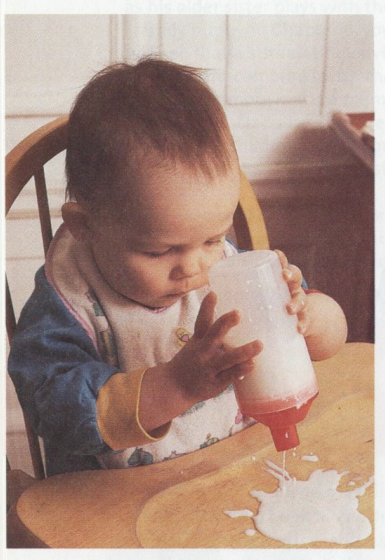
- 18 months
  - Can coordinate attention with toys and partners in play
  - Language assists in developing
    - Information
    - Values
    - Directions
  - Attention to the action of others leads to:
    - Social expectations standards – examples of attitude and strategies

0-3 Attention Development

- **18 months plus**
  - Differences in development may reflect
    - Speed of learning
    - Amount of information acquired
    - Temperament
    - Emotional tone

0-3 Attention Development

- **18 months plus**
  - Inhibitory control
    - Low stimulation may cause impulsivity, sensation seeking or responsiveness to rewards
    - May be due to variations in the Neurotransmitter system



0-3 Attention Development

- Toddler = new attention system
  - Attention to novelty decreases
  - Attention to what others attend to increases
  - More related to planned, self-generated activity
  - Exploration is decreased, looking is increased
  - Plans powerfully organize behavior

0-3 Attention Development

- Toddlers (18mos +)
  - Language spurts and accompanies action
  - Symbolic functioning is ,thus, able to begin

0-3 Attention Development

- Toddlers (18mos +)
  - Knowledge can now be based on generalized and abstract knowledge rather than mere perception and action
  - Eventually, language DIRECTS action
    - Can act on verbal instructions

0-3 Attention Development

- Toddlers (18mos +)
  - Begin to identify themselves in a mirror
    - New sense of self
    - New level of self-regulation
  - Recognize that they have an effect on the environment
  - Take pleasure in producing particular outcomes for themselves

0-3 Attention Development

- Toddler (cont)
  - Plans powerfully organize behavior
  - Attention increases to carry out activity and complete plans

0-3 Attention Development

- Toddler (cont)
  - Squirming decreases
  - Walking away from assigned tasks decreases
  - Awareness of noise increases

0-3 Attention Development

- Toddlers (cont)
  - Interest level affects attention
  - Memory deployment becomes systematic

0-3 Attention Development

- Toddlers (cont)
  - Self-regulation begins to change behavior based on cognitive, social and emotional demands
  - Interplay begins – the ability to share attention with others

0-6 Attention Development

- Preschool
  - Continuation of higher brain controls
    - Self-monitoring
    - Control over impulsive responses
    - Problem solving increases
    - Memory increases

0-6 Attention Development

- Preschoolers
  - Development reflects higher level brain functions
    - Consolidation of skills
    - Gradual accumulation of knowledge
    - Improved ability to plan
    - Increased ability to sit
    - Enhanced self-control

Stages of Attention

- Initiation (starting)
  - Cortex of the brain must be aroused
  - Orienting response is alerted when an event captures our attention
    - Meet a new or exciting event
    - Brain is alerted
    - Prepares to learn more about the event

Stages of Attention

- Initiation
  - Orienting response is relatively automatic
    - Responds to moderately intense changes in stimulation
    - Responds to relatively complex stimuli more quickly than simple ones
    - Signal the possibility of interesting events

Stages of Attention

- Initiation
  - Once the second level of attention develops, a child may CHOOSE to work on a task
  - Attention by choice responds more slowly than the “orienting response”

Stages of Attention

- Engagement
  - Physical changes signaling increased attention
    - Facial expression of interest
      - Raised or knit eyebrows and slightly open mouth
      - Lower lip rolled under or tongue protruding
      - Interest/excitement incr. During exploration
      - Joy incr. During play

Stages of Attention

- Engagement
  - Physical changes signaling increased attention
    - Motor activity
      - Activity and movement-related inattention decline during preschool years
        - Physically moving away decr. between 2.5 and 3.5 years
        - Frequency of small movements decr. Significantly between 3 and 7 years
      - Movement competes with sustained attention

Stages of Attention

- Engagement
  - Physical changes signaling increased attention
    - Decrease in heart rate and variability
    - Integration of response systems
  - **Developments in the engagement of attention are dependent, in part on the developing integration of the facial, motor and heart rate responses**

Stages of Attention

- Disengagement and Termination of Attention
  - Once engaged, **an active process of disengagement** is necessary to **shift attention** to another object of location

Stages of Attention

- Disengagement
  - Disengagement begins to occur at around 4 months
    - Maturation of neural mechanisms
    - Expansion of the visual field
    - Faster attention ability
  - Repetition follows more focused initial attention

Stages of Attention

- Disengagement
  - Top-down (second attention system) attention allows a child to engage and disengage on instruction or decision to do so

Stages of Attention

- Distractiblility at all ages will be determined by:
  - interplay of the child's motivation and internal state
  - nature of the distractors
  - nature of the child's activity

Early Signs of ADHD

- Physical Anomalies – more anomalies = more aggression and less attention
  - Biological markers related to preschool behaviors
    - Malformed ears
    - Missing creases on palm
  - Brain chemical/electrical variations
  - Brain formation variations

Early Signs of ADHD

- Spent less time playing
- Engaged in more functional play
- Acted younger than their peers
- Less construction and dramatic play
- Less time playing beside or with other children
- Less likely to converse with other children

Early Signs of ADHD

- More negative interactions with adults
- Difficulties increase when need to sit still
- More impulsivity
- Behavior reported as being more problematic by their parents
- Differences continued in a three year study

Early Signs of ADHD

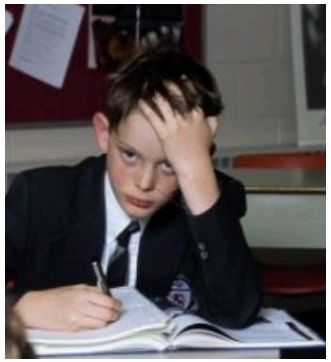
- Developmental patterns of ADHD
  - 3 year old ratings
    - More restless
    - More disobedient
    - Less concentration than others
    - More behavior problems
    - More destructive
    - Less popular with peers

Early Signs of ADHD

- Developmental patterns of ADHD
  - 4 year olds
    - Same as threes but had fewer problems with disobedience than threes.
  - 6 year olds indicated an increase in concentration but other symptoms remained – especially restlessness

Early signs of ADD w/o H

- Low attenders
  - Less adaptable
  - Less likely to approach new objects and situations
  - More negative mood
  - Less sensitive or responsive to sounds and sights



ADD in other conditions

- Regulatory disorders that continue past 6 months
  - Disturbances in sleep
  - Difficulties in consoling self
  - Difficulties around feeding
  - Hyperarousal (disorganization and distractibility in the face of new stimulation)

ADD in other conditions

- Regulatory disorders that continue past 6 months
  - Difficulty regulating the state necessary for sustained and focused attention
  - Cannot inhibit their own body concerns to be able to attend
  - May have difficulties behaviorally engaging with their environment

ADD in Autism

- Attention to Toys
  - Less manipulatives than the norms
  - Autistic children attended to and manipulated more simple toys
- Attention to Environment
  - Less attentive to adults' points, shifts in gaze, and displays of objects

ADD in Autism

- Communication
  - Less likely to communicate with gesture
  - Less likely to look from toy to adult
  - Less likely to display positive emotion
  - Facial expressions tend to be neutral
  - Decreased joint attention

ADD in Autism

- Social attention
  - Difficulty in attending to the complexity and unpredictability of social events
  - Easily become overstimulated
  - Need social situations to be simplified and more predictable to attend

Summary

- Attention deficits are due to a breakdown in the ability to
  - Initiate
  - Engage
  - Sustain

    And/Or
  - Shift

    attention

Summary

- They have a biological, neurological base:
  - Metabolic
  - Electrical
- They can be predicted by behaviors in preschool

- Early inattention interferes with top-down, self-regulating attention development