Aspects of Psychological Development

- Bodily Growth & Change
- Nutrition: Preventing Overweight
- Malnutrition
- Oral Health
Bodily Growth & Change

• Growth continues to be rapid but slowed from infancy and toddlerhood
  – Grow 2 – 3 inches a year
  – Gain 4 to 6 pounds a year
  – Muscles and skeletal growth progresses
    • Children become stronger
  – Cartilage turns to bone faster
    • Bones become harder

• Respiratory and circulatory systems help build stamina and with developing immune system, healthier children
<table>
<thead>
<tr>
<th>Age</th>
<th>Boys</th>
<th>Girls</th>
<th>Boys</th>
<th>Girls</th>
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<tr>
<td>3</td>
<td>37½</td>
<td>37</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>3½</td>
<td>39</td>
<td>38½</td>
<td>34</td>
<td>32½</td>
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<td>4</td>
<td>40½</td>
<td>39½</td>
<td>36</td>
<td>35</td>
</tr>
<tr>
<td>4½</td>
<td>41½</td>
<td>41</td>
<td>38</td>
<td>37</td>
</tr>
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<td>5</td>
<td>43</td>
<td>42½</td>
<td>40</td>
<td>40</td>
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<tr>
<td>6</td>
<td>45½</td>
<td>45½</td>
<td>46</td>
<td>45</td>
</tr>
</tbody>
</table>

*Fifty percent of children in each category are above this height or weight level, and 50 percent are below it.

Source: Kuczmarski et al., 2000.
Nutrition: Preventing Overweight

• Nutrition needs and sleep needs are different than infants and toddlers

• At age 2, healthy diet is the same as adults
  – Primarily fruits and vegetables
  – Whole grains
  – Low-fat and nonfat dairy products
  – Beans
  – Fish
  – Lean means

• Obesity: 14% of 2 – 5-year-olds overweight
  – 12% more at risk
  – Boys more affected than girls
  – Mexican American boys most prone
  – Greatest increase: low-income families
Nutrition: Preventing Overweight (cont)

• Obesity related to:
  – Behavior problems
  – Low reading and math scores
• Tendency toward obesity can be hereditary
• Main factors in obesity epidemic are environmental: fast food, more sedentary life
• 3-year-olds eat until full; 5-year-olds eat more when larger portion is put in front of them
  – Don’t encourage to clean plate, don’t encourage large portions
• What child eats is important
  – Young children should get only 30% calories from fat
    • No more than 1/3 of fat calories should be saturated fat
• Each hour of TV child watches increases risk of overweight
  – TV in bedroom further increases risk
• Too little exercise and too much sedentary activity are important factors in overweight
Undernutrition is underlying cause in more than half of all deaths under age 5 worldwide.

Early education may help counter the effects of undernourishment:
- Children more likely to attend preschool
- Parents more likely to interact appropriately

Children who received nutritional supplements and medical examinations in one study were placed in special preschools with small classes:
- At 17 years they had lower rates of antisocial behavior and mental health problems than a control group.
  - The effects were greatest among those who had been undernourished to begin with
Oral Health

- By 3 all primary (deciduous) teeth are in place
- Permanent teeth appear at about 6
  - Thumb sucking is usually not a problem
- Fluoride and improved dental care has dramatically reduced incidence of tooth decay
  - Disadvantaged children have more untreated cavities
- Tooth decay often comes from sweetened milk and juices and lack of regular dental care
Sleep Patterns and Problems

• Sleeping Disturbances & Disorders
• Bed-Wetting
Sleep Patterns and Problems

• Sleep patterns change throughout growing-up years
  – Young children sleep more deeply at night
• Most US children sleep 11 hours at night with no naps by age 5
  – Differences in cultural expectations
• Young children may engage in elaborate routines to avoid separation anxiety and take longer to fall asleep
  – ½ of parents report stalling at bedtime and 15 minutes or longer for child to fall asleep
  – 1/3 of preschoolers actively resist going to bed
  – 1/3 of preschoolers awake at least once each night
  – Regular, consistent sleep routines minimize these problems
• Transitional objects help a child shift from the dependence of infancy to independence of later childhood
  – Night light, favorite toy, blanket
Sleep Requirements in Childhood

The chart illustrates the recommended hours of sleep for different age groups in childhood. Nighttime sleep is typically indicated by blue bars, while daytime sleep, marked by purple bars, is divided into typical numbers of naps per day. The length of naps may vary significantly.

Key points:
- 1 week: Total sleep: 16 1/2 hours
- 1 year: Total sleep: 15 1/2 hours
- 2 years: Total sleep: 15 hours
- 3 years: Total sleep: 15 hours
- 6 months: Total sleep: 14 1/4 hours
- 9 months: Total sleep: 14 hours
- 12 months: Total sleep: 13 3/4 hours
- 18 months: Total sleep: 13 1/2 hours
- 2 years: Total sleep: 13 hours
- 3 years: Total sleep: 12 hours
- 4 years: Total sleep: 11 1/2 hours
- 5 years: Total sleep: 11 hours
- 6 years: Total sleep: 10 3/4 hours
- 7 years: Total sleep: 10 1/2 hours
- 8 years: Total sleep: 10 1/4 hours
- 9 years: Total sleep: 10 hours
- 10 years: Total sleep: 9 3/4 hours
- 11 years: Total sleep: 9 1/2 hours
- 12 years: Total sleep: 9 1/4 hours
- 13 years: Total sleep: 9 hours
- 14 years: Total sleep: 8 3/4 hours
- 15 years: Total sleep: 8 1/2 hours
- 16 years: Total sleep: 8 1/4 hours
- 17 years: Total sleep: 8 1/4 hours
- 18 years: Total sleep: 8 1/4 hours

*Divided into typical number of naps per day. Length of naps may be quite variable.
Sleep Disturbances & Disorders

- 10% of parents say their preschooler has a sleep problem
- Sleep disturbances may be caused by accidental activation of brain’s motor control system or incomplete arousal from a deep sleep
- Night terrors awaken the child abruptly early in the night
  - Child may scream and sit up in bed, rapid breathing, staring, or thrashing
  - Not really awake, quiets quickly, and remembers nothing the next day
  - Occurs between 3 and 13 years
  - Boys more often
- Sleep walking and talking fairly common 3 – 12 years
  - Harmless, don’t interrupt, causes more confusion and fright
- Nightmares common
  - Occur toward morning
  - Brought on by staying up too late, eating heavy meal close to bed or overexcitement
  - Frequent, persistent nightmares that make a child fearful or anxious may signal excessive stress
Bed-Wetting

- Most children dry day and night by 3 – 5 years
- Enuresis: repeated involuntary urination at night, is not unusual
  - 10 – 15% of 5-year-olds wet bed regularly, in deep sleep
    - More commonly boys
  - More than ½ outgrow bed-wetting by 8
  - Not emotional, mental or behavioral problem
  - Runs in families
  - Combined with slow motor maturation, allergies or poor behavioral control
- Fewer than 1% have physical problem
- Punishment doesn’t work nor does withholding liquids
- Bells to wake up less that 50% effective
- No evidence of behavioral therapy success
Motor Development

- Gross & Fine Motor Skills
- Artistic Development
- Handedness
Gross & Fine Motor Skills

- Gross motor: basis for sports, dancing, and other activities
  - Motor skills don’t develop in isolation
  - Large muscles
    - Running, jumping
  - Sensory and motor areas of cerebral cortex allow better coordination of what child wants to do and what they can do
  - Muscles are stronger
  - Lung capacity is greater
  - Children are faster
  - Simple to complex
    - Jump on bed
    - Jump on hard surface
    - Jump from small step
    - Jump forward
    - Balance on one foot
    - Hop 3 hops
  - Stair climbing: up is easier
<table>
<thead>
<tr>
<th>3-Year-Olds</th>
<th>4-Year-Olds</th>
<th>5-Year-Olds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannot turn or stop suddenly or quickly</td>
<td>Have more effective control of stopping, starting, and turning</td>
<td>Can start, turn, and stop effectively in games</td>
</tr>
<tr>
<td>Can jump a distance of 15 to 24 inches</td>
<td>Can jump a distance of 24 to 33 inches</td>
<td>Can make a running jump of 28 to 36 inches</td>
</tr>
<tr>
<td>Can ascend a stairway alternating feet, unaided</td>
<td>Can descend a long stairway alternating feet, if supported</td>
<td>Can descend a long stairway alternating feet, unaided</td>
</tr>
<tr>
<td>Can hop, using largely an irregular series of jumps with some variations added</td>
<td>Can hop four to six steps on one foot</td>
<td>Can easily hop a distance of 16 feet</td>
</tr>
</tbody>
</table>

Gross & Fine Motor Skills

• Fine Motor
  • Tying shoelaces
  • Cutting with scissors
    • Simple to complex
  • Pour liquids
  • Eat with utensils
  • Use toilet alone
  • Imitate circle, horizontal line, vertical line
  • Draw circle, horizontal line, vertical line
  • Draw a person
    • Simple to complex
  • By three years, most children demonstrate a preference for using one hand over another
    • Not all tasks are performed by preferred hand
Artistic Development

• Use cognitive abilities
• Express themselves emotionally
• Stages in early drawing reflect maturation of the brain as well as the muscles (Kellogg)
  – 2 years: scribble, not random
    • 20 basic scribbles
<table>
<thead>
<tr>
<th></th>
<th>Single vertical line</th>
<th></th>
<th>Roving enclosing line</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Multiple vertical lines</td>
<td></td>
<td>Ziggazag or waving line</td>
</tr>
<tr>
<td>3</td>
<td>Single horizontal line</td>
<td></td>
<td>Single loop line</td>
</tr>
<tr>
<td>4</td>
<td>Multiple horizontal lines</td>
<td></td>
<td>Multiple loop line</td>
</tr>
<tr>
<td>5</td>
<td>Single diagonal line</td>
<td></td>
<td>Spiral line</td>
</tr>
<tr>
<td>6</td>
<td>Multiple diagonal lines</td>
<td></td>
<td>Multiple overlaid circles</td>
</tr>
<tr>
<td>7</td>
<td>Single curved line</td>
<td></td>
<td>Multiple line circles</td>
</tr>
<tr>
<td>8</td>
<td>Multiple curved lines</td>
<td></td>
<td>Circular line spread out</td>
</tr>
<tr>
<td>9</td>
<td>Dots</td>
<td></td>
<td>Single crossed circle</td>
</tr>
<tr>
<td>10</td>
<td>Roving open lines</td>
<td></td>
<td>Imperfect circle</td>
</tr>
</tbody>
</table>
Artistic Development

Ages 3–4

Shape stage

Design stage

Ages 4–5

Pictorial stage

(a) Early pictorial

(b) Later pictorial

(c)
Artistic Development

• Age 3: shape stage
  – 6 basic shapes
    • Circles
    • Squares or rectangles
    • Triangles
    • Crosses
    • Xs
    • Odd forms

• Design stage: combine two basic shapes

• Age 4 – 5: pictorial
Copying Shapes: 3 years
Copying Shapes: 4 years
Copying Shapes: 5 and 7 years
Adults should not teach children to draw but should learn from them.

Pablo Picasso
Handedness

- Preference for using one hand over the other
- Usually evident by age 3
- Left hemisphere of brain is usually dominant; most people favor their right side
- Not always clear cut
  - Not everybody prefers one hand for every task
- Boys more likely to be left-handed
- Genetic or learned?
  - Controversial
  - May be a single gene for right-handedness
Health & Safety

• Accidental Injuries & Deaths
• Health in Context: Environmental Influences
Nutrition: Preventing Obesity

• Obesity is a serious problem
  – 2003 – 2006 more than 12% of 2- to 5-year-olds have BMI at or above the 95\textsuperscript{th} percentile,
    • Another 12% were at or above the 85\textsuperscript{th} percentile
  – Greatest risk is children in low-income families
  – Tendency may be hereditary, but main factors are environmental
    • Caloric intake
    • Lack of exercise
  – After age 2 can drink skim milk
  – An additional hour of TV over 2 hours per day increases the likelihood of obesity at age 30 by 7%
    – What children eat is as important as how much they eat

• Excess body mass is a threat to health
Surviving the First Five Years

- Bar graph showing deaths per 1,000 live births by region:
  - Africa: 180
  - Americas: 60
  - Southeast Asia: 40
  - Europe: 20
  - Eastern Mediterranean: 120
  - Western Pacific: 80
  - World: 50

- Pie chart showing causes of neonatal deaths:
  - Neonatal: 37%
  - Diarrhea: 17%
  - Pneumonia: 19%
  - Malaria: 8%
  - Measles: 4%
  - HIV/AIDS: 3%
  - Injuries: 3%
  - Other: 10%
  - Asphyxia: 23%
  - Sepsis or pneumonia: 26%
  - Congenital: 8%
  - Preterm: 28%
  - Other 7%
Accidental Injuries & Deaths

- Major diseases of childhood are much less common in Western industrialized countries as a result of widespread immunizations
  - In the developing world, preventable diseases still take a large toll
    - Pneumonia, diarrhea, malaria
  - Young children are curious and venturesome
  - Accidents are leading cause of death after infancy throughout childhood*
  - Early childhood not good at determining risk
  - Decrease in deaths due to car seats
  - Most deaths resulting from injuries occur in the home
    - Fires, drowning in tubs, suffocation, poisoning, falls
  - Poisoning from medications require locking up (20,000 treated yearly)
    - Childproof caps
Health in Context: Environmental Influences

Socioeconomic Status and Race/Ethnicity

- The lower the SES, the greater the risk of illness, injury, and death
  - More likely to have chronic conditions and activity limitations
  - More likely to lack health insurance
  - More likely to have unmet medical and dental needs

- Medicaid has served as a safety net for many poor children since 1965
  - SCHIP (State Children’s Health Insurance program) extends coverage to those not previously covered by Medicaid

- Access to quality care is a particular problem for black and Latino children, especially poor or near poor

- Language and cultural barriers and need for Latino and Asian care providers could bridge the gap for services to underserved populations
Health in Context: Environmental Influences: *Homelessness*

• Reduction in affordable housing and poverty has increased homelessness
• 1.35 million children are homeless each year
  • Families are 40% of homeless population
  • Proportion is higher in rural areas
  • Many homeless families headed by single mothers in their 20s
    • Often fleeing domestic violence
• Cut off from supportive community, family ties, and institutional resources and ready access to medical care and schooling
  • Result: more health problems than poor children who have homes
  • 3 times more likely to be immunized
  • More likely to die in infancy
  • 2 – 3 times more likely to have iron deficiency anemia
• High rates of diarrhea, severe hunger and malnourishment, obesity, tooth decay, asthma, respiratory, skin, eye/ear infections, scabies, lice, trauma-related injuries, elevated levels of lead
Health in Context:
Environmental Influences:

*Homelessness*

• Children suffer:
  – Depression
  – Anxiety
  – Neurological and visual deficits
  – Developmental delays
  – Behavior problems
  – Learning difficulties
  – Miss a lot of school and have no place to do homework
  – Perform poorly on standardized reading and math tests
  – More likely to repeat a grade or place in special education
Percentage of Homeless Families with Children (U.S. Cities)
Health in Context: Environmental Influences

Exposure to Smoking

- Parental smoking in home and car is preventable cause of illness and death
  - Damage from tobacco is greatest in young children
  - 60% of US children 3 – 11 years exposed to secondhand smoke
    - Increased risk of respiratory infections, bronchitis, pneumonia, ear problems, worsened asthma, slowed lung growth
    - Secondhand smoke contains hundreds of carcinogens (cancer-causing chemicals) and can lead to premature death
Health in Context:
Environmental Influences

Exposure to Air Pollution

• Environmental contaminants may play role in some childhood cancers, neurological disorders, ADHD, mental retardation

• 62% children live in counties that don’t meet federal guidelines for national air quality standards, ozone levels being worst offender

• Poverty and minority status associated with higher exposure to polluted air
Exposure to Pesticides

- 4.5 billion pounds of chemical pesticides used annually in US
  - Found in food, water, homes, schools, workplaces, lawns, gardens
  - ½ of reported pesticide poisonings (50,000 year) occur in children under 6
- Children more vulnerable than adults to damage from pesticides
  - Pesticide exposure greater in agricultural areas
- Precautions against pesticide damage: apply pesticides prudently (or use organic methods), store in original containers, wash fresh produce before eating or organic, insect repellants used sparingly and washed off when indoors (or natural methods)
Health in Context: Environmental Influences

Exposure to Lead

• Lead-contaminated foods or water
• Airborne industrial wastes
• Putting contaminated fingers in mouth
• Inhaling dust
• Playing with paint chips in homes or schools where there is lead-based paint
• Lead poisoning can seriously interfere with cognitive development
• Lead poisoning can lead to neurological and behavioral problems
• Effects on developing brains may be irreversible
• Very high levels of blood lead may cause headaches, abdominal pain, loss of appetite, agitation, lethargy, vomiting, stupor, convulsions
  • 5-year longitudinal study treated lead-exposed children but did not improve damaged psychological, behavioral, and cognitive functioning
• PREVENTION IS CRITICAL, no safe level of exposure to lead
There is hope if people will begin to awaken that spiritual part of themselves, that heartfelt knowledge that we are caretakers of this planet.

~Brooke Medicine Eagle