Overview of Chapter 14

- Adolescents & Society
- Biological Theories of Adolescent Development
- Puberty
- The Emergence of Sexual Behavior
- Cognitive Development

Overview of This Week

- A New Quality of Mind
- Research on Adolescent Thought
- Puberty
- What is Adolescence?
- Thinking About Moral Issues

New Quality of Mind

- Ability to think systematically, logically, and hypothetically
- Literature, art, and religion take on new meanings
- Fascination with abstract ideas
Research on Adolescent Thought

Features of Formal Operational Thought

- **Hypothetical reasoning**
  - While a younger child would make a decision without first contemplating the range of possibilities, adolescents can generate and mentally test hypotheses and can also think about situations that are contrary to fact

- **Metacognitive thinking**
  - Thinking about one’s own thinking becomes more complex; can also think more deeply about others’ points of view

Features of Formal Operational Thought

- **Thinking about the future**
  - While a younger child is likely to focus only on having a good time right now, adolescents are better able to plan ahead

- **Thinking about conventional limits**
  - Adolescents rethink fundamental issues of social relations, morality, politics, and religion; leads to idealism and a search for heroes

Formal Operations

- **Ability to think systematically about all logical relations within a problem, joined with a keen interest in abstract ideas and in the process of thinking itself**

- **Examples**
  - Thinking about politics and law in terms of abstract principles; capable of seeing the beneficial, rather than just the punitive, side of laws
  - Interested in universal ethical principles and critical of adults’ hypocrisies
Piaget’s “combination-of-variables” problem (p. 624)

A combination-of-variables task involving an everyday situation

Definitions
- Sugar: The main ingredient to be measured.
- Toss: A method to determine the presence of sugar.
- Index: A visual representation of the presence of sugar.

Possible strategies
1. Use the index to determine if there is sugar present.
2. Use the toss and visual representation to confirm.
3. Use the index and toss to determine if there is sugar present.

A deductive reasoning problem

<table>
<thead>
<tr>
<th>Card 1</th>
<th>Card 2</th>
<th>Card 3</th>
<th>Card 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking beer</td>
<td>Drinking coke</td>
<td>16 years of age</td>
<td>22 years of age</td>
</tr>
</tbody>
</table>

Each of the above cards has information about a person sitting at a table. One side of each card gives the person’s age and the other side of the card says what they are drinking. Here is the rule: IF A PERSON IS DRINKING BEER, THEN THE PERSON MUST BE OVER 21. Pick the cards or card that you must turn over to find out whether the rule is being broken.

Reasoning by Logical Necessity

- Underlies deductive reasoning (e.g., Men are mortal, Fred is a man, so Fred is mortal)...
  - Begins to appear around 6th grade (ages 11-12)...
  - There is a great deal of variation in when and under what circumstances it is displayed.
Development of formal operational reasoning as indicated by responses to deductive reasoning problems.
Adolescent Egocentrism

- An adolescent’s belief that their own psychological experiences are unique.
- Some teenagers believe that they are immune to the common dangers that apply to ordinary mortals, leading them to engage in risky behaviors such as drinking and driving, or unprotected sex.

Criticisms of Piaget

- Formal operational thought develops more slowly than Piaget claimed, with some teens not showing formal thought until late adolescence.
- Adolescents and adults in agricultural societies do not seem to show formal thought, so it may require education in science and math.
- Even adolescents who can demonstrate formal thought on science problems may not be able to apply those reasoning tools to other aspects of their life until much later.

What Piaget ignored:

- Formal operational thinking cannot be achieved by the individual alone.
- The adolescent must participate in particular kinds of social institution if they are to become capable of this kind of systematic theoretical reasoning.

Puberty

- Growth Spurt
- Brain Development
- Sexual Development
- Timing of Puberty
Puberty

- The series of biological developments that transforms individuals from a state of physical immaturity into one in which they are biologically capable of sexual reproduction.

Puberty

- Cascade of biochemical events that begins around the end of the first decade of life
  - Alters body size, shape, and functioning.

Growth Spurt

- *Homo sapiens* is only primate to experience a growth spurt following childhood – a key indicator of the onset of puberty.

Faster growth than at any time since infancy

- During 2-3 years, boys may grow 9 inches taller, girls 6-7 inches taller.
- By end of growth spurt, reach 98% of adult height.
- Progression: Legs → trunk → chest and shoulders, head.
- Boys lose body fat and are stronger than girls by the end of puberty: girls, however, are healthier, end up living longer, and are better able to tolerate long-term stress.
Brain Development

Although the brain attains 90% of its adult weight by the age of 5, and grows very little in size during adolescence, recent longitudinal studies point to complex changes in its organization and function at puberty.

These images are composites derived from brain scans of normally developing children and adolescents (a) and adolescents and adults (b). The red areas indicate where there is both an increase in the size of the brain and a decrease in gray matter. Note that there are substantially more areas of red in the adolescent and adult image, most of which are concentrated in the frontal area of the brain associated with complex cognitive processes.

Sexual Development

- Changes in the primary sex organs – those directly involved in reproduction
- Appearance of secondary sex characteristics – the anatomical and physiological signs that outwardly distinguish males from females
  - Appearance of underarm and pubic hair; facial hair (M); voice changes (M); muscles develop (M); breasts and mammary glands develop (F); hips and pelvic inlet widen (F) – do not reach adult size until 18 years of age, which makes childbirth difficult and potentially dangerous for young adolescent females

Timing of Puberty

- Wide individual variations, although girls on the average begin somewhat earlier
  - Adolescent females who experience high levels of family stress go through menarche earlier, while those who participate in high levels of physical exercise reach it later
  - Age of menarche has been declining in most industrialized countries since 1840s...
  - Fifty years ago, maximum height for USA male reached at age 26; now at age 18
**Sequence of Events at Puberty**

**Females**
- Height spurt: 11.5-15.5
- Menarche: 12.5-13.5
- Breast: 11.0-12.5
- Pubic hair: 10.5-11.5

**Males**
- Height spurt: 11.5-15.5
- Penis: 13.5-14.5
- Testes: 12.5-13.5
- Pubic hair: 10.5-11.5

Puberty lasts approximately 4 years.

**What is Adolescence?**

**Age of Menarche**
- Has been declining in both developing and industrialized countries during the past 150 years.

**Length of Time Between Puberty, Sexual Activity, and Marriage**

- **1900, women**
  - Menarche: 13
  - Sexual intercourse: 22 years
  - Marriage: 28 years

- **1980, women**
  - Menarche: 11.8
  - Sexual intercourse: 14.8 years
  - Marriage: 26.8 years

- **1980, men**
  - Sexual intercourse: 12.5 years
  - Marriage: 28 years
Adolescence is...

Rites of Passage
- Puberty: 12 y
- Bar Mitzvah, Bat Mitzvah: 13 y
- Quinceañeras: 15 y
- Drivers License: 16 y
- Eligible to Vote: 18 y
- Legal drinking: 21 y
- Graduate college: 24 y

Thinking about Moral Issues
An Important Concern in Adolescence

- What is right? What is wrong?
- What principles should I base my behavior on and use to judge the behavior of others?
- How do I balance my responsibilities to others against my own personal rights?
- What does it mean to be a moral person in a world where immoral behavior is so prevalent?
- Why is our society organized as it is?
- What might be done to improve society and myself?
<table>
<thead>
<tr>
<th>Level</th>
<th>Stage</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1:</td>
<td>1: Heteronomous morality</td>
<td>age 5 or 6</td>
</tr>
<tr>
<td>Preconventional</td>
<td>2: Instrumental morality</td>
<td>7 or 8</td>
</tr>
<tr>
<td>Level 2:</td>
<td>3: Good-child morality</td>
<td>10 or 11</td>
</tr>
<tr>
<td>Conventional</td>
<td>4: Law &amp; Order morality</td>
<td>adolescence</td>
</tr>
<tr>
<td>Level 3:</td>
<td>5: Social contract morality</td>
<td>early adulthood</td>
</tr>
<tr>
<td>Postconventional</td>
<td>6: Universal ethical principles</td>
<td>rare</td>
</tr>
</tbody>
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### Mean percentage of moral reasoning of U.S. citizens at each of Kohlberg's stages, by age group

![Graph showing percentage of moral reasoning by age group.]

### Distribution of moral judgment scores for a sample of 16-year-olds

![Graph showing distribution of moral judgment scores.]

**Two Different Moral Voices**

- Carol Gilligan: *In a Different Voice*
- Female moral thinking is oriented toward interpersonal relationships, coupled with an ethic of caring and responsibility for other people (i.e., altruism).
- Male moral reasoning is oriented toward the question of individual rights and justice.
- Does this remind you of anything we’ve talked about?
- Chodorow’s view of early childhood
- Men are not more moral than women; they have a different way of thinking about morality.