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Section A

Factors That Contribute to Brain Maturation
Adolescence: Time for Great Risk and Opportunity

- It is the stage of life of the greatest risk for:
  - Emergence of psychological disorders
  - Depression, anxiety, conduct disorders (early/mid adolescence)
  - Schizophrenia (late adolescence)
  - Alcohol and drug use (mid/late adolescence)
Culture Influences the Timing of Puberty

- Monogamous vs. polygamous societies
- Presence vs. absence of father
- Exposure to pressures
Some Developmental Phenomena Occur Cross-Species

- Earlier maturation of females
- Greater risk taking of males
- Change in sleeping patterns
- Increased alcohol consumption
Epigenetics

- Genes and environment interact through epigenetic processes to influence behavior
How Epigenetics Works

- Epigenetics controls genetic influence through methylation (-CH3 group) to one of the proteins in DNA sequence, effectively silencing the gene
  - Genes surrounded by methyl groups are more difficult to transcribe or copy
The role of licking of rat pups by mother in infancy influences degree of aggressiveness when they mature (Weaver et al., 2004)
Genetic Influences on Behaviors

- Genetic influences on behaviors tend to increase with age through adolescence.
- Verbal skills and cognitive functioning of adopted children become increasingly more like biologic than adoptive parents during adolescence.
Genetic Differences in Brain Development

- Female is the “default” pathway for neurodevelopment
- Absent of testosterone, female brain development occurs with syndromes
  - Congenital adrenal hyperplasia
  - Androgenetic sensitivity syndrome
Sexual Orientation

- Pre- and post-natal hormonal environment of the brain may influence sexual orientation
  - Congenital adrenal hyperplasia
  - Diethylstilbestrol (DES)
  - Maternal stress
  - Genetics
- Perinatal: gonadal hormones influence sexual differentiation of the brain
- Puberty: rising hormonal levels produce final maturational changes of the brain
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<td>4</td>
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<tr>
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Source: Urdy, 1985
Raging Hormones Is a Myth

- Hormones contribute only modestly to adolescent mood
- Contributions to negative affect
  - Gonadal hormones: 4%
  - Social factors: 8-18%
- Testosterone contributes modestly to male risk-taking