Hormones and Chromosomes

Ch 4
Chapter Overview

I. “Quiz”
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I. Quiz
1. PMS makes you smarter.
   We’ll come back to this one.
2. Men who live with pregnant women undergo hormonal changes that facilitate fathering.

True
3. Steroid hormones are hormones related to the differences between the sexes and sexual reproduction.

True
4. Androgens are male hormones.

False
5. Estrogens are female hormones. The jury is still out.
6. Men are smarter than women because male brains are larger

Unknown
7. Primary sex traits include muscular development, a deepened voice, and facial hair in men and rounded contours and enlarged breasts in women.

False
8. Persons with an XXX or XYY chromosomal pattern (Klinefleter syndrome) do NOT develop into “superfemamine” or “hypermasculine” persons.

True
9. Symptoms once seen as parts of PMS are probably due to expectation and false attribution to hormonal changes preceding menstruation.
10. Native Americans whose “spirit” did not match their biological bodies (androgynous persons) were more often accepted by their people than rejected.

True
II. Consider the Following

A. PMS
B. “Father Nature”
C. Big Discussion
A. PMS Makes You Smarter

*During PMS certain hormones drop, like testosterone, which feeds the left brain. And the left brain controls logic and makes you sharp at math and other rational areas. So when there's less testosterone in your body, you end up using your right brain more - and that's the part that controls creativity. This is a good time to write a song, redecorate your room/house - anything artistic. If there's a personal problem you've been stuck on, brainstorm solutions now. The right side of the brain is good at thinking outside the box.*

*You're also more intuitive because the right brain is tapping into your subconscious. Put it to use!* 

*You're more assertive. Progesterone drops, which drives your maternal, nesting side. The less you have, the less "needy" you feel as far as wanting to feel settled in a relationship. You're more self-reliant and less apt to tolerate people you don't really like much. So sit a friend/boyfriend/husband/etc down and confront them... just be careful.*

Mon. Feb 20, 2:58pm
B. Father Nature: The Making of a Modern Dad

Psychology Today, March-April, 2002
III. The Endocrine System and Steroid Hormones

A. Definitions:
   Endocrine system and Steroid Hormones affect the development and functioning of the reproductive system.
   - Hormones = substances secreted from endocrine glands
   - Steroid hormones = hormones that relate to reproductive functioning.
   - Gonads = reproductive organs (ovaries and testes) that secrete steroid hormones,
   - Pituitary gland = gland located in the brain that secretes a number of tropic hormones.
   - Tropic hormones = hormones that stimulate other glands to release their hormones.
B. Explanations

1. The pituitary gland must be stimulated by releasing hormones produced by the hypothalamus.

2. The two main classes of gonadal hormones are androgens and estrogens
   a. Most common estrogen is estradiol.
   b. Men and women have androgens
   c. Most common androgen is testosterone
“Well, Mr. Rosenberg, your lab results look pretty good—although I might suggest your testosterone level is a tad high.”
IV. Stages of Differences Between the Sexes

A. Sexual differentiation begins at conception & ends at puberty.
B. Prenatal => internal genitalia and external genitalia develop at separate times.
C. Difference in timing => possibility of errors in male & female patterns.
V. Sexual Differentiation

A. Conception => X chromosome from mother and X or a Y chromosome from father.
X Chromosome Y Chromosome
(And now a stupid, sexist joke)
Gene, I've never met a female that wasn't a double crosser.
B. Six wk. hormones => no sex differences

1. Both have Wolffian and Müllerian systems
   a. Males => Wolffian system (requires Müllerian-inhibiting substance)
   b. Females => Müllerian system (requires no prenatal surge of hormones, Wolffian system degenerates)
Internal Genitalia Development

At 6 weeks, all human fetuses have the antecedents of both male (Wolffian) and female (Müllerian) reproductive ducts.

Under the influence of testicular testosterone, the Wolffian system develops, and Müllerian inhibiting substance causes the Müllerian system to degenerate.

In the absence of testosterone, the Müllerian system develops into female reproductive ducts, and the Wolffian system fails to develop.
C. 3-4 months: external genitalia develop. Initially, male & female external genitalia are identical. Then androgens promote male development. (Textbook p. 79)
D. Nervous System shows gender differences.

1. May develop because of hormonal influences.
2. Brain size differs with gender.
   • Women's brains are less lateralized than men's.
   • Some gender differences exist in brain structures, but the differences b/w sexes are smaller than the differences within sexes.
E. Changes During Puberty produce sexually-motivated, reproductive people.

a. Pituitary => gonadotropic hormones (follicle-stimulating hormone or FSH & luteinizing hormone or LH)

b. FSH & LH stimulate gonads to increase estrogens and/or androgens production

c. FSH & LH => maturation of genitals & fertility

d. LH & FSH seems necessary for sexual interest during puberty.
F. When Things Go Wrong

1. Wrong Number of Sex Chromosomes
   a. missing or extras of pair 23 => developmental disabilities, mental retardation, & reproductive problems.
b. Klinefelter syndrome:
- XXY chromosome pattern => sterile male w/ a feminized body appearance.
- Additional X chromosomes => increasing problems.
- XYY chromosome pattern => controversial
  » Aggression?
  » Tendency is to be very tall & often mildly retarded.
2. Abnormalities in Prenatal Hormones

a. Can produce mismatch b/w chromosomal sex and reproductive organs & internal & external genitalia.

- Adrenogenital syndrome => masculine external genitalia of female fetuses (may be minor & surgically corrected.)
Androgen insensitivity syndrome affects chromosomal males; bodies fail to respond to androgens; external genitalia of females; usually not identified until menarche does not occur; hormone treatments cannot correct.
• Hermaphroditism or intersexuality: individual has both male and female reproductive organs.
• Pseudohermaphroditism => individuals who may be identified as girls at birth but who masculinize during puberty.
b. The affected individuals do not typically experience gender identity problems, & have a consistent social and erotic identity.
VI. Hormones and Behavior Instability AKA Raging Hormones

A. Premenstrual Syndrome (PMS)
   1. Lots of publicity but poor definition
   2. Lots of research but poor control of variables
   3. Well-controlled studies found no evidence of PMS or difference in mood fluctuations between young men and young women.
   4. When participants had to recall moods, evidence of PMS appeared. This suggests that mood-related symptoms of PMS may be due to attribution rather than experience.
   5. Women (and those around them) may be more willing to attribute women’s negative mood to PMS than to accept other causes for these problems.
B. Testosterone and Aggression

1. James Dabbs => complex relationships b/w testosterone level and antisocial (but not necessarily aggressive) behavior.
2. Testosterone has complex affects on women's behavior.
3. Directionality problem: testosterone & aggression
4. The relationship may be even more complex, with testosterone being one factor in an interaction that is capable of making men warriors or fathers.
C. CONSIDERING DIVERSITY,
1. More than two sexes.
2. Examples:
b. Pseudohermaphrodites of Dominican Republic & New Guinea
b. Native American berdache
c. India: Hijras--sometimes intersex, transsexuals, transvestites or “sworn virgins.”
d. Some Middle Eastern cultures have individuals who are not gender-consistent. This includes professional women from Western countries.
Follow up on “PMS Makes You Smarter.”

A. Research Findings
B. “If Men Could Menstruate,” Gloria Steinum (1979)