Lecture 9: Biology and Crime; Evolutionary Theory and Crime

Part I: Early Biological Theories

Part II: Modern Biological Theories

Part III: Evolutionary Theory and Crime (Homicide)

Part I: Early Biological Theories

- Dominated criminological thinking after 1870s.

- Assumed crime is not rationally reasoned behavior that occurs unless punishment is applied (deterrence), but the result of inborn abnormalities.

Nineteenth-Century Positivism

Emphasizes the understanding of criminal behavior by uncovering factors or traits which account for criminal behavior.

Positivists use the **scientific method** and empirical data to aid in their understanding of crime.

Cesare Lombroso

- In 1876, wrote *The Criminal Man*.

- Observed physical characteristics of Italian prisoners (head, body, arms, skin). Concluded that prisoners are different from law-abiding people.

- Characteristics identify "born criminals." Born criminal is an "atavism."

Atavism: Atavism refers to Lombroso's theory that while most individuals evolve, some devolve, becoming primitive or "atavistic". These evolutionary "throwbacks" are "born criminals," the most violent criminals in society. Born criminals could be identified through their atavistic stigmata.

Visible "Stigmata"

- Asymmetrical face
- Large monkey-like ears
- Large lips
- Receding chin
- Twisted nose
- Long arms
- Skin wrinkles

Applications of Lombroso's Ideas

- These photos were an early French police guide to identify particular types of criminals.

"Innate" Criminology

- Lombroso's theory motivated others to search for characteristics that might cause individuals to commit crime (e.g., inherited traits, physical abnormalities, body type, feeblemindedness, biochemical imbalances).
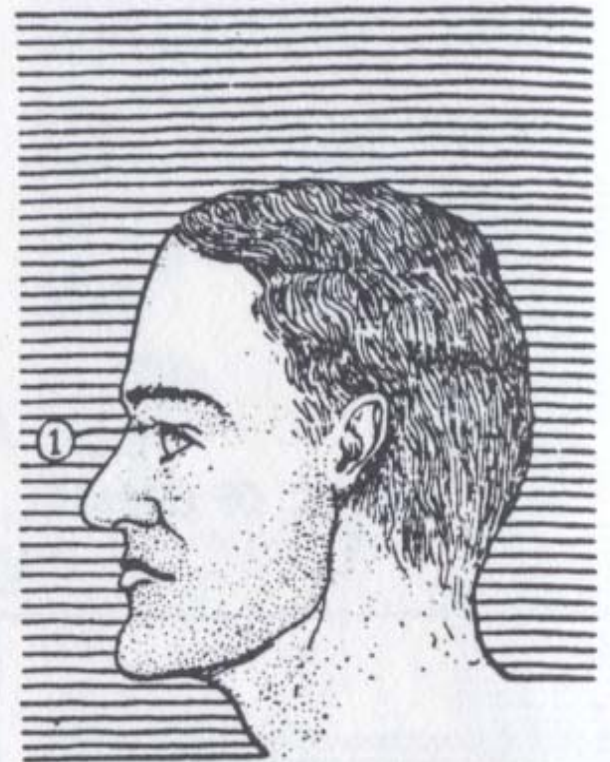
OLD AMERICAN CRIMINALS
MOSAIC OF EXCESS METRIC AND MORPHOLOGICAL FEATURES,
INDEPENDENT OF AGE AND STATE SAMPLING

ROBBERS
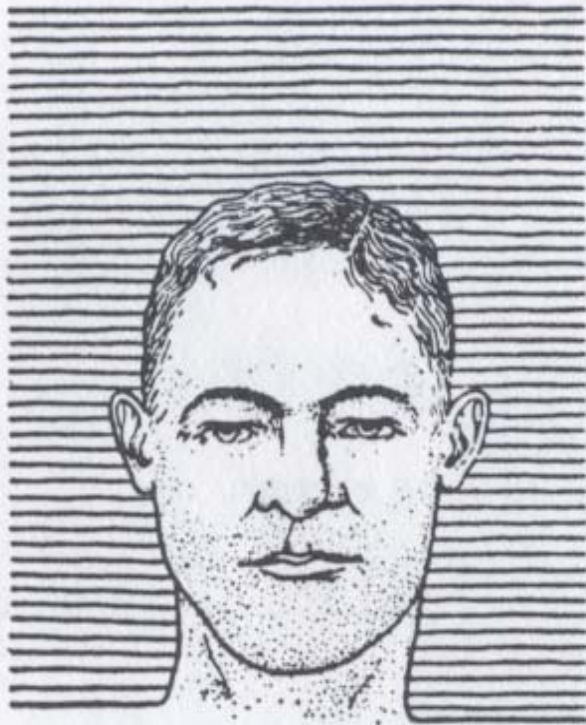
Low waved hair
High heads
Median eyefolds ①
Broad faces
Unwrinkled
Short ears
Lack of sparse beards
Relatively broad, short noses

OLD AMERICAN CRIMINALS
MOSAIC OF EXCESS METRIC AND MORPHOLOGICAL FEATURES, INDEPENDENT OF AGE AND STATE SAMPLING
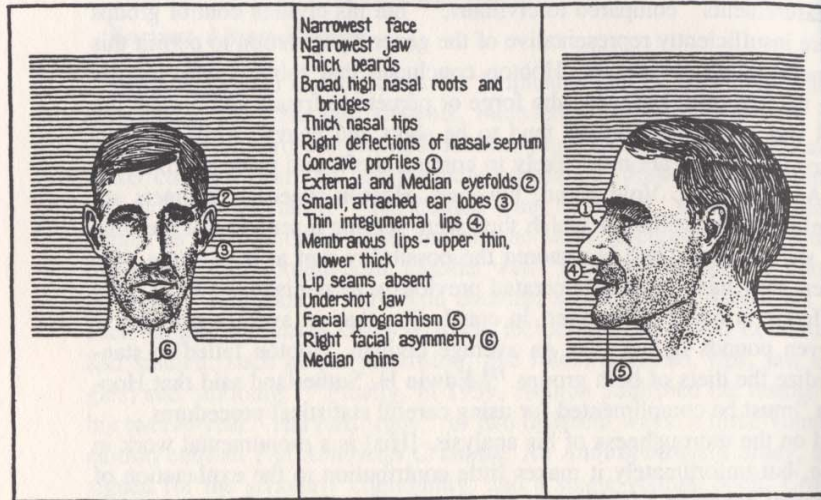### BURGLARS AND THIEVES

Golden hair
Deficiency of head length
Deficiency of head circumference
Deficiency of face breadth
Concave noses
Deficiency of jaw breadth
Undershot jaws
Excessive forehead breadth
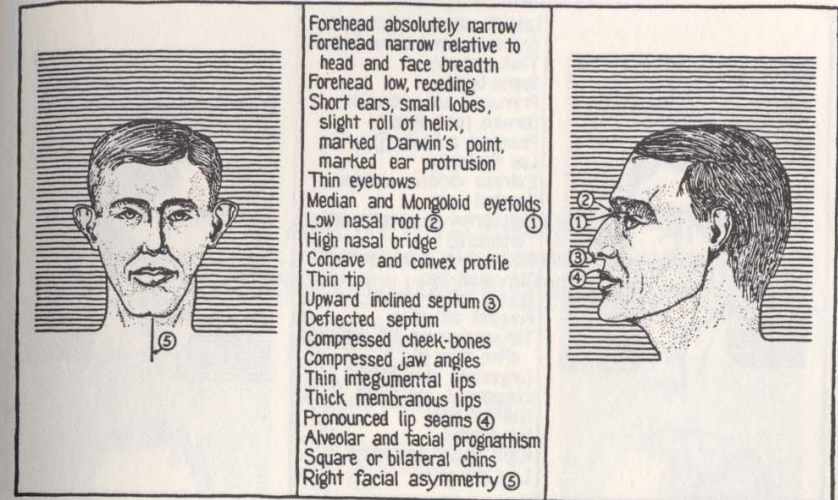 relative to jaw breadth

OLD AMERICAN CRIMINALS
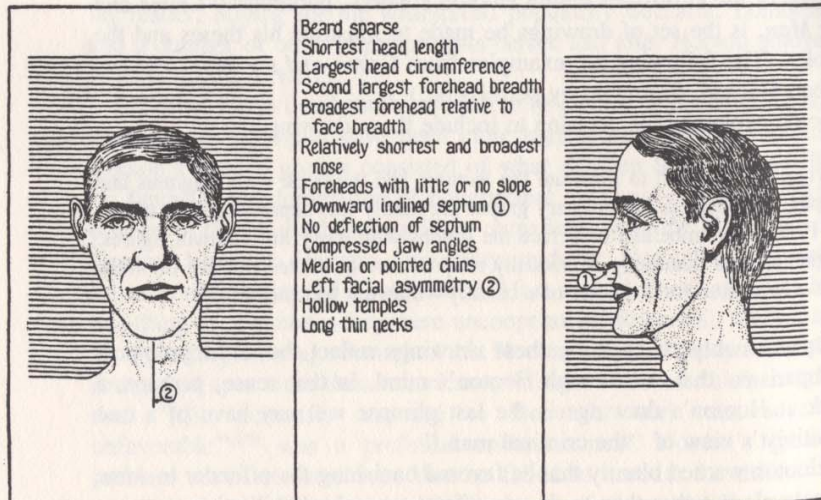## MOSAIC OF CRANIAL, FACIAL, METRIC AND MORPHOLOGICAL FEATURES
MASSACHUSETTS

Narrowest face
Narrowest jaw
Thick beards
Broad, high nasal roots and
   bridges
Thick nasal tips
Right deflections of nasal septum
Concave profiles ①
External and Median eyefolds ②
Small, attached ear lobes ③
Thin integumental lips ④
Membranous lips – upper thin,
   lower thick
Lip seams absent
Undershot jaw
Facial prognathism ⑤
Right facial asymmetry ⑥
Median chins

OLD AMERICAN CRIMINALS
MOSAIC OF CRANIAL, FACIAL, METRIC AND MORPHOLOGICAL FEATURES
KENTUCKY

Forehead absolutely narrow
Forehead narrow relative to
   head and face breadth
Forehead low, receding
Short ears, small lobes,
   slight roll of helix,
   marked Darwin's point,
   marked ear protrusion
Thin eyebrows
Median and Mongoloid eyefolds
Low nasal root ②
High nasal bridge
Concave and convex profile
Thin tip
Upward inclined septum ③
Deflected septum
Compressed cheek-bones
Compressed jaw angles
Thin integumental lips
Thick membranous lips
Pronounced lip seams ④
Alveolar and facial prognathism
Square or bilateral chins
Right facial asymmetry ⑤

OLD AMERICAN CRIMINALS
MOSAIC OF CRANIAL, FACIAL, METRIC AND MORPHOLOGICAL FEATURES
TENNESSEE

Beard sparse
Shortest head length
Largest head circumference
Second largest forehead breadth
Broadest forehead relative to
   face breadth
Relatively shortest and broadest
   nose
Foreheads with little or no slope
Downward inclined septum ①
No deflection of septum
Compressed jaw angles
Median or pointed chins
Left facial asymmetry ②
Hollow temples
Long thin necks

OLD AMERICAN CRIMINALS
MOSAIC OF CRANIAL, FACIAL, METRIC AND MORPHOLOGICAL FEATURES
TEXAS

Wavy hair
Heavy beard
Maximum face breadth
Very pronounced cheekbones
Hollow temples
Relatively shortest and broadest
   faces
Nasal profile straight
Broad noses
Thick nasal tips
Downward inclined septum ①
Membranous lips – upper thin,
   lower thick
Full cheeks
Pronounced jaw angles
Bilateral chins
Slight alveolar prognathism
Long ear lobes ②
Pronounced Darwin's point ③
Slight antihelix

BODY-BUILD TYPES

MEDIUM – *SLENDER*
(348)

MEDIUM – *MEDIUM*
(1925)

MEDIUM – *HEAVY*
(729)

—169.29 cm.—

RANK
3-Robbery
3-Burglary, larceny
1-Skilled trades
2-Unskilled labor
1-Bachelors
3-Education

RANK
3-Previous convictions
7-Forgery, fraud
6-2nd. d. murder

Mean Age 30 yrs.

122.7

WT.

—171.36 cm.—

RANK
2-Robbery
2-Arson
4-Previous convictions
8-Forgery, fraud
1-1st. d. murder

RANK
8-Education
7-Bootlegging
9-Professions
3-Laborers

Mean Age 29.25 yrs.

145.5

WT.

—172.95 cm.—

RANK
1-Vs. Public Welfare
2-Sex
3-2nd. d. murder
1-All offenses
3-Extractives

RANK
8-Burglary, larceny
7-Previous convictions
8-Bachelors

Mean Age 33.7 yrs.

174

WT.

Charles Goring

- English medical officer

- Compared prison inmates to university undergraduates, soldiers, professors, and hospital patients.

- Found no significant differences between behavior and 37 physical traits (only **body stature** and weight were significant).

Hooten's Study

- Compared 13,873 criminals and 3,203 non-criminals as controls.

- Claimed to find biological (not sociological) differences between criminals and non-criminals.

- <u>Work was criticized</u>: control population had many firemen and police who were bigger. Also, there was a great deal of variation within criminal sample, and he focused on ONLY the few traits that seemed different.

Sheldon's Somotypes

- Sheldon built on Hooten's hunch that general physique rather than specific traits would explain criminality.

- Used body types—endomorphy, mesomorphy, and ectomorphy—to evaluate criminality.

23 year old with average body build
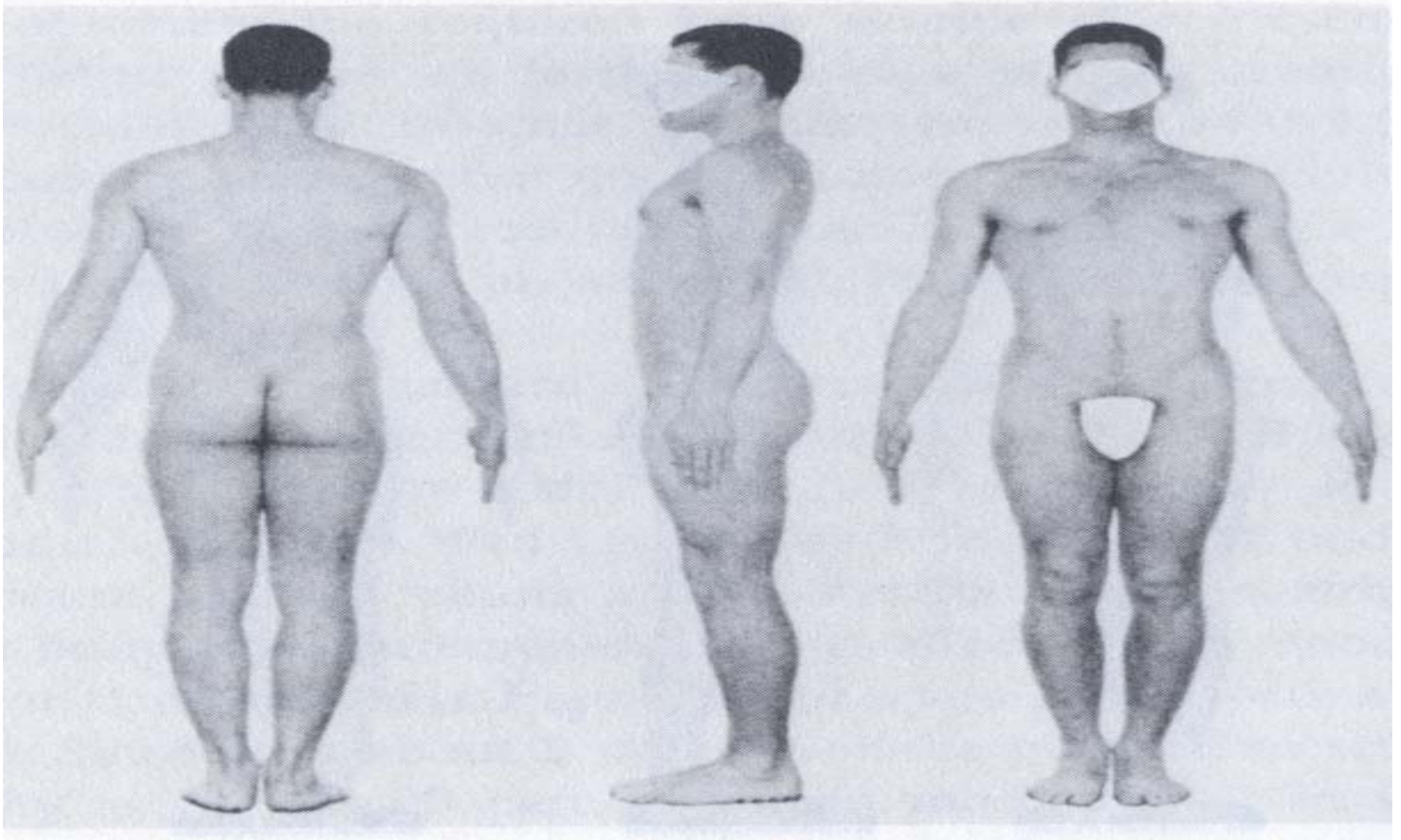
Mesomorphic body build.
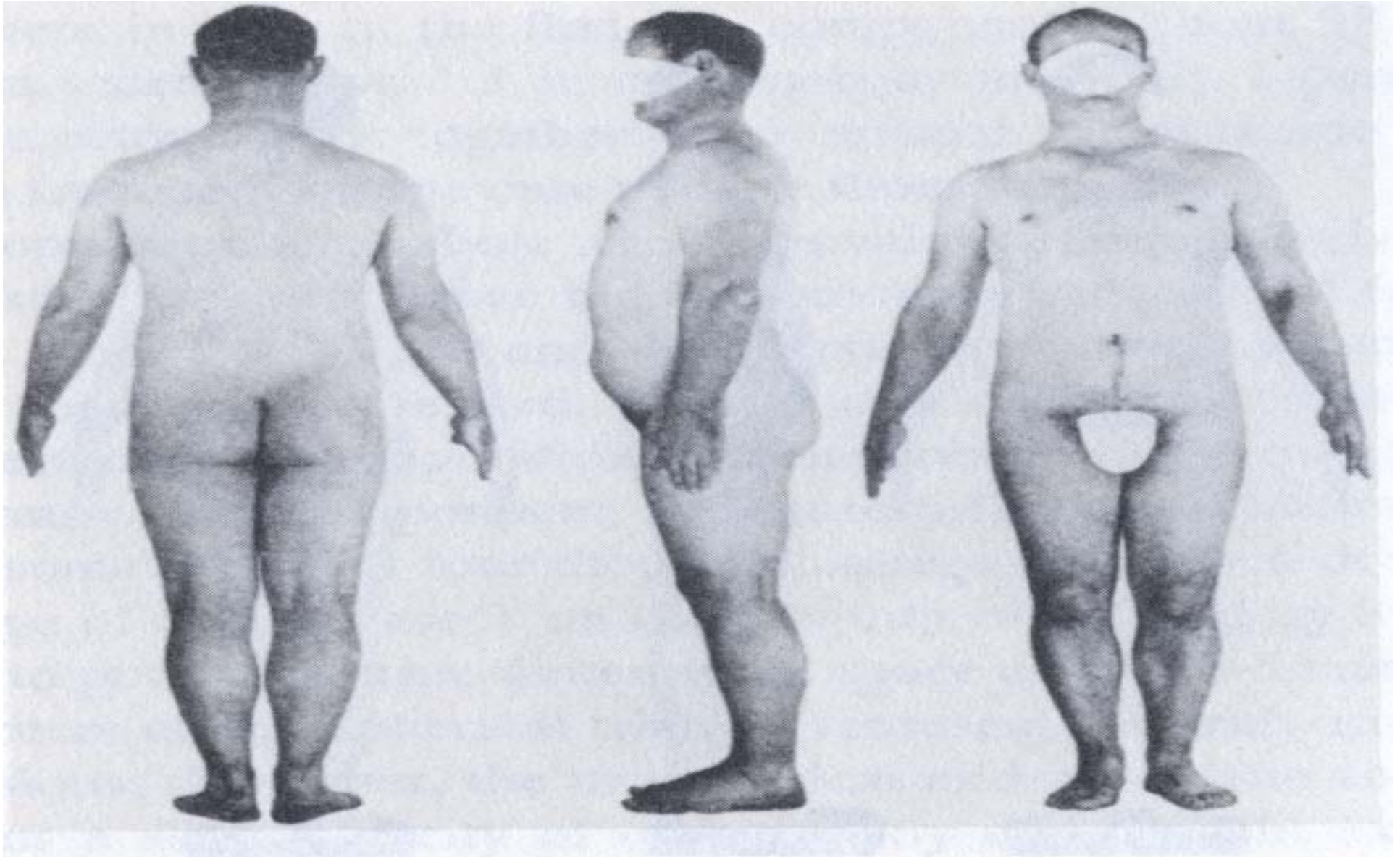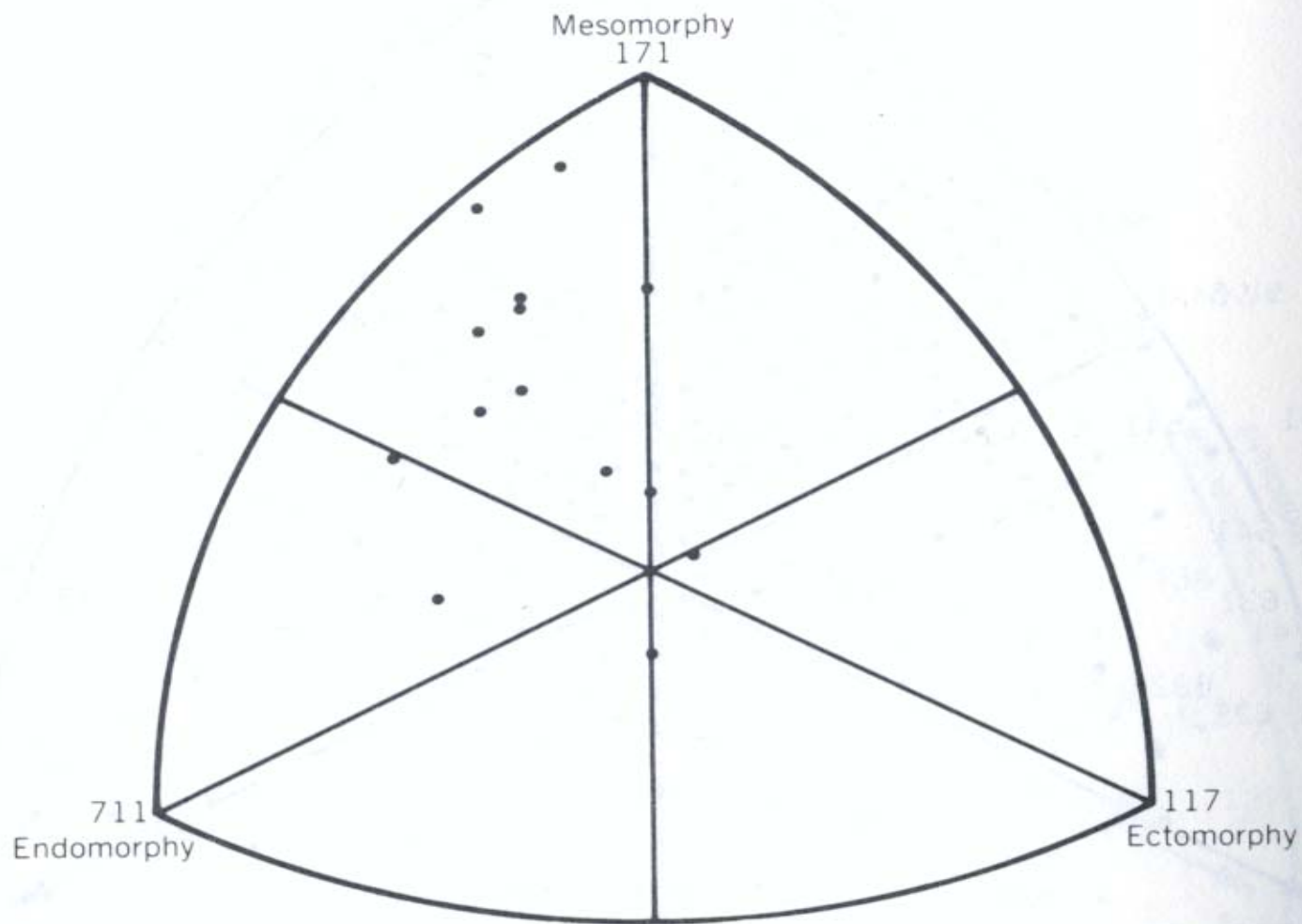
Endomorphic Body Type
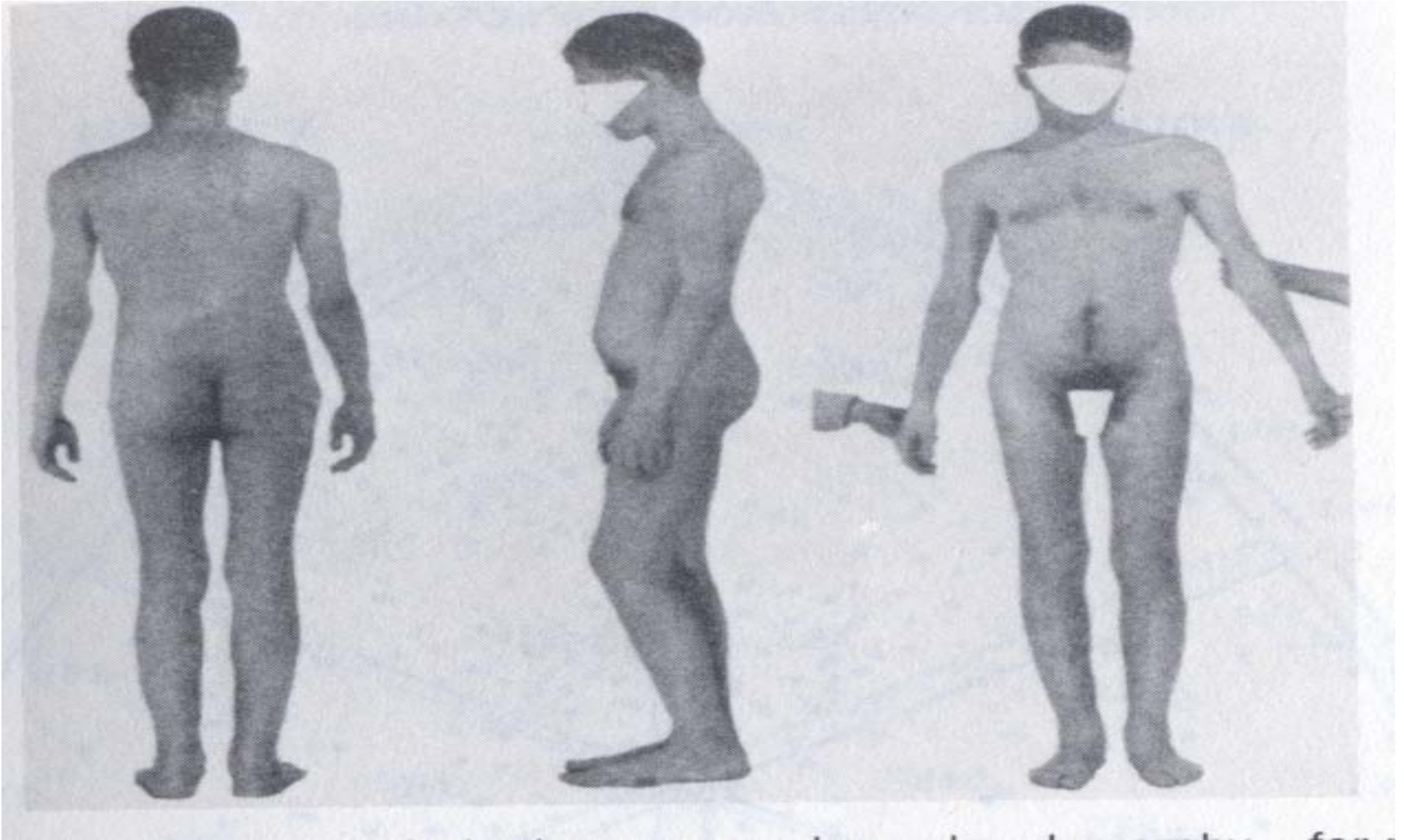
Ecotomorphic Body Type
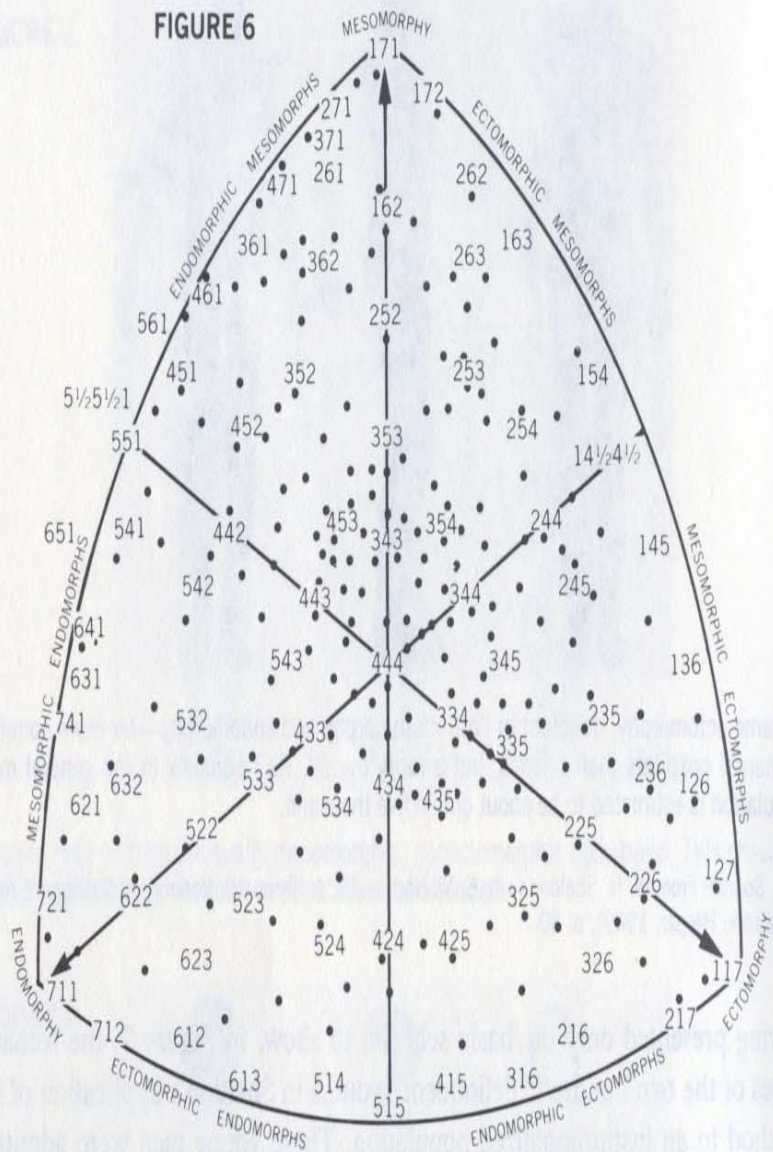
FIGURE 6

Source: From W. H. Sheldon (with E. M. Hartl and E. McDermott), *Varieties of Delinquent Youth* (New York: Harper, 1949), p. 728.
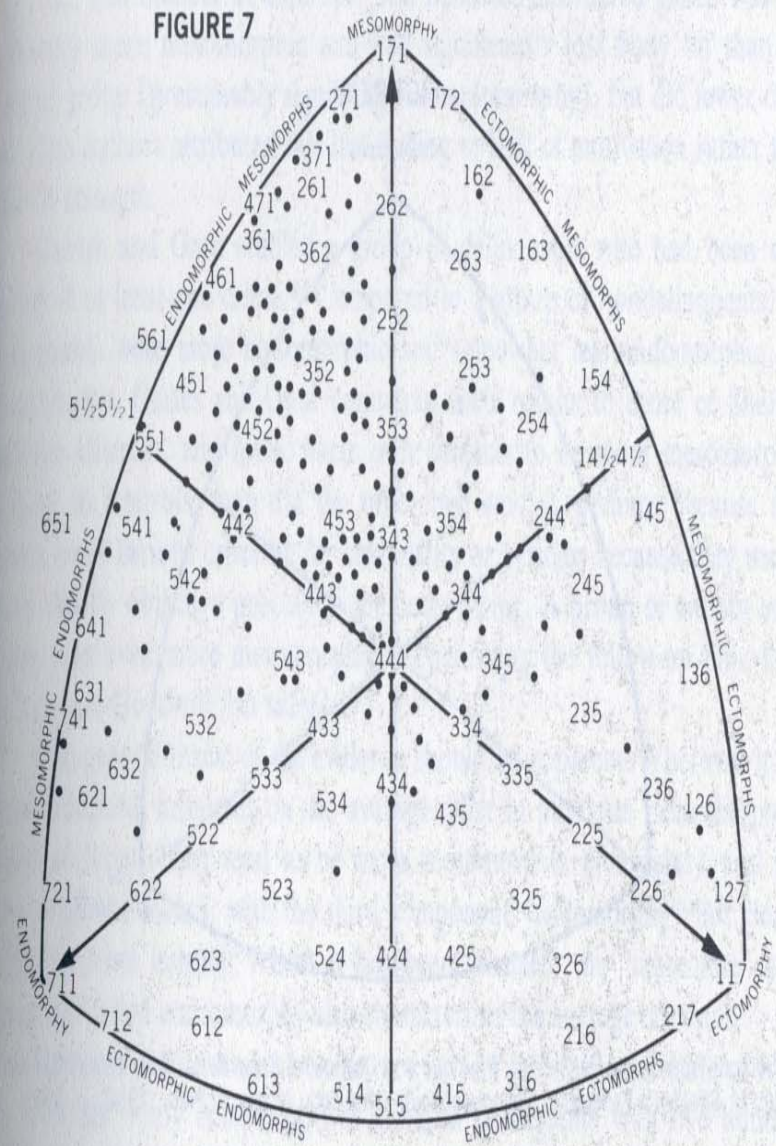
FIGURE 7

Source: From W. H. Sheldon (with E. M. Hartl and E. McDermott), *Varieties of Delinquent Youth* (New York: Harper, 1949), p. 729.

20

FIGURE 8

Source: From E. M. Hartl et al., *Physique and Delinquent Behavior: A Thirty-Year Follow-Up of William H. Sheldon's Varieties of Delinquent Youth* (New York: Academic Press, 1982), p. 499.

XYY Super Male Criminal

- Some males receive extra Y chromosome, and some predict this extra "maleness" should result in more criminality.

- Some studies report 1-3% greater proportion of XYY individuals in prisons than in general population that has less than 1%.

- Weak empirical support, and very narrow scope.

Part II: Modern Biological Theories

- Modern theories reject *biological determinism* and *nature/nurture* dichotomies.

- Genetics code for physical and behaviorally linked <u>traits</u> that may predispose criminality through interaction with environmental factors. Behavior is not inherited, but "traits" that influence how an individual responds to their environment.

Biology ⟶ **Criminal Behavior**

Biological Traits +
Environmental Factors ⟶ **Criminal Behavior**

Genes $\longrightarrow$ **Attention Disorder** $\longrightarrow$ **Social Problems** $\longrightarrow$ **Criminal Behavior**

Physical Environment

Social Environment
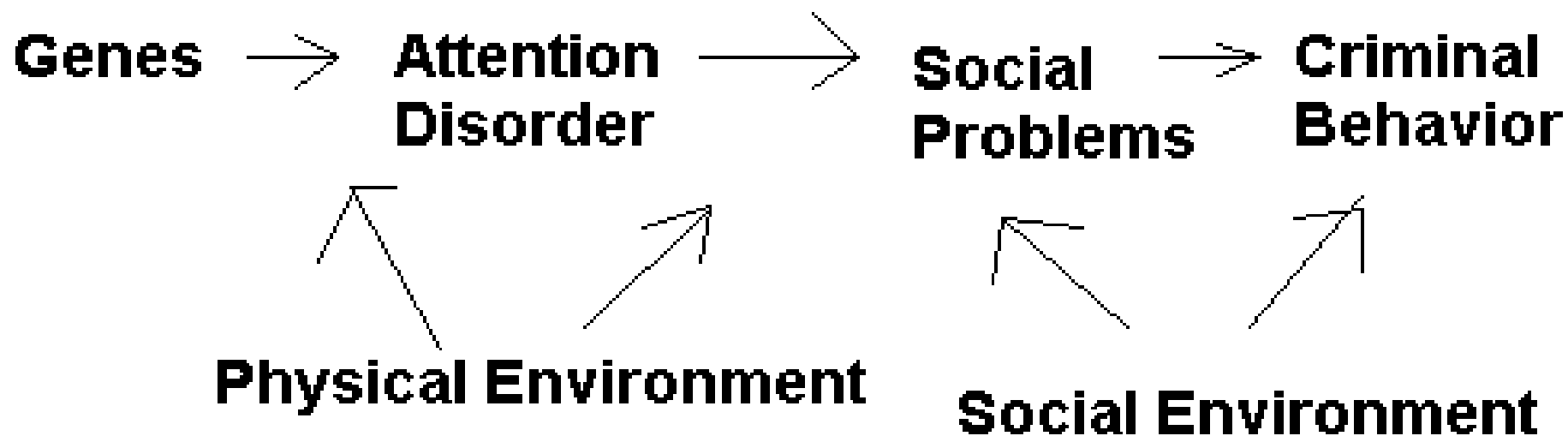
Biological Hypotheses

- Hypothesis: Biologically inherited traits such as IQ, amount of testosterone, and other unspecified genetic traits should increase the likelihood of individual criminality.

- Tests: Most studies find *weak* association between criminality and traits such testosterone. Weak to moderate support for link with IQ.

Genetically Transmitted Criminal Susceptibility

- Controlling for environment, is their a link between genetic similarity and crime?

- <u>Adoption Studies</u>: Control for genetic similarity between father and son, and consider adoption environment.

- <u>Twin Studies</u>: Twins share all the same genes. Do they behave similarly even in different environments?

	Step Parents		
		Convicted	Not Convicted
Biological Parents	Convicted	24.5%	20%
	Not-convicted	14.7%	13.5% sons convicted

% of sons convicted of crimes depending on conviction records of biological and step parents.

Twin Studies: Evidence for genetic *link* with crime

	Young Identical Twins	Young Fraternal Twins	Adult Identical Twins	Adult Fraternal Twins
Concordant	87%	72%	51%	22%

Concordant: A twin of a delinquent/criminal is also found to have a delinquent/criminal record.

Personality Theory

- Personality: stable patterns of behavior, including thoughts and emotions, that distinguish one person from another. **Personality = genotype + environment**

- Some people have abnormal, inadequate, or specifically criminal personalities.

"What is inherited are certain peculiarities of the brain and central nervous system that interact with certain environmental factors and thereby increase the likelihood that a given person will act in a particular antisocial manner in a given situation".

Eysenck & Gudjonsson 1989: 247

Sociopaths

Self-concept: Invulnerable

Superior

Pre-emptive rights

Sees Others: Dupes/stupid

Inferior

Weak

Strategies: Manipulative

Violence

Anti-social Personality Disorder DSM-IVR: Diagnostic criteria (an official diagnosis)

A. There is a pervasive pattern of disregard for and violation of the rights of others occurring singe age 15, as indicated by 3 or more of the following-

1. Failure to conform to social norms with respect to lawful behaviours as indicated by repeatedly performing acts that are grounds for arrest

2. Deceitfulness, as indicated by repeated lying, use of aliases, or conning others for personal profit or pleasure

3. Impulsivity or failure to plan ahead

Anti-social Personality Disorder DSM-IVR: Diagnostic criteria II

4. Irritability and aggressiveness, as indicated by repeated physical fights or assaults

5. Reckless disregard for the safety of self or others

6. Consistent irresponsibility, as indicated by repeated failure to sustain consistent work behavior or honour financial obligations

7. Lack of remorse , as indicated by being indifferent to or rationalising having hurt, mistreated, or stolen form another.
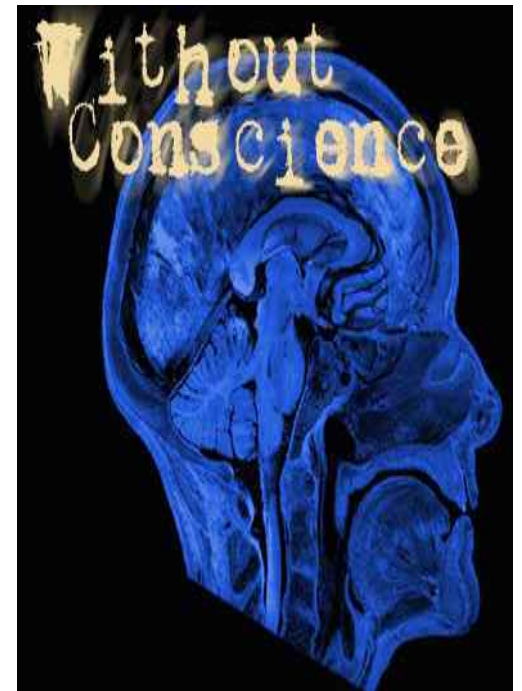
Anti-social Personality Disorder DSM-IVR: Diagnostic criteria III

B. The person is at least age 18 years.

C. There is evidence of Conduct Disorder with onset before age 15.

D. the occurrence of anti-social behavior is not exclusively during the course of a Schizophrenia or a Manic Episode.

Associated Features and Disorders - Dysphoria, depressive, anxiety and substance abuse disorders & meet many of the criteria of other PD's Borderline, histrionic & narcissistic.

Prevalence: 3% of males [1% of females] in the community and 3-30% of subjects in treatment and forensic populations [e.g. prison].

"Causes" of Sociopathy

- Psychopaths seem to have impaired frontal lobe functioning
  - lack of forethought and ability to consider implications
  - less limbic input to frontal cortex
- How much of this is inherited genetically?
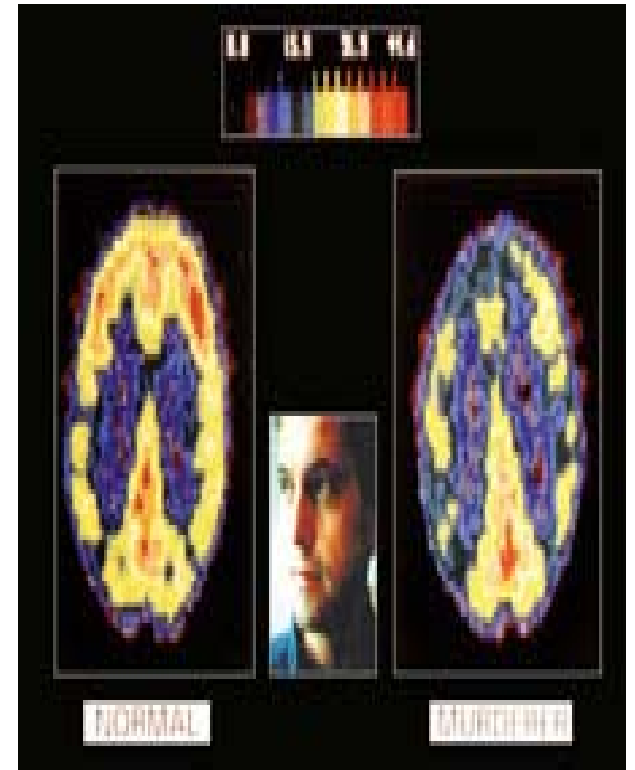
Causes of Sociopathy

- Some researchers distinguish between primary and secondary sociopathy. Primary sociopathy thought to be highly heritable. Secondary sociopathy a learned behavioral strategy more related to social and environmental conditions.

- Low SES, dysfunctional families (esp. alcohol abuse), childhood abuse correlated with sociopathy.

Correlates with Behavior

- Do self-reported deviants (psychopaths) score highly on specific deviant scales or become more likely to be arrested?

- The results are mixed for self-report studies. Problems with tautology: some personality questions include questions such as "do you have trouble with the law."

- Comparison of populations is supportive. Large fraction of individuals from prison populations score high on psychopathy scales. Possibly 80% of chronic offenders fit these criteria.
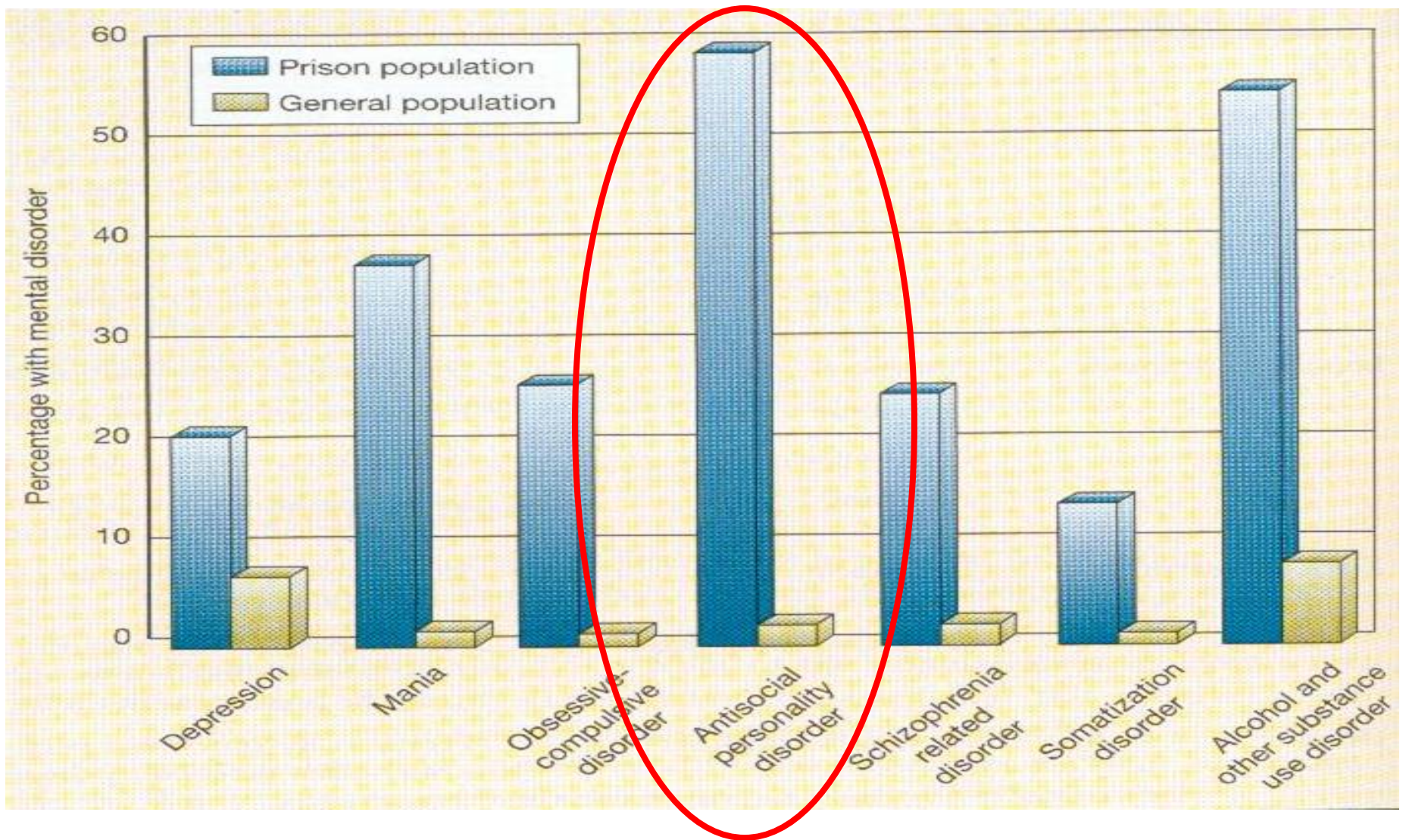
- majority of criminals (~40-75%) meet criteria for Antisocial Personality Disorder
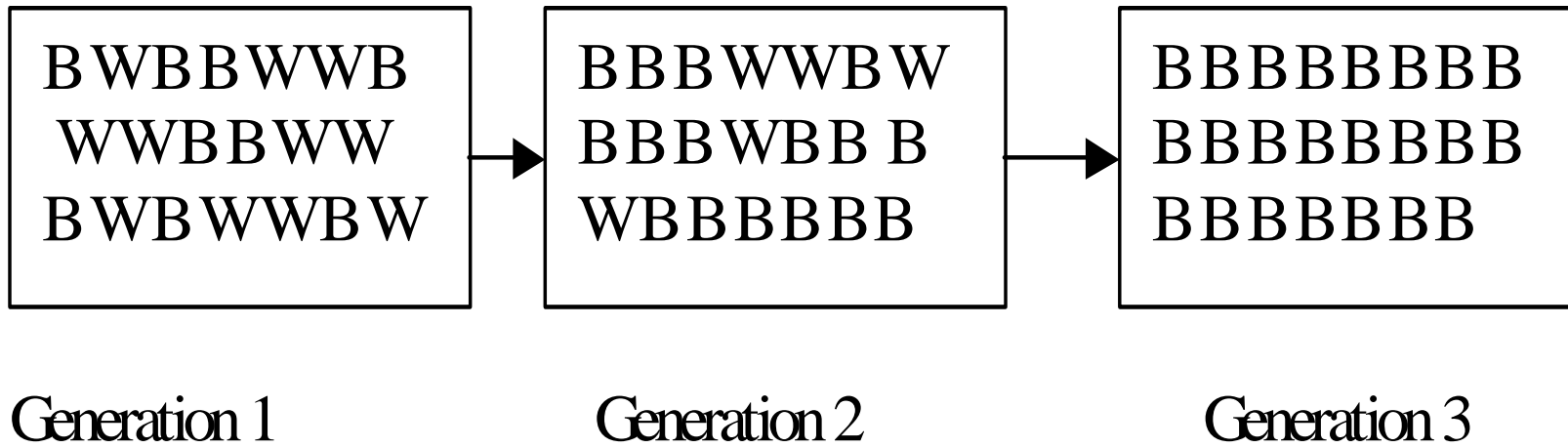- APD found more commonly in prisons than psychiatric facilities

Part III: Evolutionary Theory and Crime (Homicide)

Assumptions of Evolutionary Theory

- Natural selection has shaped both physical and behavioral traits among *all* species, including humans.

- Individual organisms that make the best "decisions" will be the most fit (e.g., have more successful offspring).

- Evolutionary theory focuses on <u>adaptive</u> behavior, thus evolutionary theories view most behavior as <u>normal</u> rather than <u>abnormal</u> behavior.

Natural Selection

- <u>Competition</u> occurs because more offspring produced than resources to support them

- <u>Heritable variation</u> exists among individuals.

- Those with "favorable" traits will survive and reproduce, thus such <u>traits will be disproportionately represented</u> in future generations.

BWBBWWB WWBBWW BWBWWBW	BBBWWBW BBBWBB B WBBBBBB	BBBBBBBB BBBBBBBB BBBBBBB

Generation 1   Generation 2   Generation 3

GENERATION 1: BOTH BLACK AND WHITE TREE MOTHS.

GENERATION 2: TREES TURN BLACK DUE TO SOOT FROM IDUSTRIAL REVOLUTION

GENERATION 3: ONLY BLACK MOTHS REMAIN. BLACK MOTHS "ADAPTED" TO THEIR ENVIRONMENT.

Natural Selection and the Human Mind

- Through process of natural selection, individuals who make the best "decisions" have more offspring. Because "decisions" linked with organic brain "mechanisms", they pass on the decision-making ability.

- Evolutionary theory is similar to rational choice theory. It states that individuals make rational decisions (with regards to fitness) because evolution has created the *organic ability* to do this.

43
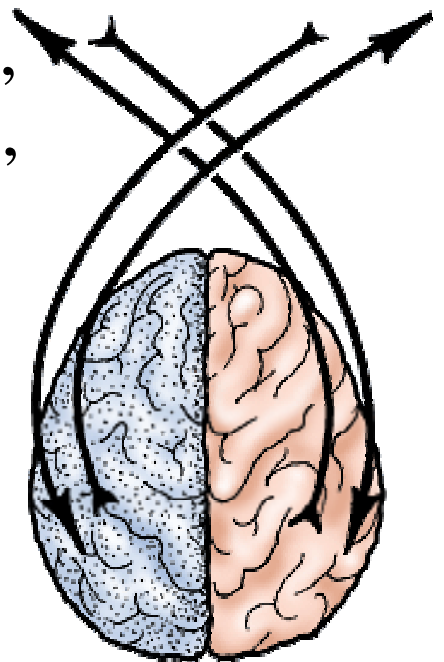
Kin Selection

- Natural selection produces "organic mechanisms" that results in *less conflict* and *more cooperation* between close genetic relatives.

- <u>Logic</u>: You can pass on your genes either through your own children, or your through your cousins, siblings, and other relatives.

Kin Selection and Homicide

- As a result of kin selection, individuals should:

1.) Be *less* likely to kill their own children and related family members than non-relatives.

2.) *Be more* likely to cooperate when competing against non-relatives.
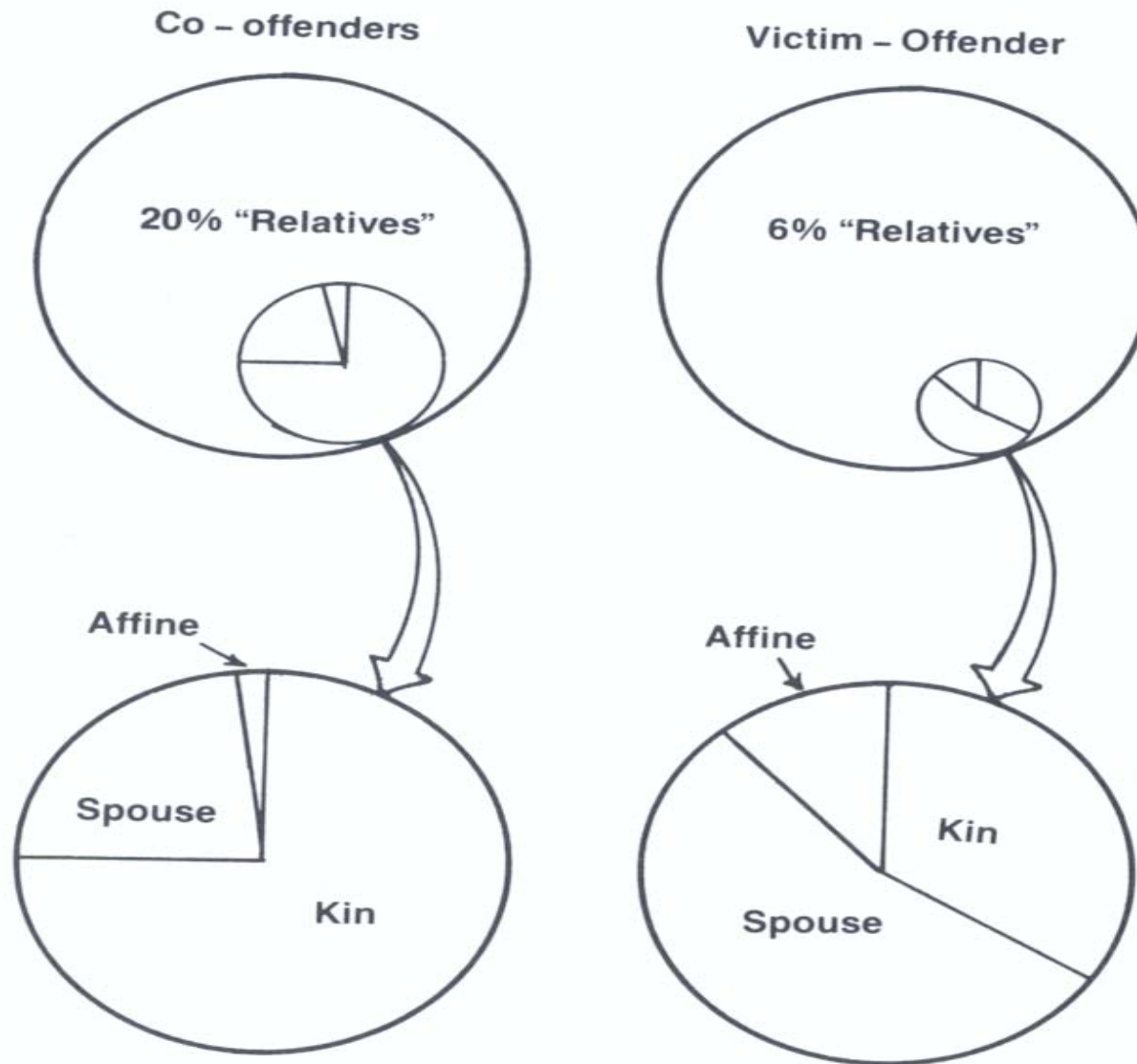
Figure 2.1. Kinship and homicidal conflict in 13th-century England. 2434 homicides form the data base. (After Given, 1977, Tables 5, 6, and 21.)

Table 2.2. Estimated Average Relatedness of Victim-and-Offender versus Co-offenders[a]

	Relationship			
	Victim-offender		Co-offender	
	r	(N)	r	(N)
Detroit	.03 *low*	(508)	.09 *high*	(43)
Miami	.01	(494)	.09	(27)
Bison-Horn Maria	.09	(130)	.16	(17)
Bhil	.05	(100)	.27	(22)
Munda	.07	(47)	.33	(9)
Oraon	.06	(43)	.23	(7)
Tzeltal Mayans	.08	(26)	.35	(6)
Gros Ventre	.01	(14)	.50	(1)
13th-Century England	.01	(2434)	.08	(2372)

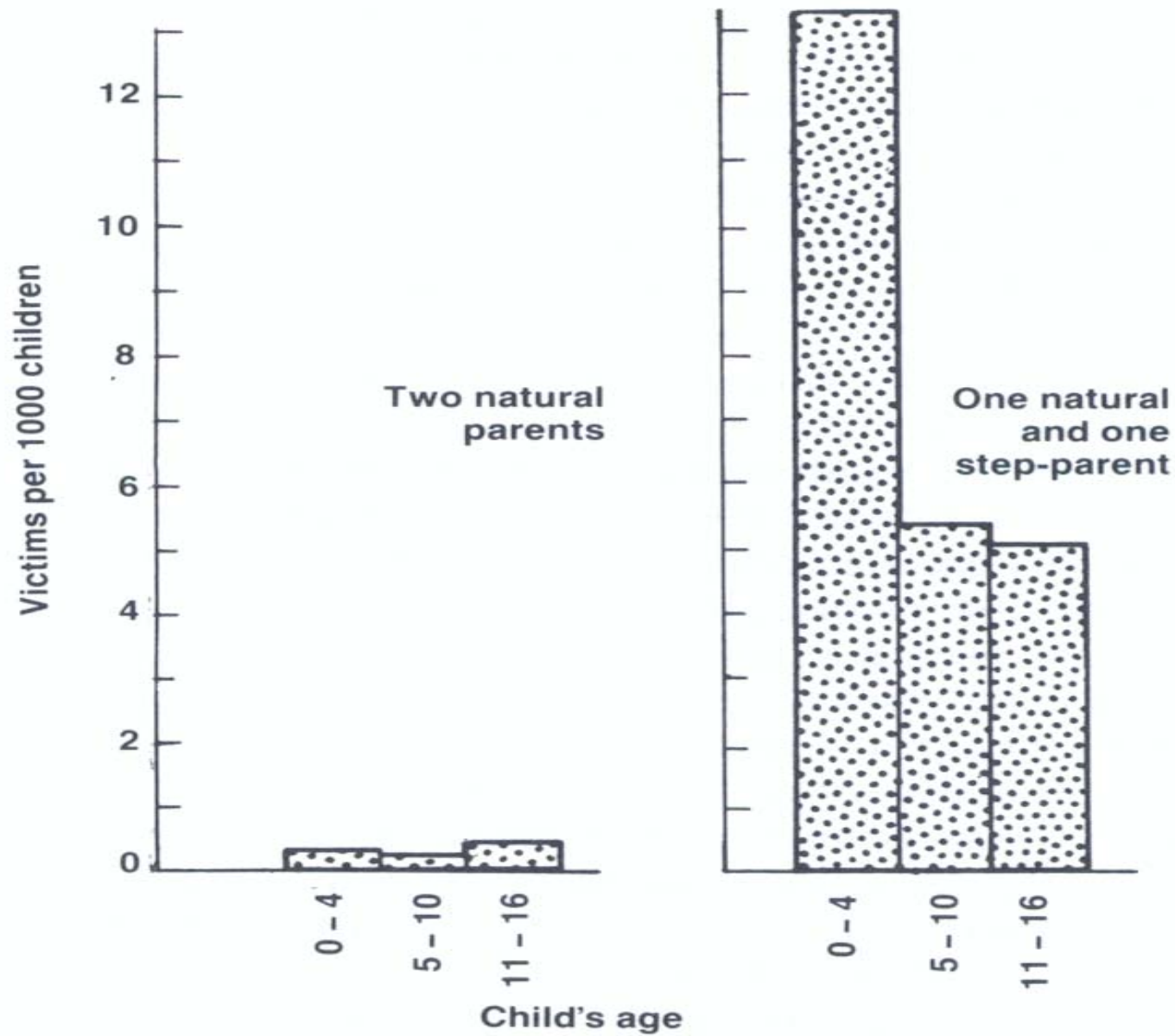The Bhil (V   1070) Munda and Oraon (Saran 1974) are all "aboriginals"

Figure 4.8. Per capita rates of child abuse cases known to children's aid societies and reported to a provincial registry. Hamilton, Ontario, Canada, 1983. (Modified from Daly & Wilson, 1985.)

Infanticide and Reproductive Value

- Natural selection has created mechanisms to increase fitness. As children get older, there is a greater probability that they will reproduce successfully. Thus, from a fitness perspective, older children are more valuable to parents.

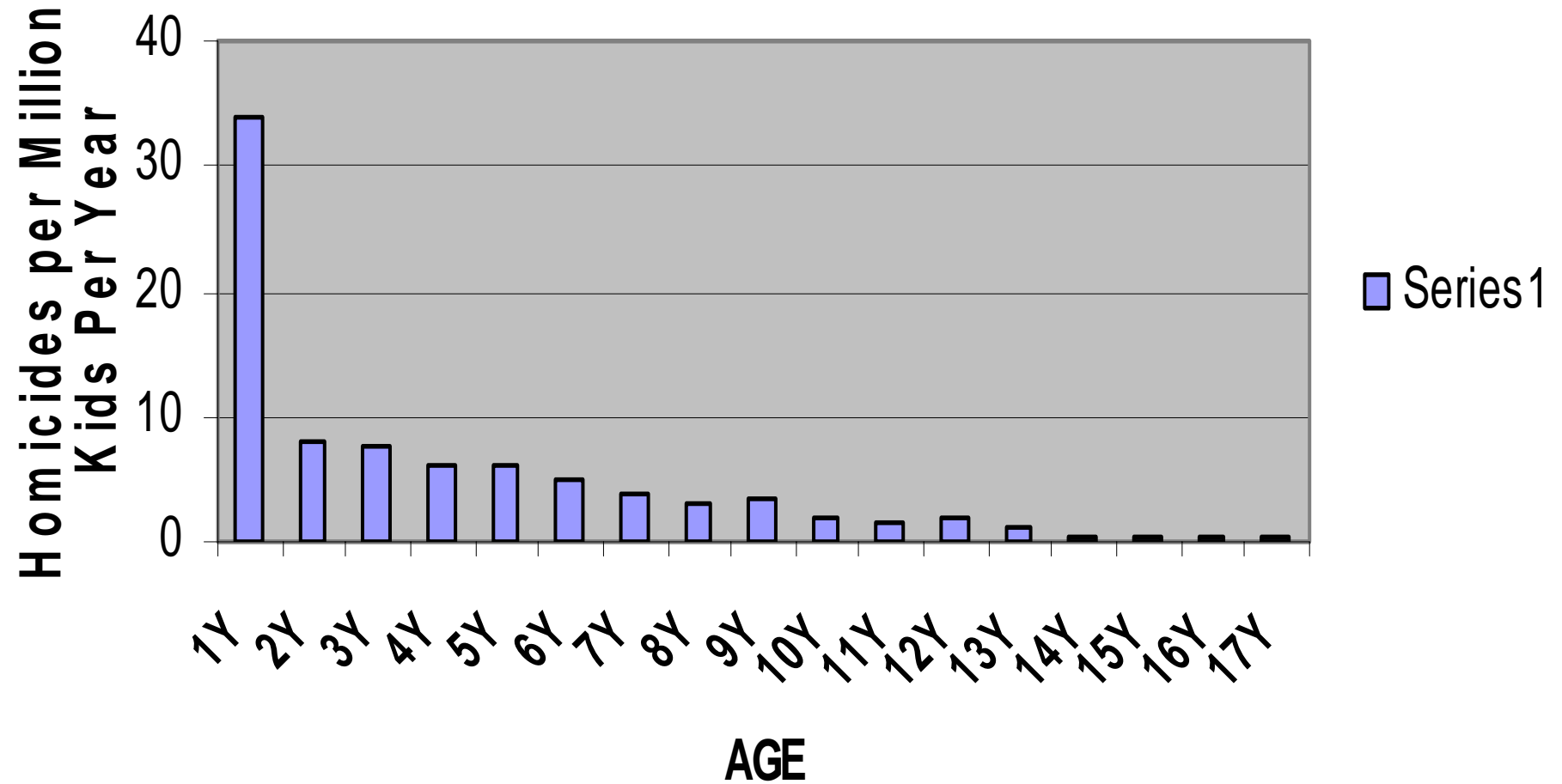- Hypothesis: Older children should be killed less often than younger children.
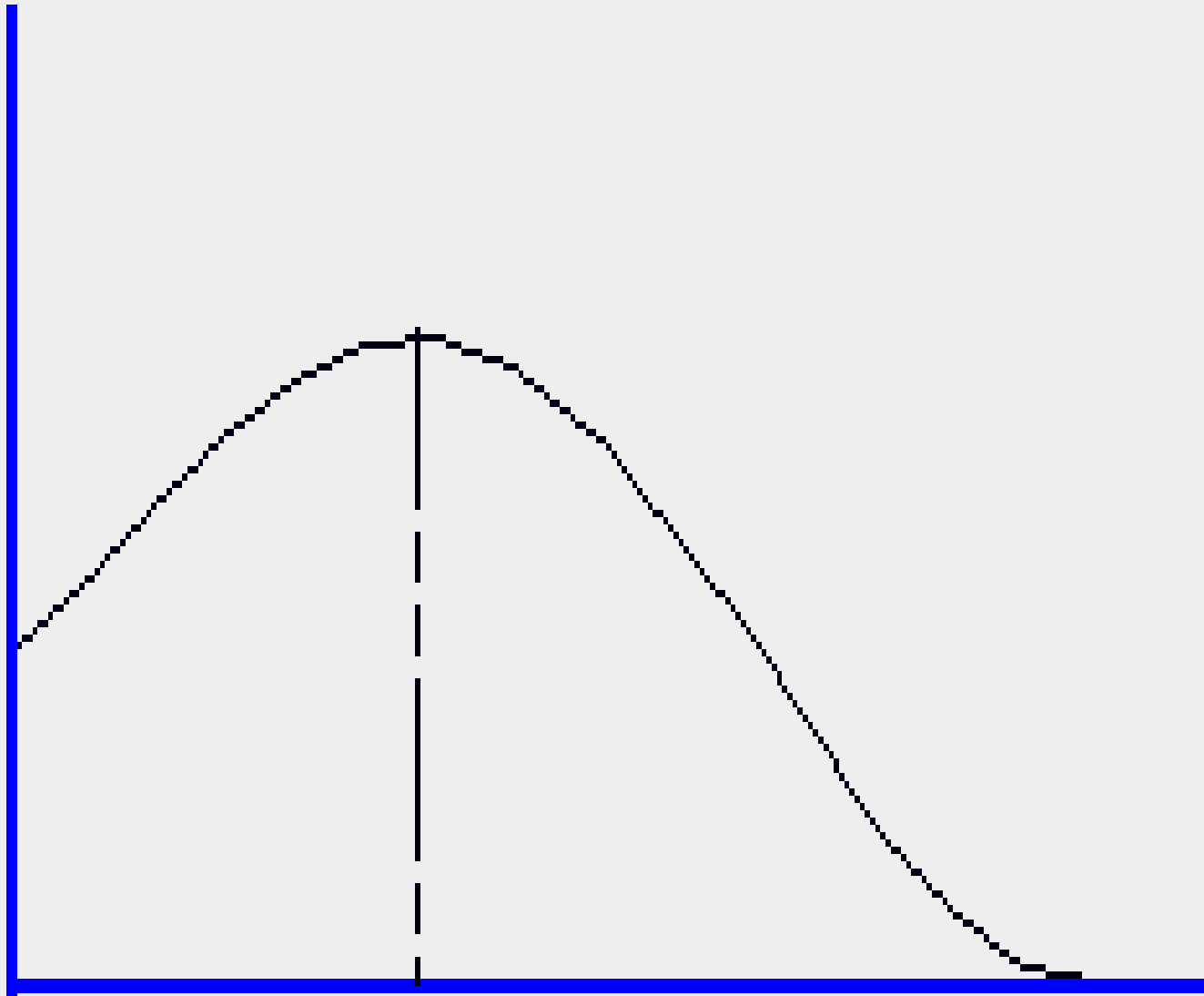
Risk of Homicide by Natural Parent

Sexual Selection and Mating Competition

- If natural selection has created mechanisms to increase fitness, males should be more likely to compete with other males, than females compete with other females.

Logic of Sexual Selection

- 1.) Females invest more in children (e.g., opportunity and nutritional costs of pregnancy). Females are <u>choosy</u> about their mates.

- 2.) Males compete to be <u>chosen</u> by females if they look like they can provision resources and defense.

Sexual Selection cont.

- 3.) In many species, some males can amass more wealth or territory than others. These extra resources and power can be attractive enough to attract more than one wife.

- Thus, the <u>variance</u> of successful mating and fitness is higher among males than females.

Sexual Selection cont

- 4.) Because of the variance in wealth, men with fewer resources will use other strategies to impress and attract mates.

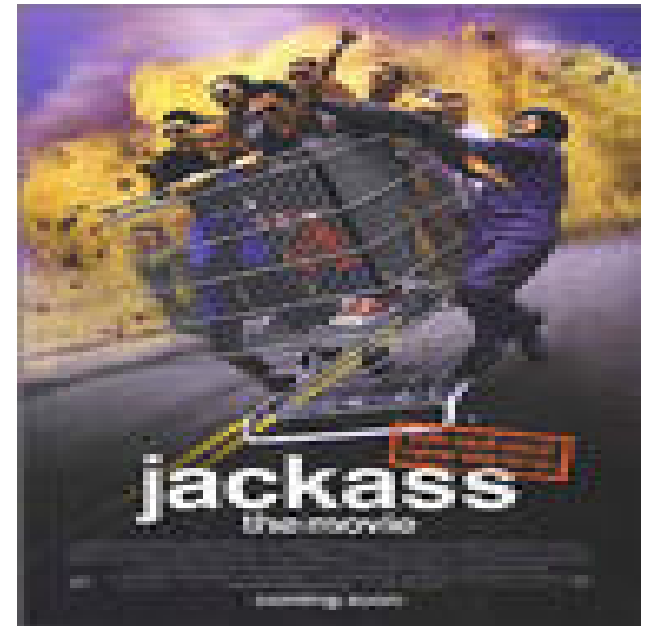- Violent behavior is one risky strategy that men can use.

Table 8.3. Two Hundred Twelve Closed Social Conflict Homicides in Detroit, 1972, in Which Victim and Offender Were Unrelated (Friends, Acquaintances or Strangers), Classified by Conflict Typology and by the Sexes of the Principals[a]

Conflict typology	Male killed male	Male killed female	Female killed male	Female killed female
Escalated showing-off contests	26	0	2	1
Retaliation for previous verbal or physical abuse	75	9	6	5
Jealousy conflicts	20	5	6	3
Business conflicts	10	1	2	0
Intervention in family dispute	5	0	0	0
Miscellaneous unique disputes	2	0	1	1
Insufficient information	26	4	1	1
Total social conflicts among nonrelatives	164	19	18	11

[a]From Wilson and Daly (1985), Table 3.

Male Competition and Age

- Males are more likely to be involved in crime (violence, robbery, etc) when they are competing with other males.

- Once males get older, find mates, and have children, they have less incentives to compete with other males (the benefits are smaller and the costs are higher).
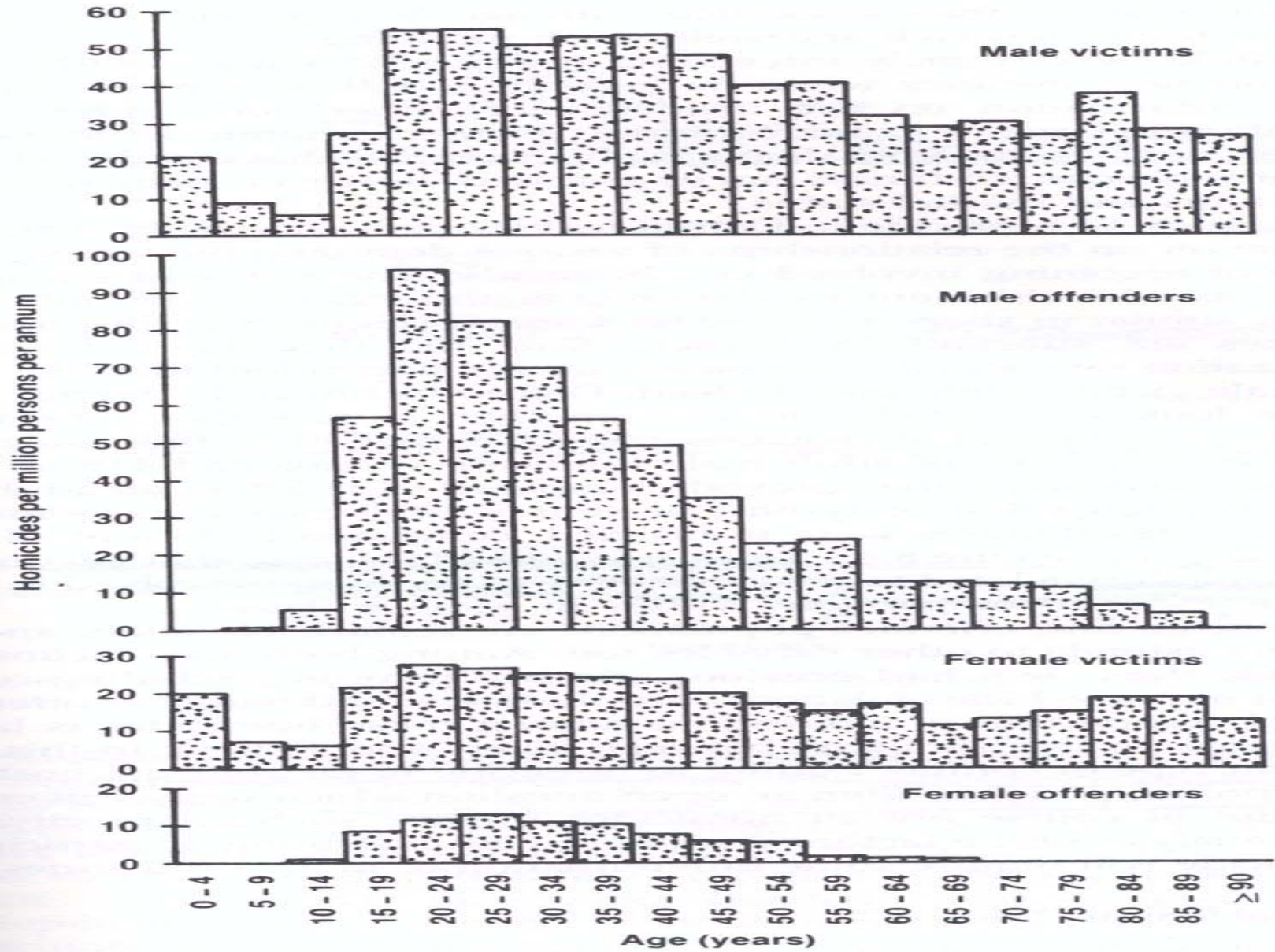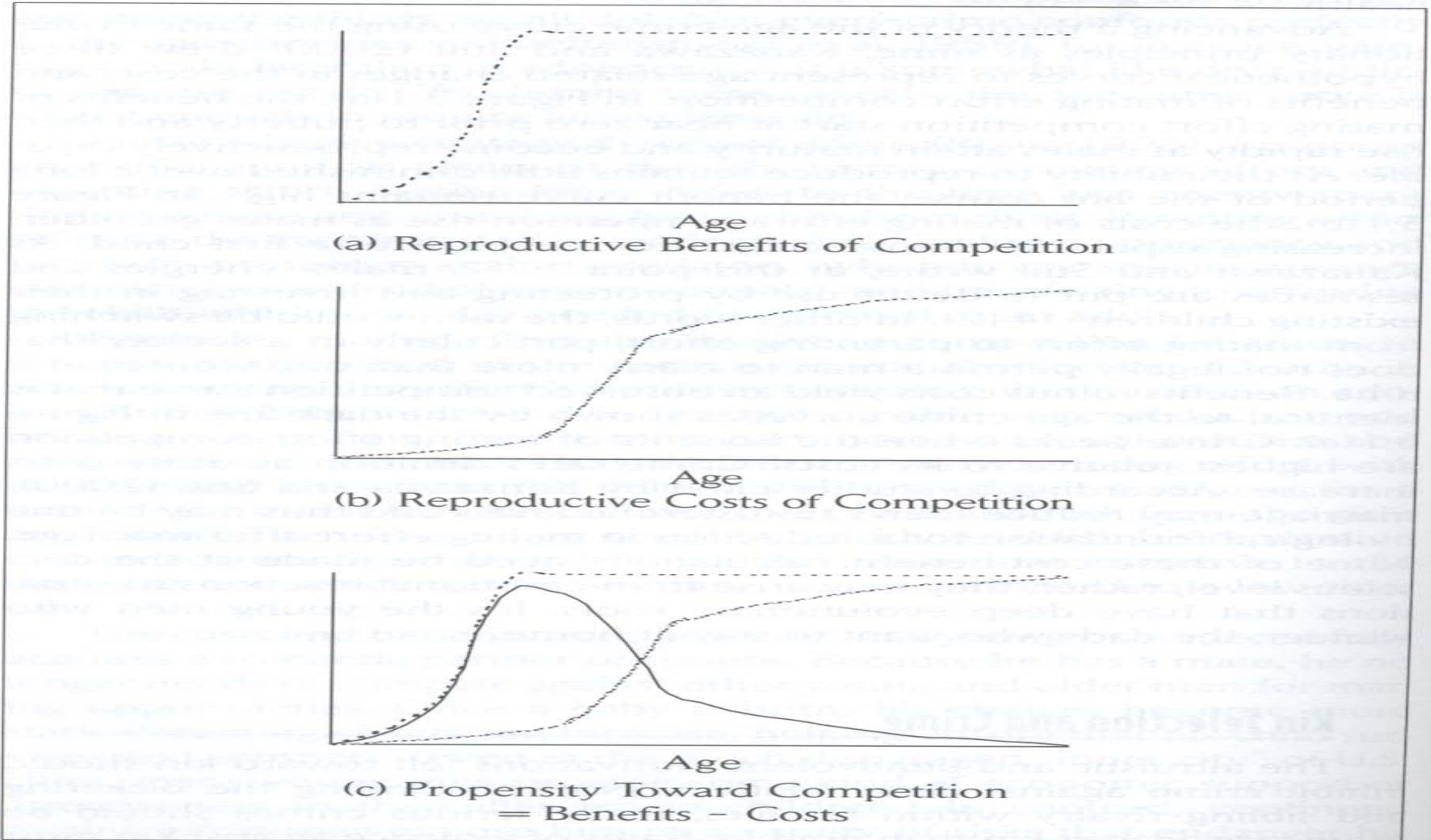
Figure 8.1. Age- and sex-specific homicide rates in Canada, 1974–1983.

Figure 3.1
The Benefits and Costs of Mating Competition and the Age Crime Curve

Age
(a) Reproductive Benefits of Competition

Age
(b) Reproductive Costs of Competition

Age
(c) Propensity Toward Competition
    = Benefits − Costs

Spousal Homicides

- Males face the problem of being a cuckold, or raising a child that is not theirs.

- Because of problems with paternal certainty, males are likely to be *jealous* and *protective* of their mates.

Table 9.1. Police Attribution of Motive in 1060 Spousal Homicides in Canada, 1974–1983

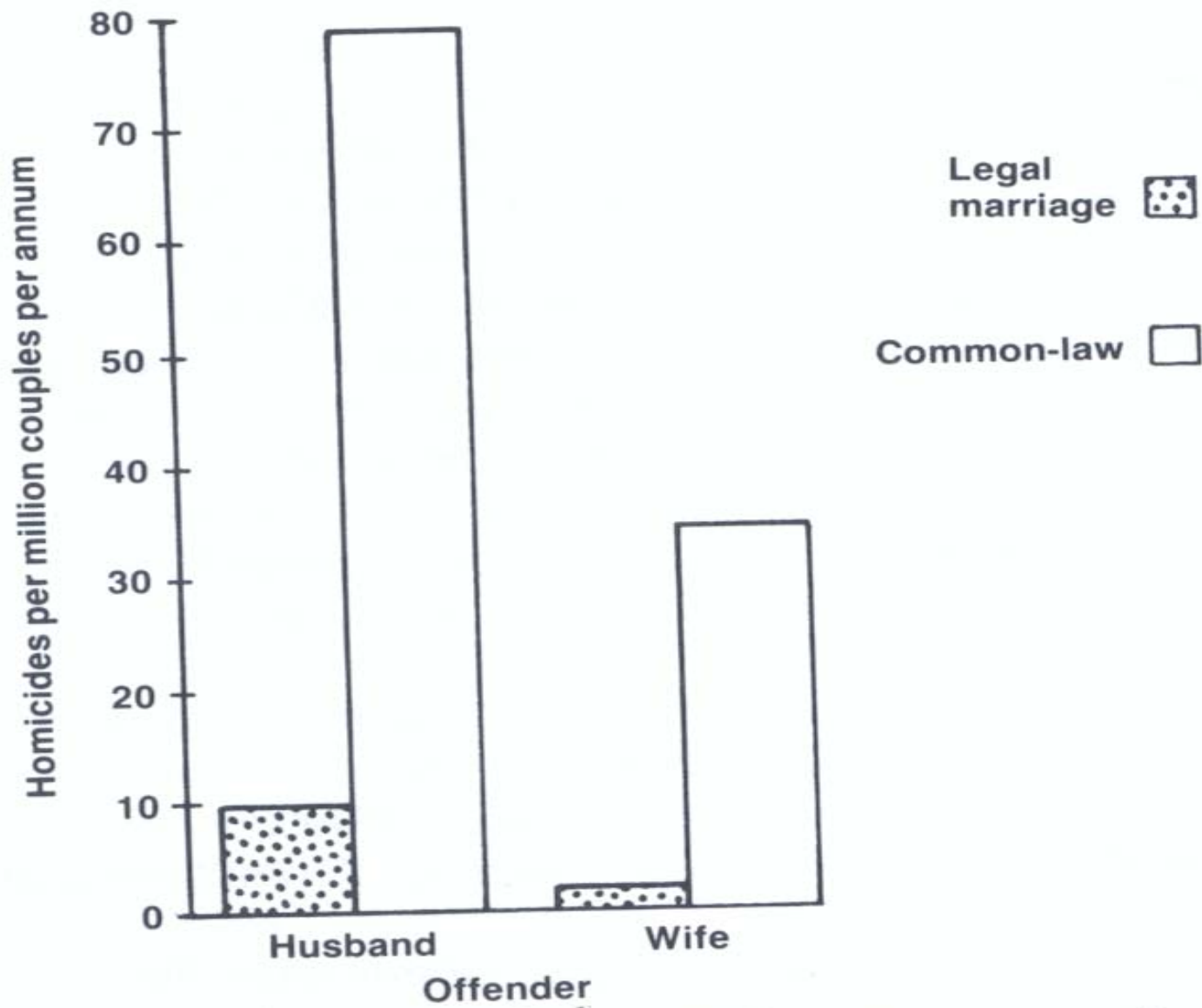|	Killer is the husband	Killer is the wife	Total
Argument	353	160	513
Jealousy	195	19	214
Anger/hatred	84	22	106
Mentally ill/retarded	59	7	66
Revenge	27	7	34
Self-defense	0	10	10
Inadvertent act	6	3	9
Robbery	1	2	3
During other offense	2	1	3
Rape	1	0	1
During escape	0	0	0
Other motive	38	9	47
No motive attributed	46	8	54
Total cases	812	248	1060

Figure 9.4. Rate of spousal homicide in legal versus common-law marriages. Canada, 1974–1983.