Race and Crime: A Reply to Roberts and Gabor

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Afin de permettre une évaluation adéquate de ma théroie, je a) présente des données déjà publiées ailleurs qui montrent que, en moyenne, les mongoloïdes l'emportent sur les caucasoïdes et ceux-ci sur les négroïdes en ce qui concerne la grosseur du cerveau et l'intelligence, le retard maturationnel, la retenue sexuelle, le tempérament tranquille et l'organisation sociale, b) analyse de nouvelles données qui montrent que la criminalité présente des différences raciales d'ordre international, c) traite de la valeur prédictive de la race quant au comportement, d) fait voir l'existence de traits de caractère durables, e) montre que Lombroso est juste dans certaines de ses convictions touchant les bases biologiques de la criminalité, f) examine des données qui tendent à montrer que les différences de la criminalité ont une base génétique, et g) propose que la recherche se penche sur la question des bases neurohormonales de la criminalité.

To allow an adequate of my theory, I (a) tabulate previous data showing that, on average, Mongoloids > Caucasoids > Negroids in brain size and intelligence, maturational delay, sexual restraint, quiescent temperament, and social organization; (b) analyze new data demonstrating that race differences in crime occur internationally; (c) discuss the predictive power of race for behavior; (d) show the existence of enduring traits of character; (e) show Lombroso to have been correct in some of his beliefs about the biological basis of crime; (f) review evidence suggesting that the race differences in crime have a genetic basis; and (g) propose that future research investigate the neurohormonal basis of crime.

Roberts and Gabor (1990) seriously misrepresent my position. They manoeuvre around the main argument and so deconstruct the crime figures into particulars that readers may fail to see the forest for the trees. To appreciate what I have said, therefore, it is necessary to consider the data in Table 1. The crux of the matter — and I wish to emphasize that this is the essential point — is that any theory proposed to explain the many differences among human races must be judged by its ability to account for the overall pattern of correlated variables in which the Caucasoid average so consistently falls between those of Mongoloids and Negroids. It is not simply differences in crime that require explanation.

Table 1

Average Racial Differences in Life History Variables

	Mongoloids	Caucasoids	Negroids
Brain weight and intelligence			
Cranial capacity	1448 cc	1408 cc	1334 cc
Brain weight at autopsy	1351 g	1336 g	1286 g
Millions of "excess neurons"	8900	8650	8550
IQ test scores	107	100	85
Maturation rate			
Gestation time	?	Medium	Early
Skeletal development	?	Medium	Early
Age of walking	Late	Medium	Early
Age of first intercourse	Late	Medium	Early
Age of first pregnancy	Late	Medium	Early
Life-span	Long	Medium	Short
Personality and temperament			
Activity level	Low	Medium	High
Aggressiveness	Low	Medium	High
Cautiousness	High	Medium	Low
Dominance	Low	Medium	High
Impulsivity	Low	Medium	High
Sociability	Low	Medium	High
Reproductive efforts			
Multiple birthing rate	Low	Medium	High
Size of genitalia	Small	Medium	Large
Secondary sex characteristics	Small	Medium	Large
Intercourse frequencies	Low	Medium	High
Permissive attitudes	Low	Medium	High
Sexually transmitted diseases	Low	Medium	High
Androgen levels	Low	Medium	High
Social organization			
Law abidingness	High	Medium	Low
Marital stability	High	Medium	Low
Mental health	High	Medium	Low

For over 70 years, the psychological study of race focused mainly on the differences between blacks and whites in the United States, especially in educational achievement and intelligence. My research broadened the data base on race by (a) including Mongoloid samples (one third of the world's population), (b) including other Negroid samples (most black people live in post-colonial Africa), and (c) considering other life-history variables including speed of physical maturation, brain size, longevity, personality traits, rate of twinning, reproductive behaviour, and social organization. I concluded that the average racial group differences are to be found worldwide, in Africa and Asia as well as in Europe and North America (Rushton 1988a).

Before proceeding further, I emphasize that considerable variability exists within each major group, as well as within numerous subdivisions. Thus there are important individual differences to be considered over and above the average tendencies. Racism is the failure to acknowledge such within-group variation and to treat (usually mistreat) people in a category as though they were all the same. When Roberts and Gabor (1990) make such outlandish statements as "Professor Rushton associates 'lawlessness' with being black", they seriously misrepresent my views.

The central scientific question then is: Why should Caucasian populations average between Negroid and Mongoloid populations on so many variables? While socialization obviously has a significant role to play in achievement, sexuality, and social organization, other observations such as the speed of physical maturation, morphology, and the production of gametes imply the presence of evolutionary and therefore genetic influences.

r/K Evolution Theory

The racial pattern found in Table 1 may be explained by an ecological theory of why traits covary in animal life-histories in which Mongoloids are more *K*-selected than are Caucasoids and Negroids. *K*-selected life-histories emphasize parenting effort as contrasted with *r*-selected life-histories which emphasize mating effort, the bioenergetic tradeoff between which is postulated to underlie cross-species differences in speed of maturation, body size, reproductive effort, and mortality rate (Ruston 1985, 1988a, 1988b; following E.O. Wilson 1975). Selection for increased brain size, for example, typically leads to fewer and slower maturing offspring, greater parental care per each offspring, stronger parental bonding, increased social organization, and a longer life span.

Within species of plants, insects, birds and non-human mammals, many of the life-history variables are found to covary as theoretically expected and to be genetic in origin. There is, therefore, good biological reason to apply such analyses to differences among humans. One analysis of reproductive effort within the Caucasoid population contrasted the characteristics of the mothers of dizygotic twins who, because they ovulated more than one egg at a time can be considered to represent the *r*-strategy, with the mothers of singletons representing the *K*-strategy.

Predictably, the former mothers were found to have, on average, a lower age of menarche, a shorter menstrual cycle, a higher number of marriages, a higher rate of coitus, a greater fecundity, more wasted pregnancies, an earlier menopause, and an earlier age of death (Rushton 1987).

Of critical importance to the current debate is the work of Ellis (1987a, 1987b, 1989, forthcoming) directly applying *r/K* theory to crime. Ellis (1987a) contrasted the characteristics of criminals who, because they are lower in altruism and social organization, can be considered to represent the *r*-strategy, with the general population representing the *K*-strategy. The criminals were found to have, on average, shorter gestation periods (more premature births), a more rapid development to sexual functioning, a greater copulatory rate outside of bonded relationships (or at least a preference for such), less stable bonding, a lower parental investment in offspring (as evidenced by higher rates of child abandonment, neglect and abuse), and a shorter life expectancy. Ellis (1989:94) also analyzed rape from an *r/K* perspective linking forced copulation to an *r*-reproductive strategy. Regarding race differences, he theoretically derived the prediction that "blacks should have higher rape rates than whites, and whites in turn should have higher rates than Orientals". As we shall see from international data, Ellis's prediction is confirmed.

International Crime

Stable social organization depends on individuals following rules, a construct which can be indexed through marital functioning, mental durability, and law abidingness. On each of these measures, the rank-ordering within American populations is Mongoloid > Caucasoid > Negroid, and cross-cultural studies suggest these findings may be internationally generalizable (Rushton 1988a). Individually motivated and capricious assault and murder is universally condemned and clearly provides a good index of social disorganization. With homicides, the U.S. has the highest rate in the industrialized world, but 49% are committed by Negroids and 13% by Hispanics.

Roberts and Gabor (1990) deny the international generalizability of the crime data and argue that because some African countries report lower homicide rates than do some Asian countries that: "the genetic

position is consistently refuted''. Before dealing with whether genetic explanations fit the data, it is important to consider just what are the data. To establish them, I consulted International Crime Statistics for 1983-1984 and 1985-1986 which provided data on nearly 100 countries in 14 crime categories (International Criminal Police Organization 1988). Because the figures for some crimes are highly dependent on a country's laws (e.g. ''Sex Offences'') or on availability (e.g. ''Theft of Motor Cars''), I focussed on the three most serious crimes which are relatively unambiguous: *Murder*, ''Any act performed with the purpose of taking human life, in whatever circumstances. This definition *excludes abortion but includes infanticide*'' (Preface, emphasis in original); *Rape*; and *Serious Assault*, ''An injury whereby life could be endangered, including cases of injury involving the use of a dangerous instrument. Cases where instruments are used merely to threaten people without causing injury are to be excluded.''

I collated the figures per 100,000 population for 1984 and 1986 (or the next nearest year) and aggregated across the three categories (see Table 2). Countries for which data could not be found in all three categories were dropped. Countries were then grouped by primary racial composition with only Fiji and Papua New Guinea being eliminated due to uncertainty as to their racial status. For 1984, complete data were available for 71 countries: 9 Mongoloid (including Indonesia, Malaysia, and the Philippines), 40 Caucasoid (including Arabic North Africa, the Middle East, and Latin America), and 22 Negroid (sub-Saharan Africa including Sudan, and the Caribbean); for 1986, complete data were available for 88 countries (12 Mongoloid, 48 Caucasoid, and 28 Negroid). Obviously, these groupings do not represent in any sense ''pure types'' and there is enormous racial and ethnic variation within almost every country; moreover, each country undoubtedly differs in the procedures used to collect and disseminate the crime figures. Certainly, within each racial grouping are to be found countries reporting both high and low crime rates. The Philippines, for example, a country grouped as Mongoloid, reported one of the highest homicide rates in the world, 43 per 100,000 in 1984; Togo, a country grouped as Negroid, had the lowest reported crime rate in the world, a ''rounded down'' 0 per 100,000 in all 3 crime categories in 1984.

Table 2

International Crime Rates per 100,000 Population for Countries Categorized by Predominant Racial Type

	Homicide		Rape		Serious Assault		Total	
	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
1984								
Mongoloid (N = 9)	8.0	14.1	3.7	2.6	37.1	46.8	48.8	50.3
Caucasoid (N = 40)	4.4	4.3	6.3	6.5	61.6	66.9	72.4	72.5
Negroid (N = 22)	8.7	11.8	12.8	15.3	110.8	124.6	132.3	139.3
F(2,69)	1.92		3.99*		3.16*		3.59*	
1986								
Mongoloid (N = 12)	5.8	10.9	3.2	2.7	29.4	40.2	38.4	42.7
Caucasoid (N = 48)	4.5	4.6	6.2	6.3	65.7	91.2	76.4	95.4
Negroid (N = 28)	9.4	10.6	14.4	15.9	129.6	212.4	153.3	223.8
F(2,86)	3.04		7.54*		2.87		3.55*	

*P <0.05

The means and standard deviation for the three racial groups broken down by type of crime are shown in Table 2. If each country is treated as an independent entry, the results of one-way ANOVAs reveal that the races differ significantly in crime production. Using the aggregates, significant linear trends show Mongoloids > Caucasoids > Negroids for both 1984 ($F(1,69) = 5.20$, $P < 0.05$) and 1986 ($F(1,86) = 4.99$, $P < 0.05$). For readers objecting to the parametric analysis of these ratio figures, the exact probability of getting this particular ranking twice in a row is $1/6 \times 1/6 = 0.027$. Thus, despite enormous variation within each group, trends emerge in the direction predicted by Ellis (1989) and Rushton (1988a) and not as predicted by Roberts and Gabor (1990).

A similar racial pattern of social organization is found when assessed historically. Two and a half thousand years ago, China governed 50 million people via an imperial bureaucracy with universally administered entrance exams leading to the Inner Cabinet (Bowman 1989), an achievement which may have surpassed those of equivalent European civilizations, including that of the Roman Empire. In Africa, however, written languages were not invented and the degree of bureaucratic organization necessarily limited (Baker 1974). Post-colonial African social organization still lags significantly behind the rest of the world (Lamb 1987).

The Predictability of Race

Many consider the use of racial terminology to be poorly justified. Especially following World War II, it has been argued that the phrase "ethnic group" be substituted for race, thereby shifting the emphasis away from a "question begging . . . biologistic bias" (Montagu 1960: 697). This position, however, obscures higher level conceptual order. It is not just crime which is predictable by race. The rate per thousand births of two-eggs twins is less than 4 for Mongoloids, about 8 for Caucasoids, and more than 16 for Negroids, regardless of which country the samples are taken from (Bulmer 1970). This is because the tendency to double-ovulate is inherited largely through the race of the mother, independently of the race of the father, as observed in Mongoloid-Caucasoid crosses in Hawaii and Caucasoid-Negroid crosses in Brazil (Bulmer 1970). Similarly in sexual behavior and its consequences (intercourse frequencies, sexually transmitted diseases including AIDS), the Japanese are similar to the Chinese and Koreans, whether assessed in their home countries, Hawaii, or the U.S. mainland, but are different from Russians, Israelis, and European-Americans, who in turn are similar to each other but are different from Kenyans, Nigerians, and African-Americans (Rushton and Bogaert 1987, 1989). The unit of analysis with the highest explanatory power, therefore, is the higher order concept of race, within which cluster the different ethnic groups and, ultimately, individuals.

The relation between race and antisocial behavior has been found even for children in a unique Canadian setting. In Montreal, 825 4-to-6-year-olds from 66 different countries speaking 30 different languages were assessed by 50 teachers. All the children were in preschool French language immersion classes to enable better integration into the school system. The Negroid children often came from French language countries like Haiti, the Caucasoid children from Spanish-speaking countries like Chile, and the Oriental children from Vietnam and Kampuchea. Teachers reported better social adjustment and less hostility-aggression from Mongoloid children than from Caucasoid children than from Negroid children (Tremblay and Baillargeon 1984).

Race is also correlated with brian size. Roberts and Gabor make much of the endocranial data and analyses by S.J. Gould, the Harvard paleontologist and anti-sociobiological ideologue. Consider, therefore,

the data in Table 3. The first column presents the "corrected" figures from a paper alleging "unconscious . . . finagling" and "juggling" of internally measured cranial capacity measures in the work of S.G. Morton (1799-1851), America's great 19th century contributor to physical anthropology (Gould 1978). The second column presents an update of these figures after Gould explicitly acknowledges that his biases incline him to making directional errors (Gould 1981). In both, Gould dismissed the differences in Table 3 as "trivial". When the principle of aggregation is applied to Gould's figures, however, the results show that in size-of-brain case, Mongoloids (Native Americans + Mongolians) > Caucasoids (Modern Caucasians + Ancient Caucasians) > Negroids. After excluding "Malays" due to uncertainty as to their racial category, the figures from column 1, in cubic inches, average 85.5, 84.5, and 83, respectively, and from column 2, 86.5, 85.5, and 83, respectively. (The figures do not change appreciably if Malays are included as either Mongoloids or Caucasoids). Endocranial differences of 1 or more cubic inch (16 cm^3) should not be dismissed as "trivial". Gould's analysis and conclusions are misleading.

Table 3

S.J. Gould's "Corrected" Final Tabulation of Morton's Assessment of Racial Differences in Cranial Capacity

	Cubic inches	
Population	1978 Version	1961 Version
Native Americans	86	86
Mongolians	85	87
Modern Caucasians	85	87
Malays	85	85
Ancient Caucasians	84	84
Africans	83	83

The evidence for racial differences in brian size includes an enormously greater amount of data than that shown in Table 3, with thousands of converging data points from (a) internally measured cranial capacity, (b) brain weight assessed at autopsy, and (c) cranial volume estimated from external head measures (Rushton, Forthcoming). For example, Beals, Smith and Dodd (1984) computerized the entire world data base of 20,000 crania gathered by 1940 (after which data collection

virtually ceased because of its association with racial prejudice), grouped them by continental area, and found statistically significant differences. The sex-combined brain cases from Asia averaged 1380 cm^3 (SD = 83), those from Europe averaged 1362 cm^3 (SD = 35), and those from Africa averaged 1276 cm^3 (SD = 84). When body size was accounted for, the differences remained or became even larger because Mongoloids are typically smaller than Caucasoids and Negroids, except for their heads.

Aggregation and Moral Character

Roberts and Gabor so jumble the crime figures into type, region, generation and subpopulation with no discernible pattern being seen that it seems as if only a hodge-podge of unspecified post-hoc "situational" and "interaction" factors *could* fit the data! Perhaps though, Roberts and Gabor have missed an important point when they state "Any examination of aggregate crime statistics is going to over-estimate the true incidence of crime committed by blacks relative to the amount committed by whites". They do not say why it is that aggregation should produce an overestimate.

Emphasizing the context-dependent nature of criminal behavior has led many theorists to argue that situational determinants and person × situation interactions are so powerful that it is not useful to analyze crime from the perspective of enduring traits of character (Campbell and Gibbs 1986). It has seemed self-evident from such an "interactionist" perspective that, if people alter their behavior with varying circumstances, they cannot be said to have enduring characteristics that reliably differentiate them from others. In support, situationalists point to the alleged low level of behavioral consistency across contexts. This is the position endorsed by Roberts and Gabor who cite a classic study by Hartshorne and May (1928) to the effect that there is very little cross-situational consistency in honesty. As Roberts and Gabor put it: "children that were dishonest in one situation were honest in others".

The cross-situational consistency issue is pivotal in the search for human nature and the definitive study is the enormous "Character Education Inquiry" carried out by Hartshorne and May in the 1920s and published in three books (Hartshorne and May 1928; Hartshorne, May and Maller 1929; Hartshorne, May and Shuttleworth 1930).

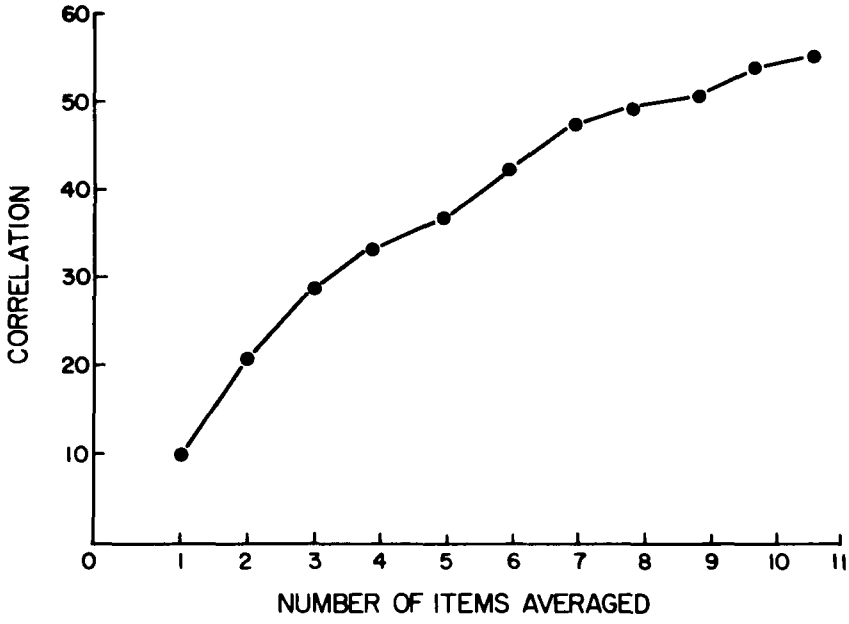
Hartshorne and May gave 11,000 elementary and high school students some 33 different behavioral test of altruism (referred to as the "service" tests), self-control, and honesty in home, classroom, church, play, and athletic contexts. Concurrently, ratings of the children's reputations with teachers and classmates were obtained. Altogether more than 170,000 observations were collected. Scores on the various tests were correlated to discover whether behavior is specific to situations or consistent across them.

The results showed that any one behavioral test correlated, on average, only 0.20 with any other test. If, however, the measures were aggregated into batteries, then much higher relationships were found either with other combined behavioral measures, with teachers' ratings of the children, or with the children's moral knowledge scores. Often these correlations were on the order of 0.50 to 0.60. For example, the battery of tests measuring cheating by copying correlated 0.52 with another battery of tests measuring other types of classroom cheating. Thus, depending on whether the focus is on the relationship between individual measures or on the more representative relationship between averaged groups of behaviors, situationalism and consistency are both supported. Which of these two conclusions is more accurate?

A major error is involved in focussing on correlations between just two situations. The more accurate assessment is to use a *principle of aggregation* and average across a number of measures (Rushton, Brainerd and Pressley 1983). The argument for aggregation becomes particularly obvious to university professors in the context of multiple-choice examinations. Imagine how unreliable assessing undergraduates' course performance with a single multiple-choice item would be. Such items only intercorrelate 0.15. Aggregating across many items, however, typically provides a reliable index of a student's performance. Similarly, single items on IQ tests only correlate 0.15, subtests based on 4 to 6 items correlate 0.30 to 0.40, and batteries of items comprising verbal and performance subscales correlate 0.80. In psychometric parlance, aggregation effects occur because specificity variance and error variance cancel out, leaving only true score variance to remain.

Figure 1 presents data applying the principle of aggregation to an aggression questionnaire where correlations increase as a function of the

Figure 1



Relation between number of aggressive items aggregated and the predictability of other aggressive occasions. As shown, the greater the amount of aggregation, the greater the predictability.

Source: Rushton and Erdle 1987.

number of items involved. As the number of items being correlated increase from 1 to 7 to 11, the corresponding predictabilities increase from 0.10 to 0.44 to 0.54 (Rushton and Erdle 1987). Clearly, if the goal is to predict aggressiveness, aggregated estimates provide increased utility. Similar results occur with group differences. The percentage of variance accounted for by sex differences in the aggression data shown in Figure 1 increased from 1% to 3% to 8% as the number of questionnaire items increases from 1 to 5 to 23. Parallel results occur when age and socio-economic status differences were examined. When age, sex, and SES were combined, the Multiple R increased from an average of 0.18 for single items to 0.39 for the 23 items. Similar results occur when official crime figures are used.

Individual differences in aggressiveness, when reliably assessed, are also longitudinally stable and predictive of antisocial behavior. For example, Huesmann, Eron, Lefkowitz and Walder (1984), using peer ratings and questionnaire measures of aggression, found individual differences at age 8 correlated 0.46 with those at age 30, and that they predicted a syndrome of antisocial behavior including criminal convictions, traffic violations, child and spouse abuse, and physical aggressiveness outside the family. Moreover, the stability of aggressiveness was found to exist across three generations, from grandparents to children to grandchildren.

Lombroso and Crime

In their magisterial *Crime and Human Nature*, J.Q. Wilson and R.J. Herrnstein (1985) provide a more balanced account of the work and influence of Lombroso, the founder of criminology, than many modern criminologists are willing to accept. Although Lombroso's theories were found to be wrong in most particulars, value was found in his view that Darwin's theory of evolution provides a biological basis for why some people are more likely to develop criminal tendencies than are others, and why physical indicators may exist to allow prediction. Foremost among recent developments is the work in behavioral genetics.

According to American, Danish, and Swedish adoption studies, children who were adopted in infancy were at greater risk for criminal convictions if their biological parents had been convicted than if their adoptive parents had been (Mednick, Brennan and Kandel 1988). In one study of all 14,427 nonfamilial adoptions in Denmark from 1924 to 1947, it was found that siblings and half-siblings adopted separately into different homes were concordant for convictions. Convergent with this adoption work, twin studies of adults have found that identical twins were roughly twice as much alike in their criminal behavior as fraternal twins. In a study by Rowe (1986) for example, the heritability of self-reported antisocial behavior was about 50%. A unique study comparing sets of identical and fraternal twins raised together *and* apart on the same tests has confirmed the typical heritability of 0.50 across diverse traits, including those under consideration, such as aggression, behav-

ioral restraint, and traditional morality (Tellegen, Lykken, Bouchard, Wilcox, Sagel and Rich 1988).

Perhaps the least appreciated aspect of twin studies is the information they also provide about environmental effects. The important environmental factors influencing development turn out not to be shared by siblings but to be unique to each child. Such factors as social class, family religion, parental values, and child-rearing styles are not found to have a common effect on siblings. The important environmental variance turns out to be within a family, not between families (Plomin and Daniels 1987). This is true even of traits such as altruism and aggression, which parents are expected to socialize heavily. In a study of 573 pairs of adult twins, 50% of the variance on each scale was found to be associated with genetic effects, virtually 0% with the twin's common environment and the remaining 50% with each twin's specific environment (Rushton, Fulker, Neale, Nias and Eysenck 1986). These results are shown in Table 4.

Table 4

Variance Components from an Analysis of Altruism and Aggressiveness Questionnaires From 573 Adult Twin Pairs

Trait	Additive genetic variance	Common environmental variance	Specific environmental variance
Altruism	51%	2%	47%
Empathy	51%	0%	49%
Nurturance	43%	1%	56%
Aggressiveness	39%	0%	61%
Assertiveness	53%	0%	47%

Source: Rushton, Fulker, Neale, Nias, and Eysenck 1986.

No one believes genes code for social behaviors directly. Rather, genes code for enzymes which, under the influence of the environment, lay down tracts in the brains and neurohormonal systems of individuals, thus affecting people's minds and the choices they make about behavioral alternatives. In regard to aggression, for example, people may inherit nervous systems that differentially predispose them to anger or irritability, or impulsivity, or a lack of conditionability (Ellis 1987b).

There are many plausible routes from genes to behavior, and collectively these routes may be referred to as epigenetic rules.

Because cultural practices and social learning play such an important role in human behavior, epigenetic rules may explain how social influences are genetically channelled. (Lumsden and Wilson 1981; Rushton, Littlefield and Lumsden 1986). Consider, for example, the important observation in Table 4 that common family environment has little impact on longer-term personality. Thus, within the same rearing environment, genetically different siblings are biased to learn different items of information because they have different sets of epigenetic rules channeling their common environments in individual ways. In an illustrative study on television effects, Rowe and Herstand (1986) found that although same-sex siblings resemble one another in their exposure to violent programs, it is the more aggressive sibling who (a) identifies more with aggressive characters, and (b) views the consequences of the aggression as positive. Within-family studies of delinquents find that both intelligence (Hirschi and Hindelang 1977) and temperament (Rowe 1986) distinguish delinquent siblings from those who are not delinquent. It is not difficult to imagine how intellectually and temperamentally different siblings might seek out different social environments.

Within the constraints allowed by the total spectrum of cultural alternatives, people create environments maximally compatible with their genotypes, and choosing friends and spouses is one of the most important ways they do this (Rushton, Littlefield and Lumsden 1986). Thus, epigenetic rules, by influencing preferences, might explain the well known tendency for aggressive and delinquent personalities to seek each other out for friendship and marriage. In a study of delinquency among 530 adolescent twins by Rowe and Osgood (1984), path analysis revealed not only that antisocial behavior was about 50% heritable, but that the correlation of 0.56 between the delinquency of an individual and the delinquency of his friends was mediated genetically, that is, that students genetically disposed to delinquency were also genetically inclined to seek each other out for friendship.

Genetic "influence", however, not genetic "determinism", is the appropriate catch-phrase when it comes to social behavior. Genes affect a person's threshold for activation; for some people a small stimulus is

needed to produce behavior while for others a greater stimulus is required. An analogy may be drawn from the field of health. If someone has a genetic disposition for flu, they may never catch it in a benevolent environment. The obverse is also true; a person genetically resistant to flu may continually suffer from it in a hostile environment. In many cases, the environment is powerful enough to override genetic differences; at present about 50% of the variance in social behavior seems to be of genetic origin, leaving another 50% to the environment. As environments become less impeding and more equal across people, however, the genetic contribution becomes larger; over the last 50 years the heritability of both academic attainment (Heath, Berg, Eaves, Solaas, Corey, Sundet, Magnus and Nance 1985) and longevity (Scriver 1984) has increased. The generational changes in crime discussed by Roberts and Gabor may similarly be due to the easing of social constraints on underlying genotypes. If my genetic analysis is correct then, as environments equalize, racial differences in crime will increase further.

Finally, consider the Lombrosian concept of "stigmata". During gestation, an insult that disturbs fetal brain development in an unobservable way may simultaneously produce a minor physical anomaly (MPA) on the external body surface. Mednick et al. (1988) provide the example of ear development. The ears start low on the neck of the fetus and gradually drift into their accustomed positions. If an insult occurs and development is affected, the ears' drift upward may end prematurely, resulted in low-seated ears — an observable MPA. The number of MPAs can be counted as an index of hidden central nervous system anomalies. Utilizing longitudinal data for 129 males, Mednick et al. (1988) found that for children raised in an unstable family, the number of MPAs at age 12 years were related to violent offending by age 21.

Race, Crime and Genetics

But how much of the variance in crime among the races is of genetic origin? At the moment this is unknown. That some of it is, however, is highly likely from several lines of reasoning. First, all the data in Table 1 are explained by a gene-based evolutionary theory of racial differentiation, and it would be implausible and unparsimonious to make an exception for just one of the dimensions unless good evi-

dence was provided for doing so. Indeed, there is evidence of genetic linkage between the various dimensions, e.g. between law abidingness and temperament (Rowe 1986) and between law abidingness and sexual behavior (Rowe, Rodgers, Meseck-Bushey and St. John 1989).

A second line of evidence comes from generalizing the 50% heritability found *within* populations to the between-group differences. While it is often thought that heritabilities are specific to particular populations, recent evidence shows they are generalizable across distinct ethnic and cultural groups. For example, genetic estimates calculated in Japan for Wechsler IQ subtests predict the magnitude of the black-white differences on the same subtests in the United States (Rushton 1989b). This directly implies that the racial differences in intelligence are partly genetic in origin and indirectly increases the likelihood that those in crime are also.

Then, as in the discussion of Table 4, the crucial environmental variables influencing postadolescent behavior are found to be within families, not between them. This important discovery implies that since the environmental variables usually proposed to explain racial differences in crime, such as social class, religious beliefs, cultural practices, father absence, and parenting styles account for so little variance *within* race, they are unlikely to *between* races. This leaves genetic and within-family explanations to account for the differences.

Finally, the heritability of racial differences has been suggested more directly. With respect to both social deviancy and IQ, preliminary data indicate that black children adopted into white families are found to not resemble the adoptive siblings with whom they were raised for 17 years (Scarr, Weinberg and Gargiulo 1987). When the children were 7 years of age the results had shown that black IQ was comparable to white IQ, but a 10-year follow up indicates that black IQ and educational achievement has significantly declined while social deviance and psychopathology has increased.

Future Research

It is useful to conjecture about the physiological basis for the racial differences in crime, for regardless of how much the cause is environ-

mental or genetic, both influences must have a representation in the central nervous system. It is completely incorrect to juxtapose the environmental with the biological when one intends to contrast the environmental with the genetic; *both* sources must inevitably be mediated biologically.

Rushton and Bogaert (1987) suggested that testosterone may be one such biological mediator. Several studies have related circulating testosterone in blood and free testosterone in saliva to antisocial and aggressive behavior (Dabbs and Morris, Forthcoming). Moreover, Lynn (1989) has reviewed evidence showing that the races differ in testosterone in the direction Mongoloids < Caucasoids < Negroids. Also, Ellis (Forthcoming) has hypothesized that platelet MAO activity is a biological marker for some of the key neurochemistry underlying crime, and that blacks have significantly lower MAO activity levels than whites.

A more central locus for research attention is brain functioning. It is of interest, for example, to wonder where the 15-20 cm^3 of grey matter that differentiates the races is located. Gordon (1987) has demonstrated that black-white differences in the prevalence of delinquency can be accounted for by their differences in mean IQ and suggested that the same relation may hold for adult criminality. One agenda now, therefore, is to go beyond the racial differences in genetically based covarying traits and to identify the underlying physiological mechanisms. Explaining racial differences in crime may thus become a crucible for understanding individual differences, for the former constitute an aggregate of the latter.

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