

Skeletal Maturation Rate in North American Negro and White Children

VARIABILITY in the rate of skeletal maturation in samples of children (using the Tanner-Whitehouse^{1,2} bone-specific approach) has recently been reported^{3,4}. From samples of clinically normal North American (Philadelphia) Negro and White children I have obtained further information on this topic.

The samples comprised 486 Negro children between 6 and 13 years of age and 320 White children between 6 and 12 years of age. Hand-wrist radiographs were taken twice for each child at an interval of a year, plus or minus approximately 1 week. The differences between successive mean chronological ages ranged from 0.96 and 1.00 years for all age groups except the 11-12 year old White males, in whom the mean difference was 0.92 years. The data therefore represent one year's progress or velocity in skeletal maturity for cross-sectional samples at each age level. Before evaluating the hand-wrist films, I rated the films used by Acheson *et al.*⁵⁻⁷ in their study of the reliability of assessing skeletal maturity. The results showed an acceptable ranking⁸. All films of the present study were assessed without knowledge of the age and sex of each child. It was impractical to conceal the race of the subjects because the identification numbers were different for the two schools used. Nevertheless, all films were rated in a random order including films not used in the present report; that is, films of children seen on only one occasion. After assessing all the films (about 2,200), 150 were re-assessed, taking every fifteenth film throughout the series. Analysis of the second readings indicated a high degree of replicability⁸. The means and standard deviations of the velocity of skeletal maturation of boys and girls in the present study series relative to the British series reported⁴ are displayed in Tables 1 and 2. Because the time interval between the dates on which the hand-wrist films in the present series were taken was practically one year in all age categories but one (see above), the mean rates reported in Tables 1 and 2 represent only the mean of the differences between skeletal maturity scores at each observation period. They were not calculated by dividing the increase in number of points by the exact time interval between the two successive radiographs as was done by Marshall⁴.

Sex differences in the rate of maturation within each race group are not apparent until the immediate pre-adolescent years (from 9-10 years of age onward). Racial differences in velocities between North American Negro and White boys are not consistent over the age range reported. Negro girls tend to gain in maturity points at a slightly greater rate from 6 to 10 years; White

girls gained at a greater rate from 10 to 12 years. The results of the Negro-White comparisons agree with observations reporting essentially identical age relationships and progress in the skeletal maturity of Negro and White boys, but noting greater variability between Negro and White girls⁹. According to Todd (ref. 9, page 54):

"It is not quite so easy to explore the progress (skeletal) presented in the female series. Often indeed the Negro girl is in advance even of the White girls. But it is only the relatively small number (n=72) of our Negro girls which leaves us still hesitant in assigning differentiation of Negro girls to an age relationship identical with that of White girls."

The mean one year velocities and standard deviations at each age level for the cross-sectional samples of North American children of both racial groups generally agree closely at most ages with the mean rates and ranges of variation for the British children, which represent a pure longitudinal series⁴. Progress or velocity in each of the specific bone centres utilized in the Tanner-Whitehouse method has been reported⁸.

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ROBERT M. MALINA

Department of Anthropology,
University of Texas,
Austin, Texas 78712.

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Ecology of North Indian *Ramapithecus*

In a report on the ecology of North Indian *Ramapithecus*, Tattersall¹ claims "... in general the Nagri environment can justifiably be characterized as one of tropical forests interspersed with broad rivers and tree savanna." He reaches this conclusion after examining some of the mammalian genera reported from the deposits of the Nagri Zone.

I find it very hard to accept this conclusion as valid, for the following reasons. First, he says that "Associated with *Ramapithecus* in the Nagri Zone are forest-dwelling pongid and loridid primates". Was the very sparse *Ramapithecus* material from the Nagri Zone actually excavated from a limited area, at a single level, in association with loridids and pongids? Or were some pongid and loridid fossils among the many other mammalian fossils collected at random from the various fossiliferous exposures that are jointly grouped as "the Nagri Zone"? Even if loridids and pongids were found in direct association with *Ramapithecus*, does this in any way prove that they were "forest dwelling"? There are living loridids today which are not forest dwellers, and I doubt if we are really sure that the Miocene pongids were, necessarily, "forest dwellers".

Then he writes that "primitive pigs; a giraffid closely related to *Okapia*; rhizomyid and hystrioid rodents; viverrids; procyonid and felid carnivores" are all of them "forest dwelling types". Again I can see no valid evidence

Table 1. MALES

Age (yr)	American Negro			American White			British*		
	n	$\bar{x} \dagger$	S.D.	n	$\bar{x} \dagger$	S.D.	n	$\bar{x} \dagger$	S.D.
6-7	14	45.9	21.7	11	31.5	14.3	62	50.5	22.4
7-8	45	46.7	17.2	34	50.2	21.0	59	49.9	21.6
8-9	41	52.1	24.1	34	44.0	19.7	49	39.9	18.1
9-10	39	47.2	23.3	34	37.6	14.6	39	43.4	24.7
10-11	40	59.6	27.5	40	53.7	29.5	39	57.7	33.2
11-12	32	67.6	50.6	22	68.8	48.0			
12-13	31	62.4	34.8						

* From ref. 4.

† Mean rate (points per year).

Table 2. FEMALES

Age (yr)	American Negro			American White			British*		
	n	$\bar{x} \dagger$	S.D.	n	$\bar{x} \dagger$	S.D.	n	$\bar{x} \dagger$	S.D.
6-7	23	49.1	20.9	11	28.5	14.6	57	48.0	20.1
7-8	33	50.5	20.9	30	46.5	22.3	55	46.2	21.2
8-9	41	56.1	30.2	32	41.3	16.2	51	53.0	27.5
9-10	54	81.4	48.5	30	68.3	44.0	41	70.8	41.6
10-11	37	93.0	42.1	29	107.3	53.0	23	101.3	68.6
11-12	38	91.2	45.9	13	128.2	59.7			
12-13	18	95.2	59.3						

* From ref. 4.

† Mean rate (points per year).