

David Hamburg and Donald T. Lunde, "Sex Hormones in the Development of Sex Differences in Human Behavior," in Eleanor E. Maccoby ed. "The Development of Sex Differences," Stanford, Stanford University Press 1966

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by Young, Goy, and Phoenix (1964).

p. 13 - Report of experiment, in which rhesus macaque, a primate, is given testosterone during second quarter of gestation. They produce female pseudohermaphroditic offspring with genital aberrations such as atrophy of the clitoris. Their work was based on Wisconsin Primate Laboratory finding that infant male monkeys are more aggressive than females. These females resemble male infant monkeys in their aggressive behavior. "The masculinized females threatened, initiated play, and engaged in rough-and-tumble play more frequently than the controls. Like normal males, these masculinized females also withdrew less often from the initiations, threats, and approaches of other subjects." They also show more mounting behavior. Most aggressive characteristics disappear by third year except "social-threat behavior" which is maintained.

The authors feel that in humans, hormones may affect aggressive behavior in subtle ways. Hormones may make aggressive behavior more easily learned or more may make aggressive movements more gratifying. They may also ~~increase~~ increase sensitivity to stimuli and arouse responses of aggression. None of these possibilities have been experimentally explored, but the authors think an approach combining study of genes, hormones, and learning processes would be important.

"Recent field studies of primate behavior (DeVore 1965) reveal several characteristics of ground-living old-world monkeys that are pertinent to the present discussion: (1) There is much evidence of rough-and-tumble play among males. Their frequent repetition of such play patterns amounts ~~to~~ in fact to a kind of practice of aggressive behavior over several years, from infancy onward. In this way, the males develop the strengths and skills necessary for the defense of the group. (2) There is marked sexual dimorphism in anatomy and behavior. The adult males defend the group and settle internal disputes; they are larger and stronger than the adult females. Taking the experimental and field observations together, it appears that the male's aggressive predisposition (presumably based on genetic factors mediated by hormonal effects on brain differentiation and muscle growth) is developed through social learning and ultimately put to adaptively significant use." These observations are for complex old-world monkeys and great apes that spend much of their time on the ground.

