

# The Physiological Consequences of Child-Rearing among the Creek, Chicasaw, and Choctaw

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## RÉSUMÉ

La culture est le mécanisme humain d'adaptation extrasomatique. Donc le comportement parental/adulte envers un enfant produit chez celui-ci un comportement culturellement adaptatif. L'auteur soutient que la socialisation ne produit pas directement le comportement attendu par la société, mais que certaines pratiques envers les enfants produisent des effets physiologiques qui eux, causent le comportement voulu. Chez les Creek, les Chicasaw et les Choctaw, certaines pratiques de socialisation ont produit un système adrenal bien développé et équilibré, qui produit à son tour le désir d'explorer des milieux nouveaux et les aide à affronter des expériences difficiles. Donc, le comportement normal des adultes n'est pas tellement une fonction de la conformité aux attentes culturelles qu'un "conditionnement" physiologique qui permet à ces attentes d'être comblées.

An aspect of anthropology often overlooked is the interplay between the physical stress experienced by a child and the expected behavior of that child as an adult. Part of this oversight seems to be a consequence of defining culture as a non-biological mental set of standards. There is nothing novel about this stance, but it does, indirectly, preclude a relationship between the customs of a people and the survival, health, well-being, and so forth of those same people. But if culture is viewed as a human adaptive mechanism, what then are the implications for various cultural

practices? Would this exclude any biological constituents? This position is also not new, yet it is not as pervasive an operating view as the mentalist definition. However, it does have the benefit of being a little more relevant and practical. This short paper is an attempt to deal with one such implication of an adaptive stance: the physiology-behavior relationship as it affected personality development in the members of the Creek, Chicasaw, and Choctaw tribes.

Barry, *et al.* (1959), present a study on the relationship of child training to subsistence economy. The cultures studied were first divided into four subsistence categories: animal husbandry, hunting and/or fishing, agriculture, and agriculture with hunting and/or fishing (1959: 60). Compliance versus assertion in child training were correlated with these subsistence activities. The results related compliance with those cultures practicing either animal husbandry or agriculture, and assertion with the remaining groups. Achievement, self-reliance, and independence were all subsumed under assertion, while responsibility, nurturance, and obedience were placed under compliance. The conclusions were that such training varied with the nature of each culture's subsistence system, but tended to be suitable for the subsistence system concerned.

Taking these findings into account, it is proposed that the consequences of the parental/adult behavior toward children in the Creek, Chicasaw, and Choctaw tribes were in accord with the culture, *and* that these consequences (*i.e.*, expected adult behavior) had a physiological source. To evaluate this thesis it will be necessary to first examine some of the physiological factors which influence human behavior. After these have been outlined, child-rearing as well as observed adult behavior within the three South-eastern tribes will be described. Finally, the physiological responses to child-training will be set against the adult behavior and the thesis evaluated from there.

## PHYSIOLOGICAL AND BEHAVIORAL FACTORS

What might be some of the factors contributing to compliance or assertion in a child? To understand this question two components

will be considered: the effects of stimulation on the pituitary-adrenal system, and the effects of the pituitary-adrenal response on human behavior.

a) *Effects of stimulation on the pituitary-adrenal system*

The physiological response to stimulation and stress includes the release of ACTH (adrenocorticotrophic hormone) which induces the adrenal cortex to secrete somatic regulating hormones. The adrenal cortex helps to maintain metabolic equilibrium by secreting hormones which regulate such functions as carbohydrate metabolism, blood pressure, and body temperature (Di Raimondo 1961: 70; Levi 1967: 31). The pituitary-adrenocortical system is exceptionally responsive to distressful or agitative stimuli (Hilton 1965: 483). Regulation of the structure and function of the adrenal cortex is affected by ACTH, which stimulates the cortex to increase secretion of adrenal cortical steroids. Any stimulus requiring a homeostatic readjustment of the organism is met with an increased release of ACTH, and after an imposed stress, be it emotional or physical, the adrenal cortex enlarges in response to this hormone (Selye 1950: 35; Di Raimondo 1961: 176, 178, 289).

The magnitude of reaction to stress depends both on when in the 24-hour adrenocortical cycle the organism is stimulated and on the duration of the stimulation (Shenkin 1964: 1112; Friedman and Ader 1967: 209; Ader and Friedman 1968: 384). In humans this cycle is not present during the first week of life; however, by the fourth to twentieth week level-differences in the rhythm appear, and this rhythm is fully established by the age of seven years (Hellbrügge, *et al.* 1964: 363, 364, 366). Cortisol levels tend to be high in newborns during the first 24 hours of life because of the influence of the maternal circulation. Cortisol production remains somewhat higher than what is typical for older individuals during the first week of life (Bacon and Spencer 1973: 1265). It is important to note that the ACTH-releasing factor may also be discharged without regard to the plasma corticoid concentration when a person is subjected to stress (Bondy 1967: 1302).

The adrenocortical response to environmental stimulation is also a function of the psychophysiological state of the organism

(Ader and Friedman 1968: 378). This defensive reaction can be activated by fear, apprehension, anxiety, or exposure to novel situations (Levine 1971: 26; Luce 1971: 150). Such reactions are also present during the stress of infection (Beisel and Rapoport 1969a: 541). This response to stress includes the sympathetic and parasympathetic nervous systems; stimulation of both results in adrenalin production. This in turn stimulates the pituitary to release ACTH which activates the adrenal cortex to release somatic regulating hormones (Levi 1967: 37). High levels of steroids in the plasma are therefore indicative of a person's panic or misery (Shenkin 1964: 116; Luce 1971: 153).

Acute infection leads to increased adrenocortical secretions which contributes significantly to widespread catabolic losses from host tissues (Beisel and Rapoport 1969a: 541). A functioning adrenal cortex is necessary to permit increased synthesis of certain proteins during infection, though these catabolic events begin only after the onset of the disease symptoms (Beisel and Rapoport 1969b: 596). The human host of an infectious disease organism fares best when his own pituitary-adrenal axis is normally responsive. Susceptibility and lethality of infectious diseases increases toward the extremes of either hypoadrenocorticism or hyperadrenocorticism (Beisel and Rapoport 1969a: 541).

In infant mammals manipulation and handling hastens maturation of the adrenal system, and consequently the stress response (Levine 1960: 83; Luce 1971: 99). Animals handled in infancy will, as adults, produce adrenal-steroids quicker than those not handled in infancy. Though they react faster, the manipulated animals cease adrenocortical secretion about fifteen minutes after stimulation, whereas those who have not been exposed to stress as infants continue adrenocortical secretion long after stimulation has terminated (Levine 1960: 82).

Psychological stress is generally more potent than physical stimuli in activating pituitary ACTH production (Shenkin 1964: 117; Friedman and Ader 1967: 209). Novelty or environmental change are sufficient in themselves to produce significant elevations in plasma corticosteroid levels (Friedman and Ader 1967: 209). Friedman and Ader suggest that this reaction is most likely a

function of the experimental animal's psychological perception of its environment (1967: 212).

b) *Effects of stress and physiological responses on behavior*

Among the responses elicited by environmental stress are those that alter behavior and thereby serve to mitigate or remove the stress. Adaptation to these circumstances implies the development of properties by the organism that allow maintenance of physiological function and survival when the surroundings are changed in any (organism perceived) important respect (Hardy 1967: 1705). For organisms capable of regulating internal environment in accord with changes in external environment, adaptation results in changes in the limits of the control system without significantly changing the output of the system (Hardy 1967: 1706). Therefore, adaptive change in such organisms

is caused by continued operation of the regulating system at a high level and results... in a more responsive controller with a greater capacity and capable of closer regulation of the controlled variable [Hardy 1967: 1707].

What, then, do the physiological responses suggest for animal and human behavior? Levine has noted that adult animals stressed in infancy are more likely to freely explore their surroundings, are better capable of coping with stress, and are not cowered by novel and trying situations, compared to adults left unstressed in infancy (Levine 1960: 81, 83; Levine 1971: 26). The unmanipulated controls in Levine's experiments were found to be timid and deviant in their behavior (1971: 26). In the adult stage these two groups differ sharply in the responsiveness of the pituitary-adrenal system (*ibid.*). Luce comments that

it appeared that some early demands, experiences, or stresses actually benefited the animal and helped his adrenal system calibrate its output and the speed of its response to the demands of living. Experience, rather than a vacuum-like protection, seems to be necessary for the development of human infants, too [1971: 100].

Infant experience in humans has a profound effect in shaping the character and constitution of the adult (Levine 1960: 86). "Some degree of stress in infancy is necessary for the development of normal, adaptive behavior" (Levine 1971: 31).

The pituitary-adrenal system plays a key role in learning and in adapting to novel stimulation (Levine 1971: 31). ACTH inhibits the extinction of an avoidance response, while removal of the pituitary retards the learning of a conditioned avoidance response (Levine 1971: 27). In humans, those deprived of ACTH habituate to new stimuli faster than those injected with ACTH (Levine 1971: 29). Those humans with an untreated adrenal cortical insufficiency, or those who have had the adrenal cortex removed, exhibit a markedly increased sensitivity to taste, hearing, and smell, but at the same time a decrease in perceptive and integrative abilities (Henkin and Daly 1968: 1269, 1270). Some mental symptoms of hypoadrenocorticism are apathy and irritability, and of hyperadrenocorticism are insomnia, hyperactivity, and restlessness. In both cases anxiety and occasional psychotic reactions are manifest (Dale 1972: 1033). These represent changes from normal adrenocortical function, and indicate why a *balance* response, especially during stress, is critical. Disorders of memory, intellectual function, and personality attend many endocrine imbalances (Dale 1972: 1038). In addition, noted side effects of injected corticosteroids in children include personality changes, susceptibility to infection, and steroid diabetes (Bacon and Spencer 1973: 1267).

Lundin, in his analysis of behavioral psychology, notes an interplay between stimulation and child development. He describes the results of environmental restriction of institutionally raised children: some could not walk without help, some could not speak, and all showed signs of a marked retardation in their behavioral development (Lundin 1971: 213). He further comments that one possible explanation for this hinderance could be the lack of sensory stimuli: "children were rarely handled so kinesthetic and tactile stimulation was at a minimum" (*ibid.*). Personality studies also indicate that those suffering from anxiety find new learning difficult, and are characteristically ridden with an "endless chain of avoidance reactions" that seem impossible to eliminate (Lundin 1971: 289). As is known from the discussion above, anxious behavior stimulates the pituitary to secrete ACTH which in turn impedes the extinction of avoidance responses.

In brief summary: persons who are exposed to stress or stimulation in infancy will, as adults, tend to be willing to

investigate their surroundings, react quickly to noxious or novel stimulation, be capable of re-formulating behavioral patterns, and not be intimidated by new or trying situations. Persons who experience a paucity of stimulation in infancy will be hesitant in exploring their environment, react slowly but intensely to trying circumstances, be conservative in changing behavior, and cower from unexpected or difficult situations.

### CHILD-REARING AMONG THE CREEK, CHICASAW, AND CHOCTAW

Keeping in mind that infantile stimulation and experience result in better abilities to cope with new circumstances, let us examine child-rearing data for three Southeastern tribes: the Creek, the Chicasaw, and the Choctaw. It must be cautioned at the outset that, unfortunately, child-training and adult behavior as recorded by Southeastern ethnohistorians applies almost categorically to males. This is a consequence of the male explorers and observers, what *their* cultural backgrounds dictated as relevant behavior to record, and the accessibility of a male observer to the life-styles of each sex in the tribes.

Each of the three tribes had a combined agriculture-hunting-gathering subsistence base (Swanton 1918: 56; Swanton 1928b: 725). Cultivated plants such as corn, beans, and squash provided a source of food for only part of the year (Swanton 1928a: 443; Swanton 1946: 256). Harvesting was done in the late summer, and in the fall hunting began in earnest with the men away from the villages for much of the time (Swanton 1928a: 404).

The lack of commitment to one food supply or another is best described by Swanton:

As the harvest was seldom sufficient to last — nor was it expected to last — until another crop came in, the Indians were obliged to seek natural food supplies elsewhere and, since such supplies were not usually concentrated, this meant that the people themselves scattered about in camps where they remained until planting [1946: 257].

Among the Creeks, Chicasaw, and Choctaw post-natal care was also similar; in terms of mode of living and general habits these

groups can be treated as one people (Malone 1922: 178). Immediately after birth the child was dipped into cold water, to strengthen and harden it. Tubby states that the Choctaw:

believed that if a child was not tempered like a piece of metal it was likely to die and so they plunged infants into water just after their birth [quoted in Swanton 1931: 118].

Among the Creek and Chicasaw the child also went through this process, which would continue for the remainder of its life (Swanton 1928a: 361; Swanton 1946: 714, 716). From the youngest to the oldest member, everyone was expected to bathe every morning regardless of weather, though among the Creeks one had the option of rolling in snow if such was present (Swanton 1928a: 365; Swanton 1946: 125).

Other practices were introduced to harden the child as it grew older. Among the Creeks a child was required to lie upon the ground, to accustom himself to fatigue. The result was that "the surfaces of their bodies [were] as tough as the skin of their hands and feet" (Swanton 1928a: 366). Means of correction were also introduced at this time in the child's life. One method was the throwing of cold water over the errant child (Swanton 1931: 124). Scratching, however, was the principle means of determent. A practice characteristic of the Southeast in general, scratching was done in identical ways by all three tribes considered here (Swanton 1928a: 364; Swanton 1946: 715, 716). However, though administered as a punishment, it was also considered contributory to good health and endurance (Swanton 1928a: 364). Swanton quotes Swan on this mode of correction:

if a child requires punishment, the mother scratches its legs and thighs with the point of a pin or needle until it bleeds; some keep a jaw-bone of a gar-fish, having two teeth, entirely for this purpose [1928a: 363].

The rationale behind the practice was that it strengthened and hardened the child, enabling it to withstand the dangers of life (Swanton 1928a: 363, 365).

Aside from penal actions, children were also exposed to other 'strengthening' customs, some formal, others informal. The 'huskana,' generally ascribed solely to the Carolina Sioux, was also



present among the Chicasaw (Malone 1922: 179). Described by Lawson as a "diabolical purgation," it was a five to six week confinement usually reserved for boys, in which the youngsters were starved and not permitted to leave their 'cabin.' The reason this was done was that the experience hardened the child, enabling him or her to endure the hardships of living (Swanton 1946: 712).

Among the Choctaw little restraint was placed on children and they roamed from village to village (Cushman 1899: 215). Some of the activities boys engaged in while growing up were wrestling, running, and lifting heaving weights, all of which Swanton describes as violent exercises (1931: 124). To cure children of their laziness, the adults made them play ball and run races, as well as scratch themselves (Swanton 1931: 127). Boys were encouraged to roam through the woods, and would "test one another's endurance by stirring up yellow jackets and seeing who could withstand their stings the longest" (Cushman 1899: 214). They would also place hot coals on the backs of their hands and forearms, with no manifestation of pain (*ibid.*). This relation of the tolerance of pain to good health also permeated hunting, where a tiring person would take a fish-tooth scratcher and scratch one thigh until the blood ran to prevent him from wearing out (Swanton 1928a: 445). The efficiency with which this worked is exhibited in the account by Adair (in Swanton 1928a: 446) of how a Choctaw warrior, by scratching himself, ran down and killed a French trader mounted on a swift horse.

How did the children of these tribes behave as adults? Malone states that the Chicasaw had an air of magnanimity, superiority, and independence (1922: 175). They were known to be just, honest, liberal, and hospitable to strangers (1922: 179). The Choctaws had a calm and peaceful disposition, and prized unrestrained freedom (Swanton 1931: 125, 126). They were also known to have little difficulty in making their way about in unfamiliar territory (Swanton 1931: 160).

The Choctaw estimated their success, both in war and hunting, as depending almost exclusively upon their unwearied patience and capability of great endurance (Cushman 1899: 214). Among the Creeks acquisition of prestige was based upon abilities as a warrior

and hunter (Swanton 1928a: 366), as it was among the Chicasaw (Malone 1922: 180).

## EVALUATION

Given the information on child-rearing for the Creek, Chicasaw, and Choctaw, what should be the physiological consequences, and how do the consequences relate to the cultural behavior? The premise is that parental/adult behavior toward the child produced culturally adaptative behavior in the latter, *and* that this behavior has a physiological basis.

According to the discussion above on the adrenocortical system, the results of year-round bathing, of scratching, and of the exposure to painful stimuli would be an early maturation of the adrenal system in the children. This in turn would produce the following behavioral tendencies: a well-calibrated and mature adrenal system, a willingness to explore unknown surroundings, and a failure to be covered by new and trying experiences. As we know from the ethnohistorical data, the children actively sought novel situations, were not covered by trying or painful circumstances, and were willing to explore beyond their home villages.

According to Barry, *et al.* (1959), cultures with an agriculture-hunting-gathering subsistence base, such as the tribes considered here, should encourage self-reliance and achievement in the young. Such encouragement, including prestige achievement for the males, was present among the Creek, Chicasaw, and Choctaw. Among these peoples the children were trained to be "venturesome, independent adults who [could] take the initiative in wresting food daily from nature, and thus ensure survival in societies with a low-accumulation economy" (Barry, *et al.* 1959: 63). It appears that the physiological tendencies for such a behavioral pattern may be interpreted as largely a result of the child-rearing practices of the Creek, Chicasaw, and Choctaw. Further, approved adult behavior was not so much a function of adherence to cultural expectations or cultural standards as it was of physiological 'conditioning' enabling those expectations to be fulfilled.

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