

ETHNIC DIFFERENCES IN BABIES

Striking differences in temperament and behavior among ethnic groups show up in babies only a few days old.

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The human species comes in an admirable variety of shapes and colors, as a walk through any cosmopolitan city amply demonstrates. Although the speculation has become politically and socially unpopular, it is difficult not to wonder whether the major differences in physical appearances are accompanied by standard differences in temperament or behavior. Recent studies by myself and others of babies only a few hours, days, or weeks old indicate that they are, and that such differences among human beings are biological as well as cultural.

These studies of newborns from different ethnic backgrounds actually had their inception with work on puppies, when I attempted to raise dogs in either an indulged or disciplined fashion in order to test the effects of such rearing on their later behavior.

I spent all my days and evenings with these puppies, and it soon became apparent that the breed of dog would become an important factor in my results. Even as the ears and eyes opened, the breeds differed in behavior. Little beagles were irrepressibly friendly from the moment they could

detect me; Shetland sheepdogs were very, very sensitive to a loud voice or the slightest punishment; wire-haired terriers were so tough and aggressive, even as clumsy three-week-olds, that I had to wear gloves while playing with them; and finally, Basenjis, barkless dogs originating in Central Africa, were aloof and independent. To judge by where they spent their time, sniffing and investigating, I was no more important to them than if I were a rubber balloon.

When I later tested the dogs, the breed indeed made a difference in their behavior. I took them, when hungry, into a room with a bowl of meat. For three minutes I kept them from approaching the meat, then left each dog alone with the food. Indulged terriers and beagles waited longer before eating the meat than did disciplined dogs of the same breeds. None of the Shetlands ever ate any of the food, and all of the Basenjis ate as soon as I left.

I later studied 20 sets of identical and fraternal human twins, following them from infancy until they were 10 years old, and I became convinced that both puppies and human babies begin life

along developmental pathways established by their genetic inheritance. But I still did not know whether infants of relatively inbred human groups showed differences comparable to the breed differences among puppies that had so impressed me. Clearly, the most direct way to find out was to examine very young infants, preferably newborns, of ethnic groups with widely divergent histories.

Since it was important to avoid projecting my own assumptions onto the babies' behavior, the first step was to develop some sort of objective test of newborn behavior. With T. Berry Brazelton, the Harvard pediatrician, I developed what I called the Cambridge Behavioral and Neurological Assessment Scales, a group of simple tests of basic human reactions that could be administered to any normal newborn in a hospital nursery.

In the first study, Nina Freedman and I compared Chinese and Caucasian babies. It was no accident that we chose those two groups, since my wife is Chinese, and in the course of learning about each other and our families, we came to believe that some character

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differences might well be related to differences in our respective gene pools and not just to individual differences.

Armed with our new baby test, Nina and I returned to San Francisco, and to the hospital where she had borne our first child. We examined, alternately, 24 Chinese and 24 Caucasian newborns. To keep things neat, we made sure that all the Chinese were of Cantonese (South Chinese) background, the Caucasians of Northern European origin, that the sexes in both groups were the same, that the mothers were the same age, that they had about the same number of previous children, and that both groups were administered the same drugs in the same amounts. Additionally, all of the families were members of the same health plan, all of the mothers had had approximately the same number of prenatal visits to a doctor, and all were in the same middle-income bracket.

It was almost immediately clear that we had struck pay dirt; Chinese and Caucasian babies indeed behaved like two different breeds. Caucasian babies cried more easily, and once started, they were harder to console. Chinese babies adapted to almost any position in which they were placed; for example, when placed face down in their cribs, they tended to keep their faces buried in the sheets rather than immediately turning to one side, as did the Caucasians. In a similar maneuver (called the "defense reaction" by neurologists), we briefly pressed the baby's nose with a cloth. Most Caucasian and black babies fight this maneuver by immediately turning away or swiping at the cloth with their hands, and this is reported in most Western pediatric textbooks as the normal, expected response. The

average Chinese baby in our study, however, simply lay on his back and breathed through his mouth, "accepting" the cloth without a fight. This finding is most impressive on film.

Other subtle differences were equally important, but less dramatic. For example, both Chinese and Caucasian babies started to cry at about the same points in the examination, especially when they were undressed, but the Chinese stopped sooner. When picked up and cuddled, Chinese babies stopped crying immediately, as if a light switch had been flipped, whereas the crying of Caucasian babies only gradually subsided.

In another part of the test, we repeatedly shone a light in the baby's eyes and counted the number of blinks until the baby "adapted" and no longer blinked. It should be no surprise that the Caucasian babies continued to blink long after the Chinese babies had adapted and stopped.

It began to look as if Chinese babies were simply more amenable and adaptable to the machinations of the examiners, and that the Caucasian babies were registering annoyance and complaint. It was as if the old stereotypes of the calm, inscrutable Chinese and the excitable, emotionally changeable Caucasian were appearing spontaneously in the first 48 hours of life. In other words, our hypothesis about human and puppy parallels seemed to be correct.

The results of our Chinese-Caucasian study have been confirmed by a student of ethologist Nick Blurton-Jones who worked in a Chinese community in Malaysia. At the time, however, our single study was hardly enough

evidence for so general a conclusion, and we set out to look at other newborns in other places. Norbett Mintz, who was working among the Navaho in Tuba City, Arizona, arranged for us to come to the reservation in the spring of 1969. After two months we had tested 36 Navaho newborns, and the results paralleled the stereotype of the stoical, impassive American Indian. These babies outdid the Chinese, showing even more calmness and adaptability than we found among Oriental babies.

We filmed the babies as they were tested and found reactions in the film we had not noticed. For example, the Moro response was clearly different among Navaho and Caucasians. This reaction occurs in newborns when support for the head and neck suddenly disappears. Tests for the Moro response usually consist of raising and then suddenly dropping the head portion of the bassinet. In most Caucasian newborns, after a four-inch drop the baby reflexively extends both arms and legs, cries, and moves in an agitated manner before he calms down. Among Navajo babies, crying was rare, the limb movements were reduced, and calming was almost immediate.

I have since spent considerable time among the Navaho, and it is clear that the traditional practice of tying the wrapped infant onto a cradle board (now practiced sporadically on the reservation) has in no way induced sticism in the Navaho. In the halcyon days of anthropological environmentalism, this was a popular conjecture, but the other way around is more likely. Not all Navaho babies take to the cradle board, and those who complain about it are simply taken off. But most Navaho infants calmly accept the

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board; in fact, many begin to demand it by showing signs of unrest when off. When they are about six months old, however, Navaho babies do start complaining at being tied, and "weaning" from the board begins, with the baby taking the lead. The Navaho are the most "in touch" group of mothers we have yet seen, and the term mother-infant *unit* aptly describes what we saw among them.

James Chisholm of Rutgers University, who has studied infancy among the Navaho over the past several years, reports that his observations are much like my own. In addition, he followed a group of young Caucasian mothers in Flagstaff (some 80 miles south of the reservation) who had decided to use the cradle board. Their babies complained so persistently that they were off the board in a matter of weeks, a result that should not surprise us, given the differences observed at birth.

Assuming, then, that other investigators continue to confirm our findings, to what do we attribute the differences on the one hand, and the similarities on the other? When we first presented the findings on Chinese and Caucasians, attempts were made to explain away the genetic implications by posing differences in prenatal diets as an obvious cause. But once we had completed the Navaho study, that explanation had to be dropped, because the Navaho diet is quite different from the diet of the Chinese, yet newborn behavior was strikingly similar in the two groups.

The point is often still made that the babies had nine months of experience within the uterus before we saw them, so that cultural differences in maternal attitudes and behavior might have

been transferred to the unborn offspring via some, as yet unknown, mechanism. Chisholm, for example, thinks differences in maternal blood pressure may be responsible for some of the differences between Navahos and Caucasians, but the evidence is as yet sparse. Certainly Cantonese-American and Navaho cultures are substantially different and yet the infants are so much alike that such speculation might be dismissed on that score alone. But there is another, hidden issue here, and that involves our own cultural tendency to split apart inherited and acquired characteristics. Americans tend to eschew the inherited and promote the acquired, in a sort of "we are exactly what we make of ourselves" optimism.

My position on this issue is simple: We are totally biological, totally environmental; the two are as inseparable as is an object and its shadow. Or as psychologist Donald O. Hebb has expressed it, we are 100 percent innate, 100 percent acquired. One might add to Hebb's formulation, 100 percent biological, 100 percent cultural. As D. T. Suzuki, the Zen scholar, once told an audience of neuropsychiatrists, "You took heredity and environment apart and now you are stuck with the problem of putting them together again."

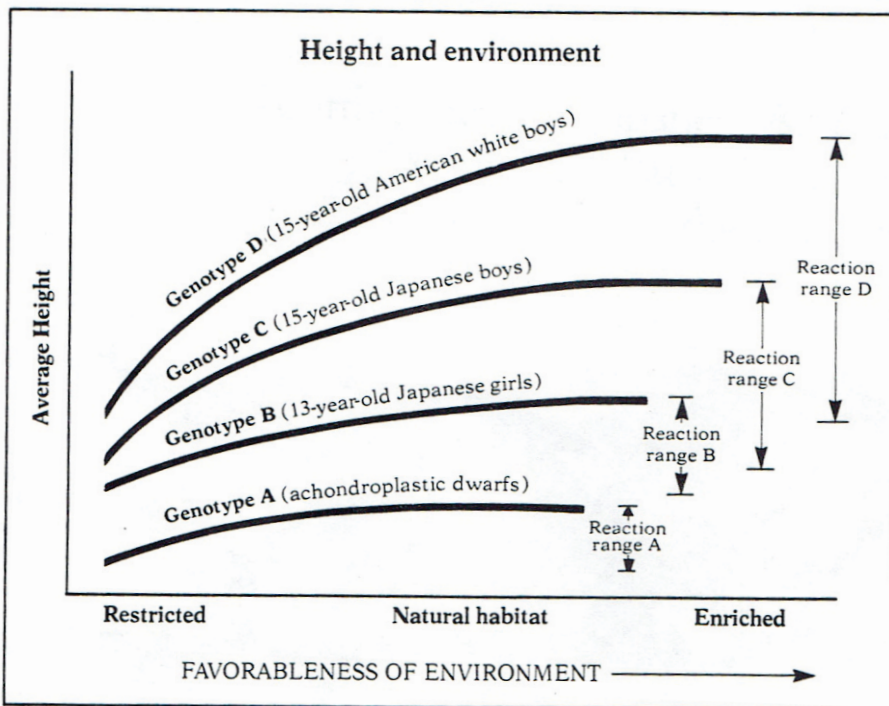
Navaho and Chinese newborns may be so much alike because the Navaho were part of a relatively recent emigration from Asia. Their language group is called Athabaskan, after a lake in Canada. Although most of the Athabaskan immigrants from Asia settled along the Pacific coast of Canada, the Navaho and Apache contingents went on to their present location in about 1200

A.D. Even today, a significant number of words in Athabaskan and Chinese appear to have the same meaning, and if one looks back several thousand years into the written records of Sino-Tibetan, the number of similar words makes clear the common origin of these widely separated peoples.

When we say that some differences in human behavior may have a genetic basis, what do we mean? First of all, we are *not* talking about a gene for stoicism or a gene for irritability. If a behavioral trait is at all interesting, for example, smiling, anger, ease of sexual arousal, or altruism, it is most probably polygenic—that is, many genes contribute to its development. Furthermore, there is no way to count the exact number of genes involved in such a polygenic system because, as geneticist James Crow has summarized the situation, biological traits are controlled by one, two, or *many* genes.

Standing height, a polygenic human trait, can be easily measured and is also notoriously open to the influence of the environment. For this reason height can serve as a model for behavioral traits, which are genetically influenced but are even more prone to change with changing environment.

There are, however, limits to the way that a given trait responds to the environment, and this range of constraint imposed by the genes is called a *reaction range*. Behavioral geneticist Irving Gottesman has drawn up a series of semihypothetical graphs illustrating how this works with regard to human height; each genotype (the combination of genes that determine a particular trait) represents a relatively inbred human group. Even the most favorable environment produces little change in



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The concept of reaction range shows clearly in this comparison of adolescent groups: the better the environment, the taller the person. Although some groups show considerable overlap in height, no matter how favorable the environment, height cannot exceed the possible reaction range.

height for genotype A, whereas for genotype D a vast difference is seen as nutrition improves.

When I speak of potential genetic differences in human behavior, I do so with these notions in mind: There is overlap between most populations and the overlap can become rather complete under changing conditions, as in genotypes D and C. Some genotypes, however, show no overlap and remain remote from the others over the entire reaction range, as in genotype A (actually a group of achondroplastic dwarfs; it is likely that some pygmy groups would exhibit a similarly isolated reaction range with regard to height).

At present we lack the data to construct such reaction-range curves for newborn behavior, but hypothetically there is nothing to prevent us from one day doing so.

The question naturally arises whether the group differences we have found are expressions of richer and poorer environments, rather than of genetically distinguishable groups. The similar performance yet substantial difference in socioeconomic status

between Navaho and San Francisco Chinese on the one hand, and the dissimilar performance yet similar socioeconomic status of San Francisco Chinese and Caucasians on the other favors the genetic explanation. Try as one might, it is very difficult, conceptually and actually, to get rid of our biological constraints.

Research among newborns in other cultures shows how environment—in this case, cultural learning—affects reaction range. In Hawaii we met a Honolulu pediatrician who volunteered that he had found striking and consistent differences between Japanese and Polynesian babies in his practice. The Japanese babies consistently reacted more violently to their three-month immunizations than did the Polynesians. On subsequent visits, the Japanese gave every indication of remembering the last visit by crying violently; one mother said that her baby cried each time she drove by the clinic.

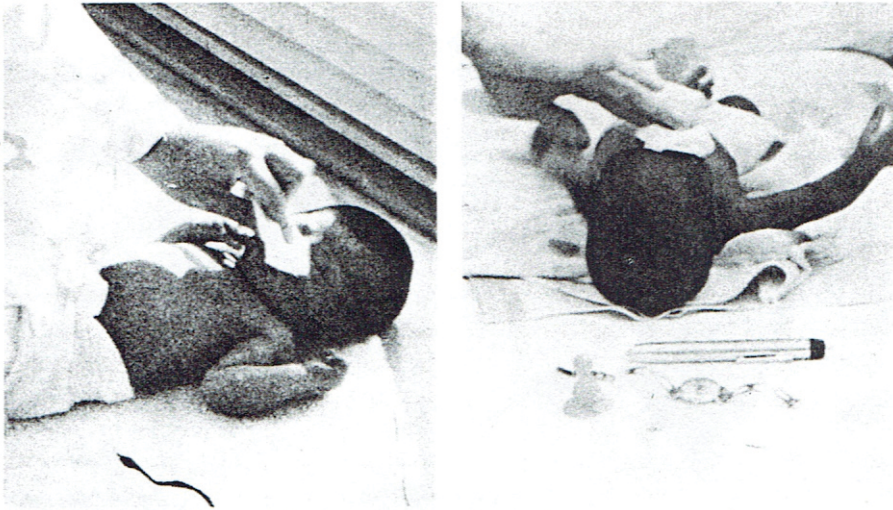
We then tested a series of Japanese newborns, and found that they were indeed more sensitive and irritable than either the Chinese or Navaho

babies. In other respects, though, they were much like them, showing a similar response to consolation, and accommodating easily to a light on the eyes or a cloth over the nose. Prior to our work, social anthropologist William Caudill had made an extensive and thorough study of Japanese infants. He made careful observations of Japanese mother-infant pairs in Baltimore, from the third to the twelfth month of life. Having noted that both the Japanese infants and their mothers vocalized much less to one another than did Caucasian pairs, he assumed that the Japanese mothers were conditioning their babies toward quietude from a universal baseline at which all babies start. Caudill, of course, was in the American environmentalist tradition and, until our publication appeared, did not consider the biological alternative. We believe that the mothers and babies he studied were, in all probability, conditioning each other, that the naturally quiet Japanese babies affected their mothers' behavior as much as the mothers affected their babies'.

With this new interactive hypothesis in mind, one of my students, Joan Kuchner, studied mother-infant interactions among 10 Chinese and 10 Caucasian mother-infant pairs over the first three months of life. The study was done in Chicago, and this time the Chinese were of North Chinese rather than South Chinese (Cantonese) ancestry. Kuchner started her study with the birth of the babies and found that the two groups were different from the start, much as in our study of newborns. Further, it soon became apparent that Chinese mothers were less intent on eliciting responses from their infants. By the third month, Chinese

Fourth-generation Japanese-American babies, like babies in Japan, sucked their fingers less and were less playful than Caucasian babies.

Courtesy Daniel Freedman



The Japanese newborn (left) does not struggle when a cloth covers his nose; the Australian aborigine (right), like the Caucasian, protests.

infants and mothers rarely engaged in bouts of mutual vocalizing as did the Caucasian pairs. This was exactly what the Caudill studies of Japanese and Caucasians had shown, but we now know that it was based on a developing coalition between mothers and babies and that it was not just a one-way street in which a mother "shapes" her infant's behavior.

Following our work, Caudill and Lois Frost repeated Caudill's original work, but this time they used third-generation Japanese-American mothers and their fourth-generation infants. The mothers had become "super" American and were vocalizing to their infants at almost twice the Caucasian rate of activity, and the infants were responding at an even greater rate of happy vocalization. Assuming that these are sound and repeatable results, my tendency is to reconcile these and our results in terms of the reaction-range concept. If Japanese height can

change as dramatically as it has with emigration to the United States (and with post-World War II diets), it seems plausible that mother-infant behavior can do the same. On a variety of other measures, Caudill and Frost were able to discern continuing similarities to infant and mother pairs in the old country. Fourth-generation Japanese babies, like babies in Japan, sucked their fingers less and were less playful than Caucasian babies were, and the third-generation mothers lulled their babies and held them more than Caucasian American mothers did.

A student and colleague, John Callaghan, has recently completed a study comparing 15 Navaho and 19 Anglo mothers and their young infants (all under six months). Each mother was asked to "get the attention of the baby." When video tapes of the subsequent scene were analyzed, the differences in both babies and mothers were striking. The Navaho babies showed greater

passivity than the Caucasian babies. Caucasian mothers "spoke" to their babies continually, using linguistic forms appropriate for someone who understands language; their babies responded by moving their arms and legs. The Navaho mothers were strikingly silent, using their eyes to attract their babies' gaze, and the relatively immobile infants responded by merely gazing back.

Despite their disparate methods, both groups were equally successful in getting their babies' attention. Besides keeping up a stream of chatter, Caucasian mothers tended to shift the baby's position radically, sometimes holding him or her close, sometimes at arm's length, as if experimenting to find the best focal distance for the baby. Most of the silent Navaho mothers used only subtle shifts on the lap, holding the baby at about the same distance throughout. As a result of the intense stimulation by the Caucasian mothers, the babies frequently turned their heads away, as if to moderate the intensity of the encounter. Consequently, eye contact among Caucasian pairs was of shorter duration (half that of the Navaho), but more frequent.

It was clear that the Caucasian mothers sought their babies' attention with verve and excitement, even as their babies tended to react to the stimulation with what can be described as ambivalence: The Caucasian infants turned both toward and away from the mother with far greater frequency than did the Navaho infants. The Navaho mothers and their infants engaged in relatively stoical, quiet, and steady encounters. On viewing the films of these sequences, we had the

In a Chinese-American nursery school, the noise level stayed low and the emotional atmosphere projected serenity, not bedlam.



The Japanese newborn (left), like the Caucasian, cannot support his head; the Australian aborigine (right) has an exceptionally strong neck.

feeling that we were watching biocultural differences in the making.

Studies of older children bear out the theme of relative unexcitability in Chinese as compared to Anglos. In an independent research project at the University of Chicago, Nova Green studied a number of nursery schools. When she reached one in Chicago's Chinatown, she reported: "Although the majority of the Chinese-American children were in the 'high arousal age,' between three and five, they showed little intense emotional behavior. They ran and hopped, laughed and called to one another, rode bikes and roller-skated just as the children did in the other nursery schools, but the noise level stayed remarkably low, and the emotional atmosphere projected serenity instead of bedlam. The impassive facial expression certainly gave the children an air of dignity and self-possession, but this was only one element effecting the total impression.

Physical movements seemed more coordinated, no tripping, falling, bumping, or bruising was observed, nor screams, crashes or wailing was heard, not even that common sound in other nurseries, voices raised in highly indignant moralistic dispute! No property disputes were observed, and only the mildest version of 'fighting behavior,' some good-natured wrestling among the older boys. The adults evidently had different expectations about hostile or impulsive behavior; this was the only nursery school where it was observed that children were trusted to duel with sticks. Personal distance spacing seemed to be situational rather than compulsive or patterned, and the children appeared to make no effort to avoid physical contact."

It is ironic that many recent visitors to nursery schools in Red China have returned with ecstatic descriptions of the children, implying that the New Order knows something about child

rearing that the West does not. When the *New Yorker* reported a visit to China by a group of developmental psychologists including William Kessen, Urie Bronfenbrenner, Jerome Kagan, and Eleanor Maccoby, they were described as baffled by the behavior of Chinese children: "They were won over by the Chinese children. They speak of an 'attractive mixture of affective spontaneity and an accommodating posture by the children: of the 'remarkable control of young Chinese children'—alert, animated, vigorous, responsive to the words of their elders, yet also unnervingly calm, even during happenings (games, classroom events, neighborhood play) that could create agitation and confusion. The children 'were far less restless, less intense in their motor actions, and displayed less crying and whining than American children in similar situations. We were constantly struck by [their] quiet, gentle, and controlled manner . . . and as constantly frustrated in our desire to understand its origins.' "

The report is strikingly similar to Nova Green's description of the nursery school in Chicago's Chinatown. When making these comparisons with "American" nursery schools, the psychologists obviously had in mind classrooms filled with Caucasian or Afro-American children.

As they get older, Chinese and Caucasian children continue to differ in roughly the same behavior that characterizes them in nursery school. Not surprisingly, San Francisco schoolteachers consider assignments in Chinatown as plums—the children are dutiful and studious, and the classrooms are quiet.

A reader might accept these data and

We have studied newborns in Nigeria, Kenya, Sweden, Italy, Bali, India, and Australia, and in each place have observed unique behavior.

Courtesy Daniel Freedman



Placed on his stomach, the Japanese newborn (left) remains in position; the Australian aborigine (right) lifts up his head and looks around.

observations and yet still have trouble imagining how such differences might have initially come about. The easiest explanation involves a historical accident based on different, small founding populations and at least partial geographic isolation. Peking man, some 500,000 years ago, already had shovel-shaped incisors, as only Orientals and American Indians have today. Modern-looking skulls of about the same age, found in England, lack this grooving on the inside of their upper incisors. Given such evidence, we can surmise that there has been substantial and long-standing isolation of East and West. Further, it is likely that, in addition to just plain "genetic drift," environmental demands and biocultural adapta-

Daniel G. Freedman, professor of the behavioral sciences at The University of Chicago, spent last fall in Australia as a visiting fellow in the department of anthropology at the Australian National University in Canberra. There he extended his research into the new-

tions differed, yielding present-day differences.

Orientals and Euro-Americans are not the only newborn groups we have examined. We have recorded newborn behavior in Nigeria, Kenya, Sweden, Italy, Bali, India, and Australia, and in each place, it is fair to say, we observed some kind of uniqueness. The Australian aborigines, for example, struggled mightily against the cloth over the nose, resembling the most objecting Caucasian babies; their necks were exceptionally strong, and some could lift their heads up and look around, much like some of the African babies we saw. (Caucasian infants cannot do this until they are about one month old.) Further, aborigine infants were easy to calm,

born capacities of Australian aborigines. His doctorate in psychology from Brandeis University was followed by a postdoctoral fellowship at Mt. Zion Psychiatric Clinic and the Langley Porter Neuropsychiatric Institute in San Francisco. Much of the information in

resembling in that respect our easy-going Chinese babies. They thus comprised a unique pattern of traits.

Given these data, I think it is a reasonable conclusion that we should drop two long-cherished myths: (1) No matter what our ethnic background, we are all born alike; (2) culture and biology are separate entities. Clearly, we are biosocial creatures in everything we do and say, and it is time that anthropologists, psychologists, and population geneticists start speaking the same language. In light of what we know, only a truly holistic, multidisciplinary approach makes sense. □

For further information:

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this article appears in an expanded form in Freedman's new book, Human Sociobiology, which will be published in March by the Free Press. With Fred Strayer and Donald Omark, Freedman edited Human Status Hierarchies, which will be published later this year.