

The left hand of math and verbal talent

Scientists at Johns Hopkins University in Baltimore say that children who possess extremely high levels of mathematical or verbal ability tend, far more often than children of normal ability, to be left-handed, nearsighted and suffering from asthma or other allergies.

"We've identified some biological correlates of intelligence," says study director Camilla Benbow, who stresses that these factors have not been shown to *cause* higher intelligence. "We view our [mathematically and verbally] precocious kids as unpredictable products of [genes] and environments."

From a national sample of over 100,000 children between 12 and 13 years of age, Benbow and colleague Julian Stanley identified and studied 292 youngsters who scored at least 700 out of 800 on the mathematical reasoning section of the Scholastic Aptitude Test (SAT) and 165 individuals who scored at least 630 out of 800 on the verbal section of the SAT (there was some overlap between the two groups). The tests are designed to be taken by high school seniors.

Over 20 percent of the children with the top scores are left-handed or ambidextrous, reported Benbow at a conference on the "Neurobiology of Intellectual Giftedness" in New York City last week. This is twice the rate of left-handedness found among the general population of 12- to 13-year-olds. Youngsters with the highest SAT scores also are twice as likely to have allergies and four times as likely to be myopic, adds Benbow. Eighty percent of the "precocious" children have at least one of these three characteristics.

The data also support previous studies by the Hopkins researchers that found boys to be superior to girls in mathematical skills (SN: 8/28/82, p. 136). For every 13 boys who scored at least 700 on the math SAT, only one girl achieved a comparable score. The survey measured boys' and girls' attitudes toward mathematics and uncovered no differences, says Benbow. Several environmental factors that may contribute to sex differences on math scores also did not appear to be significant in this sample, she observes. There was no difference between the sexes on verbal scores.

Benbow acknowledges that the top-scoring children often have intelligent, professional parents who encourage their intellectual potential. Several scientists at the conference said that the youngsters' cognitive and social development should be more closely examined.

The analysis of mathematically and verbally precocious youth stems in part from a theory proposed by the late Norman Geschwind, a Harvard University neurologist. He observed that left-handed people appear to have more immune disorders, migraine headaches and learning

disabilities. Geschwind believed that if a fetus is highly sensitive to the male hormone testosterone, or if it is exposed to high levels of the substance, the development of the left brain hemisphere—which is more involved in verbal ability—is slowed. To take up the slack, the right hemisphere—which has more control over spatial and mathematical ability—grows larger and left-handedness becomes a more likely consequence.

Some scientists say that hemispheric function in the brain is not as clear-cut as Geschwind suggested. But Benbow suggests that since mathematically and ver-

bally talented individuals shared the same biological characteristics, they may have a more balanced hemispheric distribution of these abilities than is found among children of average intelligence.

Benbow's interpretation is open to debate, but there is clearly a high incidence of left-handedness, allergies and myopia among mathematically and verbally talented children, says Robert N. Sawyer, director of a program at Duke University in Durham, N.C., that uses SAT scores to identify precocious seventh graders. Unfortunately, he notes, there are few biological or psychological data on children with average SAT scores—a lack that muddies any comparisons between "normal" and "gifted" students.

—B. Bower

Pelvic inflammatory disease: Pill risk

Physicians who prescribe oral contraceptives and women who take them may want to think twice before using them in hope of decreasing risk of pelvic inflammatory disease (PID), a general inflammation of the pelvic cavity that can lead to infertility. Although previous studies showed that oral contraceptives decrease risk of PID caused by gonorrhea, a study reported in the April 19 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* suggests that the pill does not protect against, and may even enhance, PID caused by chlamydia.

Chlamydia, which has been called the venereal disease of the '80s, is a bacterial infection that afflicts between 3 million and 10 million women and men in the United States each year, more than are afflicted by syphilis, herpes or gonorrhea. Its insidious course leaves many women without symptoms, but it can eventually lead to infertility. In men it causes painful urination and a mucoid discharge, which are often misdiagnosed as symptoms of gonorrhea. One out of five sexually active men harbor *Chlamydia trachomatis*, the offending bacteria, and can easily transmit the disease to their sexual partners, according to the Centers for Disease Control (CDC) in Atlanta. The number of women who carry the bacteria is not known, according to CDC.

CDC and researchers at the University of California at San Francisco School of Medicine became interested in the relationship between the pill, chlamydia and PID when they noticed that medical journals and textbooks recommend oral contraceptives because they are thought to decrease risk of PID. Intrauterine devices are known to increase risk of PID (SN: 8/20/83, p. 127).

The researchers looked at published studies of the relationship between the pill and PID or chlamydia. They found that most studies of the first type involved hospitalized women with severe forms of PID and did not distinguish between gonococcal and chlamydial forms of the disease. This design selects for women with gonococcal PID, says UCSF's Eugene Washington, because women with gonococcal PID have more severe symptoms than those with chlamydial PID and are more likely to seek hospitalization. The researchers conclude that this type of study "only suggests that oral contraceptives may protect against clinically severe PID, where ... gonorrhea plays an important role," but does not consider chlamydial PID.

When they examined studies of the relationship between oral contraceptives and chlamydia, they found that 12 of 14 published studies reported a two- to threefold increase in chlamydia among oral contraceptive users. The researchers suggest that changes in the cervix, the "neck" of the uterus that connects it to the vagina, may account for the increased chlamydia. In some women the pill causes cervical ectropion, a coiling outward of the vaginal end of the cervix that exposes more surface area to chlamydial infection. This can allow more bacteria to travel through the uterus and into the fallopian tubes, which become inflamed and eventually scarred. If scar tissue blocks the fallopian tubes, it can cause infertility or ectopic pregnancy, in which a fertilized egg becomes implanted and begins dividing in the fallopian tubes.

Washington emphasizes that the recent research is not a push for women to give up the pill. "But women and clinicians should keep an eye out for chlamydial infection," he says. Hunter Handsfield, director of the Sexually Transmitted Disease Program at the Seattle-King County (Wash.) Health Department, which is developing a chlamydia screening program, recommends that sexually active women be tested once a year for chlamydia. A simple monoclonal antibody test developed by several companies last year facilitates detection, he says, and is available at most hospital laboratories.

—D.D. Bennett

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