(including difficulty staying seated and sitting still without fidgeting).

In extensive interviews with 101 males, ages 16 to 23, who had been diagnosed as hyperactive in childhood, and in interviews with their parents, the researchers found that all three behavioral markers still characterize 31 of the boys. This is striking, they say, because it is often assumed that problems with attention remain, while impulsive behavior and physical overactivity diminish or disappear during adolescence. The scientists also tracked the progress of 100 nonhyperactive boys, only three of whom displayed all the signs of hyperactivity during their teenage years.

The 31 adolescents with "pure" hyperactivity also engaged in significantly more "antisocial behavior," say the investigators. This includes school truancy and expulsion, vandalism, fighting, thefts and criminal arrests. Alcohol and drug use also were far more common among these boys.

The good news, they note, is that behavioral problems markedly dropped during adolescence for the majority of once-hyperactive boys. Researchers involved in two other ongoing, long-term studies of hyperactive boys are coming up with similar findings.

Gabrielle Weiss of McGill University in Montreal and her co-workers say that less than half of a group of 63 men aged 21 to 33, who as children were diagnosed as hyperactive, continue to display at least one of the three symptoms of hyperactivity. Mild to severe "antisocial behavior" also was observed among these individuals, they report in the March JOURNAL OF THE AMERICAN ACADEMY OF CHILD PSYCHIATRY.

In 1982, James H. Satterfield and his colleagues at the National Center for Hyperactive Children in Encino, Calif., used official arrest records to confirm that 110 teenage boys diagnosed as hyperactive in childhood were arrested far more often than 88 nonhyperactive adolescents. In a further comparison, they found that hyperactive youths arrested more than once for serious offenses had, in childhood, normal brain activity on an electroencephalogram (EEG) and other tests of cortical function; hyperactive boys with no later arrests showed abnormal brain function on the same tests.

Although EEG data cover only a small portion of brain activity, cautions Satterfield, lack of abnormality still predicted later delinquency better than IQ, economic status or psychological tests. This flies in the face of traditional assumptions that brain function abnormalities lead to more severe behavior problems, he says. Explanations of the surprising finding are "all speculation" at this point, adds Satterfield. He is now putting together an extensive long-term study of hyperactives' brain function that will include brain imaging data. —*B. Bower*

Nobels

Medicine: Brown, Goldstein honored

This year's Nobel Prize in physiology or medicine goes to Michael S. Brown and Joseph L. Goldstein of the University of Texas Health Science Center at Dallas for their elucidation of a key step in cholesterol metabolism. The two researchers "revolutionized our knowledge about the regulation of cholesterol metabolism and the treatment of diseases caused by abnormally elevated cholesterol levels in the blood," said the Nobel Assembly of the Karolinska Institute in Stockholm, Sweden.

The body requires cholesterol for building cell membranes, certain steroid hormones and bile acids. Cells get the substance from ingested cholesterol that has been absorbed by the blood, and by manufacturing it themselves. In 1973 Brown and Goldstein discovered a protein on the surface of cells that grabs a cholesterol-carrying particle called low-density lipoprotein (LDL) from the blood and brings it into the cell where it can be used.

Finding the LDL receptor was the initial step in a cascade of research. Brown and Goldstein went on to discover that when cells have enough cholesterol they temporarily stop manufacturing the receptors. The high cholesterol levels left circulating in the blood wind up clogging arteries and causing potentially fatal heart and blood vessel diseases.

Complete absence of the receptors provided the explanation for why some children—about one in a million—get severe atherosclerosis at an early age, some of them having heart attacks at the age of 5 or 6. The disease, called familial hypercholesterolemia, "is a vivid experiment of nature," Brown and Goldstein wrote in the November 1984 SCIENTIFIC AMERICAN. "It demonstrates unequivocally the causal relation between an elevated circulating LDL level and atherosclerosis."

One such child, 8-year-old Stormie Jones of Dallas, received the first human heart/liver transplant last year after suffering a heart attack and having two bypass operations. The new liver has given her an organ capable of producing the much-needed receptors. Her cholesterol levels have dropped dramatically, and she is doing well.

With the exclusion of a few ethnic groups, about one in every 500 people are capable of manufacturing only low levels of the receptor. These people have plasma LDL levels twice the normal level—even before they are born—and begin to have heart attacks at the age of 35. People with normal ability to make LDL receptors are also at risk of atherosclerosis, Brown and Goldstein say, because eating a diet high in cholesterol and fatty acids suppresses receptor synthesis.

The two researchers have also looked closely at the basic genetics behind the LDL receptor. Recently, they and co-workers reported that the gene coding for the receptor is built of parts very similar to gene segments coding for unrelated proteins (SN: 5/18/85, p. 309). The finding is the first evidence supporting a theory that gene segments with no apparent function actually allow "meaningful" genetic segments to combine and form new genes.

Brown *Goldstein*

Brown and Goldstein, in their SCIENTIFIC AMERICAN article, estimated that "more than half of all people in Western industrialized societies, including the United States, have a level of circulating LDL that puts them at high risk for developing atherosclerosis." They are working with others on combining a cholesterol-reducing resin (SN: 1/2/84, p. 38) with a drug called mevinolin that inhibits a key step in cholesterol synthesis. The combination lowers blood LDL levels and increases the number of LDL receptors on cells. If drugs can be found to safely prevent suppression of the receptors, they say, "it may one day be possible for many people to have their steak and live to enjoy it too." —*J. Silberner*

Nobels

Peace: Two from the heart

The procedure undertaken five years ago by cardiologists Bernard Lown and Evgueni I. Chazov was straightforward: Clog the arteries of support for nuclear weaponry until the heart and soul of the atomic arms race stops beating. And though the physicians' organization they founded, the Boston-based International Physicians for the Prevention of Nuclear War, has not nearly completed its operation, its efforts thus far have been rewarded with the 1985 Nobel Peace Prize, announced last week in Oslo, Norway.

The organization, founded jointly by Chazov, of the USSR, who has been the personal physician of several Soviet leaders, and Lown of the Harvard School of Public Health, has swelled in membership to 135,000 people in 41 countries. The Norwegian Nobel Committee said the group has "performed a considerable service to mankind by spreading authoritative information and by creating an awareness of the catastrophic consequences of atomic warfare." The committee said it will invite both Lown and Chazov to receive the prize, which carries an award of about $225,000. □