

BEHAVIOR

Competition can be healthy

"Defeat is worse than death," a former University of Minnesota football coach is known to have said. "You must live with defeat."

There has been great concern during the past decade over such win-at-all-cost philosophies, particularly when they filter down to youngsters. "The Little League Phenomenon," as it is called, has sparked numerous debates about how much psychological harm would-be Vince Lombardi coaches and fanatical parents can do to a youngster.

Now, University of Vermont psychologist John D. Burchard has attempted to measure such possible side effects by studying 122 Pee Wee hockey players during the state's recent tournament. Through a series of pregame and postgame questionnaires, Burchard collected data on the youngsters' sportsmanship, motivation and performance in both winning and losing situations.

In a paper delivered at the Third Vermont Conference on the Prevention of Psychopathology last week, Burchard summarized his findings: "Defeat is not worse than death" for the surveyed youngsters; in defeat, the 11- and 12-year-old players took out their frustrations (verbally) on themselves and the referees but not on opposing players; there was little difference in aggression among those on winning and losing teams. In fact, youngsters on teams that lost all their tournament games "rated things a bit more positively, including themselves," Burchard said.

"Competitive environments may not be all that disruptive," he concluded. "They do not elicit aggression and hostility per se."

'OD'ing on the tube

Studies on television violence and other viewing aspects are becoming as popular to behavioral researchers as some of the programs they examine are to the viewing public. Recently, the House Interstate and Foreign Commerce Committee held hearings on TV violence. The committee reviewed numerous studies and heard days of testimony from communicators, psychologists, TV writers and producers and others.

In summarizing some of the information gathered during the hearings, the committee reports:

- By the age of 18, the average American television viewer will have witnessed 18,000 murders and been subjected to 640,000 commercials.

- More American homes have at least one television set (97 percent) than have indoor plumbing.

- The TV is on an average of 6 hours and 49 minutes a day, or about 2,400 hours a year.

- The American high school graduate will have spent 15,000 hours in front of a TV set, as opposed to 11,000 hours in the classroom.

- Saturday morning children's shows, although acknowledged to be improving in quality and content, still show 16.2 violent incidents per broadcast hour, according to one survey. By comparison, the violence rate during "family hour" is 3.8 per hour.

- A University of Pennsylvania study concludes that "people who watch a lot of TV see the real world as more dangerous and frightening than those who watch very little."

- Seventy-five percent of the leading characters on prime time TV are men, according to one study. It noted that 53 percent of the country's population is composed of women.

- To comply with the "family hour" concept scheduled from 7 p.m. to 9 p.m., EST, the networks shifted more violent programming into time slots beginning at 9 p.m., but did not substantially reduce the level of televised violence, witnesses testified.

July 9, 1977

TECHNOLOGY

The future of power from coal

As the nation begins to switch back to coal-fired electric power stations, several advanced energy-conversion designs will help make the production of electricity from coal cheaper and up to 50 percent more efficient than at present-day plants. An analysis of these alternatives has just been released by the General Electric Research Laboratory, where a research team headed by Gerald R. Fox examined the prospects for various designs, under government contract.

The team identified five advanced generating systems that over the next several years should prove both efficient and economical, including two variations of steam turbine cycles, two gas-turbine cycles, and magnetohydrodynamics. The first of these systems, to be ready for commercialization in about six years, will be a steam cycle using a "fluidized bed" of granulated coal. An air-cooled gas turbine system using a coal gasifier should quickly follow.

Farthest away will be magnetohydrodynamics (MHD), in which ionized gases from the burning coal are passed through a magnetic field to produce an electric current. The team says that a practical MHD system will take at least 19 years to develop but will have the highest efficiency of all the new designs—48 percent.

Structured TaC: New supermaterial

Tantalum carbide (TaC) has long been known to have great potential as one of the new "space-age supermaterials." It is one of the hardest substances known, fit for making high-speed drills and dies, and its extremely high melting point has made it a promising candidate as a coating for the next generation of rocket nozzles and nose cones. The problem has been that when manufactured by hot-pressing a powder, the final product has a weak internal structure and tends to be brittle.

Now Robert E. Riley and Terry Wallace of Los Alamos Scientific Laboratory have found a way to produce a TaC-graphite composite with controlled internal microstructure. A uniform coat of tantalum metal is deposited on the fibers of a graphite matrix, which is then hot-pressed to produce a very dense composite material with great structural strength and high resistance to thermal shock.

Riley says the development will lead to a "whole new family of high-temperature materials," with the basic process being available for commercialization after the appropriate patents are secured.

Long-life lasers for communication

One of the key problems in the development of optical telephone systems has been the short lifetimes of the tiny solid-state lasers used as light sources (SN: 7/19/75, p. 45). Now Bell Labs has announced production of lasers whose projected lifetimes should prove more than adequate for most applications—they should last about 100 years.

The actual tests of the lasers, of course, lasted a much shorter time, about two years, but they were conducted at high temperature so that deterioration of the devices was considerably speeded up. Barney DeLoach, head of the department that fabricated and tested the lasers, says they "now last so long that it's hard to determine their expected lifetime in a system application." The breakthrough was made by improved materials processing.

With laser light sources, a great number of messages can be sent simultaneously on hair-thin glass threads. The new lasers were first tested in a complete experimental telephone system last year.

25