TV Violence: Government Study Yields More Evidence, No Verdict

The Surgeon General's report on what watching violence on television does to youth was released last month and promptly sank out of the public eye.

Nonetheless, framers of the report, which was 2½ years in the making and is based in large part on research funded by the National Institute of Mental Health (NIMH), regard it as a significant step toward establishing that a causal relation, however modest, exists between violence viewing and aggressive behavior in young people.*

One million dollars were spent on research for the study, which was modeled on the landmark Surgeon General study that in 1964 announced that cigarette smoking was bad for the health. Requested in 1969 by Senator John Pastore (D–R.I.), chairman of the Senate communications subcommittee, the study was conducted by a special staff set up within NIMH and was headed by Eli Rubinstein, then assistant director for extramural programs and behavioral sciences.

The study was directed by a committee of 12 psychologists, social scientists, and communications experts—including two broadcasting industry executives—appointed by former Secretary of Health, Education, and Welfare Robert Finch.

The committee was not charged with making policy recommendations (regulating communications is outside the purview of HEW), and there are none. The final product is five volumes of research, topped by the committee's 279-page summary report, which attempts, not very successfully, to weave together various research results into some coherent generalizations. The summary winds up with the following: "We can tentatively conclude that there is a modest relationship between exposure to television violence and aggressive tendencies." Indications are that "the causal relation operates only on some children (who are predisposed to be aggressive)," and the report postulates that a "third variable" exists (the first two being violence viewing and violence doing), which sets the cause-and-effect phenomenon into action.

Some observers regard the committee report as over-cautious, in view of the inordinately large role television plays in the life of the average American. Some statistics from the report: 96 percent of American homes have at least one set; the average home set is on for at least 6 hours a day; most children start regular watching—at least 2 hours a day—by the time they are 2 or 3 years old. The typical 16-year-old has spent as much time in front of the tube as in school. *TV Guide* has the largest circulation of any magazine in the country.

The violence committee has been susceptible to criticism from the beginning (*Science*, 22 May 1970) because, unlike the smoking committee, which contained no tobacco people, five of its members have ties with the television industry.†

Furthermore, the three major networks were given the option of vetoing nominations to the committee, a privilege not accorded any scholarly organizations (seven men were vetoed, all of whom had done research on television violence or had spoken sharply about the industry). George Comstock, a Rand communications research specialist who served as senior research coordinator, says the unfair selection process was a source of some ill feeling between committee and staff and within the committee. He also believes the heavy industry representation resulted in a watered-down report in which some strong individual opinions were sacrificed for the sake of unanimity. (According to Comstock, the staff dubbed the committee "the network five, the naive four, and the scientific three.")

Others associated with the project, including Rubinstein, political scientist Ithiel de Sola Pool, and psychologist Alberta Siegel, say that the committee was not polarized along industry and nonindustry lines and insist that the report's strength lies in its unanimity.

The methods, at any rate, have not been called into question. The staff had a free hand in determining procedures within the broad areas of research determined by the committee, and all contracts were reviewed by normal NIMH ad hoc committees. The research projects covered a wide range, including surveys of television producers; analysis of audience reaction to commercials; attempts to uncover "third variables" such as sex, age, IQ, socioeconomic status, and family relationships; comparison of blacks and whites under the same viewing circumstances; polls of mothers and children on children's viewing habits; analyses of various kinds of violence (implied, threatened, senseless, justified, feigned, self-directed, and so forth); and reviews of Swedish, Israeli, and British broadcasting policies.

Studies had three focuses: the testing of long-term effects of violence (defined as "the overt expression of physical force against others or self, or the compelling of action against one's will on pain of being hurt or killed"), its immediate effects, and effects of TV on general behavior.

Some 7500 young people were involved in the studies—most of them were teen-agers, but some were as young as 4 and 5.

Comstock says some field studies were added to the literature that back up evidence hitherto gained only from controlled experiments. One was a project in which families were filmed watching television in their native habitats and their behavior and reactions monitored minute-by-minute. In another study, the facial expressions of chil-

* The report, *Television and Growing Up: The Impact of Televised Violence*, is available for $2.25 from the Government Printing Office, Washington, D.C. 20402. Five volumes of research, containing 60 papers and the results of 23 independent studies, will come out one by one, beginning next month.

† Committee members were Thomas E. Coffin, vice-president of NBC; Joseph T. Klapper, CBS research director; Ira H. Cisin, sociology professor at George Washington University and consultant to CBS; Harold Mendelsohn, communications professor at the University of Denver and CBS consultant; Gerhardt D. Wiebe, dean of the Boston University School of Communications and former CBS research executive; Eveline Omwake, professor of child development at the University of Connecticut; Charles A. Pinderhughes, associate professor of psychiatry at Tufts University; Anthony F. C. Wallace, University of Pennsylvania anthropology professor; Andrew S. Watson, professor of psychiatry and law at the University of Wisconsin; Irving L. Janis, Yale University psychology professor; Alberta E. Siegel, associate professor of psychology at Stanford; and Ithiel de Sola Pool, M.I.T. political science professor.

dren were watched to gauge their emotional reactions. One of the most useful studies, says Comstock, was a longitudinal one, in which a population of 19-year old boys, whose viewing habits had been studied a decade before, was subjected to a "cross-lag" analysis. This analysis allegedly confirms that there is a significant correlation between viewing violence on television and subsequent aggressive behavior.

Pool says that despite these positive findings the national press botched its coverage by following the lead of the *New York Times*, which was the first to break the story under the head "TV Violence Held Unharmful to Youth."

But such a generalization is not incomprehensible in view of the stream of ambiguities and qualified statements contained in the report.

For example, the nature of violence itself is by no means clear. In three different studies of programming, football was ignored by one research team, classified as "highly violent" by another, and "nonviolent" by still another.

Dead ends abound: the report says, "in two studies, for example, the relationship between violence viewing and aggression was found to be as strong or stronger for girls than it was for boys, while in another study virtually no relationship was found for girls."

Again, in another study, three groups of children were subjected, respectively, to a "prosocial" program (Misterogoers Neighborhood), a violent program, and a "neutral" program. It was found that children of low socioeconomic status (SES) became more cooperative and sharing with each other after watching the prosocial program, but high SES children didn't. "Rather, the high-status children showed an increase in prosocial interpersonal behavior after viewing aggressive programming." Findings such as these have convinced researchers that there is no point in testing further the hypothesis that most children react to violence in a uniform way.

Conclusiveness having proved elusive, the question arises as to what should be done next. "The real question," says Percy Tannenbaum of Berkeley, who contributed to the studies (but was blackballed from the committee), "is when do we as a society take action on a subject, even when all the evidence is not in." Or, "When do we take action if even a small percentage of the population is affected in an un-

A Modest Environmental Message

President Nixon sent his election year message on the environment to Congress this week. By all appearances it was one carefully tailored to gratify the widest possible spectrum of public and private interests at the least possible expense. There were no major new requests for money and no marked departures from policies laid down in his two previous environmental messages. With 20 of his environmental bills still languishing in Congress, the President chose instead mainly to issue executive orders and to suggest a few amendments to pending legislation.

One exception to the no-money rule was a request for an $6 million or 20 percent increase in federal funds for R & D on integrated pest control. Russell Train, Nixon's chief environmental adviser, explained to conservation leaders who were invited to a briefing on the message that this was "one of the President's new technological initiatives."

The other main features of the message were these:

► An executive order banning the use of poisons for predator control on federal lands or by federal agencies under any circumstances.

► A long-awaited proposal for an effluent tax on sulfur oxide emissions. A 15-cent-per-pound tax would be levied against industries in any area which failed to comply with all federal sulfur standards. Areas meeting "secondary" standards to protect the "public welfare" but not the "primary" health standards would be subject to a 10-cent-per-pound tax. Neither levy would take effect until 1976.

► Proposals for legislation requiring states to adopt controls over land erosion and stream sedimentation caused by construction and to establish site selection procedures for new highways and airports by 1975.

► Changes in federal tax regulations to encourage the development of recycling facilities and to discourage the development of wetlands.

► A request to Congress to empower the Environmental Protection Agency to establish a permit system for the regulation of toxic waste disposal on land and in deep waste wells.

► A plea for Congress to put what Train called "some real teeth" into the Endangered Species Act by extending its coverage from species already endangered to those "likely to be endangered." The President also announced an agreement with Mexico to add 33 species to the list of protected migratory birds, including a number of raptors.

► Eighteen individual requests for congressional establishment of new wilderness areas within national parks, forests, and wildlife refuges. At the same time, the President ordered the Interior and Agriculture Departments to speed up their reviews of park and forest lands eligible for inclusion in the system, particularly in the eastern United States where mining, logging, and recreational development are fast encroaching on the few remaining remnants of wilderness.

► A promise to ante up a substantial but unspecified fraction of $100 million to create a new environmental planning unit within the United Nations. The balance would presumably come from other nations to carry out programs agreed upon in the U.N. Human Environment Conference scheduled at Stockholm this June.

Conservationists generally professed themselves pleased at what seemed to be good intentions on the President's part, but most were also quick to point to several omissions in the list of items touched upon. Among these was the frequently destructive practice of clear-cutting in the national forests by timber companies. During a briefing, one White House adviser conceded that the Administration had tabled at least until July an executive order that would have imposed new restrictions on this practice.

A lumber industry spokesman who was present said that Nixon's avoidance of this issue in his message showed "wise restraint." But to some conservation leaders, it typified the fate of many of the President's good intentions.—R.G.

POINT OF VIEW

DDT and the Limits of Toxicology

The public hearing on DDT being conducted by the Environmental Protection Agency has accumulated some 70 volumes of testimony over a period of 6 months. Probably the hardest question the hearing must elucidate is that of how to interpret the available toxicological data on DDT. A recent witness who addressed this question was Samuel S. Epstein, professor of environmental health at Case Western Reserve University, Cleveland. Epstein, who appeared on behalf of the Environmental Defense Fund, prefaced his discussion of DDT toxicology with a critique of the general design and validity of toxicological experiments.

The current practice of toxicology is an excessively insensitive and crude procedure and we have to develop ways and means of reducing [its] gross insensitivity. Animal test systems, quite apart from being grossly insensitive as a function of sample size, are hopelessly artificial in their design. They are simplistic attempts to study relationships between a given agent and a given effect. The consensus of disinterested scientific opinion on, I think, a universal basis is that there is no such evidence which would support the concept of a safe level of carcinogen. . . .

We would not have picked up thalidomide if thalidomide had merely increased the incidence of holes in the heart, atrial-septal defects, or cleft palates. The only reason we picked it up is that it produced an unusual and bizarre phenomenon. . . .

When it comes to pesticides and food additives which are widely disseminated in the environment and which may not produce highly exceptional tumors which stand out like a beacon, our chances of demonstrating causal relationships are virtually zero.

To obtain any degree of evidence from epidemiological studies in relation to positive effects, you need to have highly potent carcinogens. If a carcinogen is weak and therefore more dangerous from a public health standpoint because it's far more difficult to pick up, your chances of demonstrating positive effect are very low. . . .

The reason why I think the following studies [of the carcinogenesis or otherwise of DDT] are inappropriate is for the following reasons. Either the doses [of DDT] used were too low. . . . You have to use high doses to attempt to reduce the insensitivity of the procedure and if you deliberately select a dose which is not too far removed [from the usual levels of human exposure] then indeed you are building a high degree of probability that you are going to get negative results. . . . You are deliberately creating negative data.

The second reason for inappropriateness is route. If, instead of administering DDT to animals by feeding, you paint it on their skin, I don't think you need bother to make very much of these experiments.

The third point is if you talk about very small numbers of animals, if you take 3½ mice, you won't expect to get very far. The final thing is that the period of observation is too low. If you kill your animals at 6 months or 9 months, before the time you should or you would expect to see these tumors, you clearly cannot develop instances on these. . . .

Q: Would you give us your professional opinion, if you have one, on whether the presence of DDT in the human environment represents a significant hazard to man?

A: I can only answer that qualitatively, and the answer is yes, DDT has been shown to be carcinogenic in a series of well-designed experiments on the basis of standard carcinogenesis procedure and philosophy. . . . I would attach a high degree of importance in terms of the decision-making process to such experiments on DDT because we are dealing with a material which not only is carcinogenic but also is highly persistent and cumulative.

Q: In your professional opinion, can a man be safely exposed to any levels of DDT? **A:** The answer is no.

desirable way." Leon Eisenberg, a Johns Hopkins Medical School psychiatrist and another blackballee, also expressed concern over how much evidence is needed to prove the desirability of change. He compared the present network attitude toward violence on television to the official nonresponse when researchers during the 1930's suggested that cigarettes were damaging to health. In both instances, says Eisenberg, the dominant opinion was that positive proof of harm should precede corrective action, rather than that the alleged offender must furnish positive proof of harmlessness. "The committee took a very narrow view which lets the industry entirely off the hook," says Eisenberg.

Several researchers involved in the study have been highly critical of the committee's conclusions. Robert Liebert of the State University of New York at Stony Brook says the report is at best "misleading," because the results of the study were in fact "impressively strong and remarkably consistent" in establishing a correlation between viewing violence on television and viewer aggression. Monroe Lefkowitz of the New York State Department of Hygiene has written the Pastore committee, accusing the violence committee of making a weak interpretation of research findings and criticizing the procedure whereby members were selected.

Indeed, it is unlikely that the report will galvanize the television industry into an orgy of self-scrutiny. A survey of producers that was included in the project indicated that these professionals believe people like violence, so that's what they give them. "The TV industry is almost totally divorced from any social science research," says Siegel, although Klapper says CBS has been engaged in social research since 1963.

Jack McLeod of the University of Wisconsin, who with Steven Chaffee conducted one of the project's major studies, says he believes the report will help erase two misconceptions on the part of broadcasters. Now that there are field studies that back up experimental data, he says, industry can no longer label experiments as "artificial." Also, doubt has been cast on the "bad-boy" hypothesis, which says that only naturally naughty kids will be affected by video violence.

The most immediate impact of the study will be, presumably, to stimulate more research. The prime areas of need,

according to the report, are identifying characteristics that predispose a child to aggressive behavior; ascertaining what reactions occur at different ages; discovering how the context of violence on television affects reactions; and identifying what fare other than violence induces aggression. The committee also sees a great need for investigating the reactions of very young children to television. Infants are the most difficult to study because lengthy, tedious observations must be relied upon in lieu of interrogation.

(According to a group of Boston mothers called Action for Children's Television, commercialism is a greater source of dismay than violence. They say that during toddler-aimed shows—particularly the Saturday morning fare, which is known among nonfans as "kidvid ghetto"—up to three times as many commercials are showered on innocent viewers as during adult shows. They have petitioned the Federal Communications Commission to outlaw commercials at prime tot time.)

The surgeon general's study may be a way to gain a foothold on the larger impact of television on society—the tastes and values it imparts, and the subtle force it has in molding children's concepts of the roles of various races, sexes, and minority groups.

These larger questions may get an airing during the week of hearings on the report to be held by Pastore's subcommittee, starting 21 March. A staff member says the object of the hearings will be to elicit the kinds of policy recommendations that the committee was barred from making. Testimony has been solicited from various government agencies, as well as from the seven individuals who were vetoed from the committee—including two prominent researchers in the field, Leonard Berkowitz of the University of Wisconsin and Albert Bandura of Stanford University.

Changing the ways of the television industry is slow going, particularly since the protections afforded by the First Amendment mean that real efforts to improve the quality of video fare will have to be voluntary. But researchers feel that the Surgeon General's report has accumulated new evidence that, if pursued, will add up to significant social pressure on broadcasters to make better use of their rich and powerful medium.

—CONSTANCE HOLDEN

National Science Foundation: Managing Applied Research

The university scientist has traditionally responded to the idea that he do applied research in much the same way a proper Victorian maiden reacted to an improper suggestion. Now the National Science Foundation, the bastion of basic research, has begun to spend a portion of its funds on problem-oriented research, and some members of the scientific community see NSF as fatally compromised.

There has, in fact, been increasing pressure on NSF from Congress, the Administration, and the public to modify its exclusive devotion to pure science (*Science*, 4 February). NSF's chief answer so far has been the RANN (Research Applied to National Needs) program, directed at helping to solve critical social and economic problems. And last month, the Administration proposed a new experimental R & D incentives program to encourage private industry to invest more tellingly in research. NSF's stake in the new program would be $22 million the first year. RANN was financed at the level of about $56 million last year—over 10 percent of the NSF budget—and an increase to $80 million for RANN is requested in the President's new budget.

Although RANN remains controversial, die-hard opposition to NSF sponsorship of any applied research seems to have dwindled markedly, both in the universities and within the foundation itself, as the change came to be conceded as inevitable. This legitimizing of problem-oriented research in NSF will doubtless be regarded as the most significant legacy of the relatively brief term as director of William D. McElroy, who left 1 February after 2½ years at NSF to become chancellor of the University of California, San Diego. What is still being argued heatedly, however, is how fast and how far the applied research effort should go, as well as what the effect of grafting a new management style on NSF will be. One thing on which both partisans and detractors of RANN do agree is that, as NSF grows bigger and more adventurous, the agency becomes more visible and vulnerable.

The idea for RANN actually germinated during the tenure of Leland Haworth, McElroy's predecessor. A small pilot program, which Haworth himself dubbed Interdisciplinary Research Relevant to the Problems of Society (IRRPOS), was launched apparently to achieve two objectives: (i) to comply with the wishes of Congress, which had just passed an NSF reorganization act giving the foundation the option of sponsoring applied research and which clearly wished the foundation to exercise the option; and (ii) to make a bid for increased funds in a science budget that was then becalmed.

A crucial time for the RANN idea was when McElroy joined the foundation in the summer of 1969. A cautious decision had been made to spend about $2 million of $6 million earmarked for the program in the first year. McElroy liked the IRRPOS idea and apparently saw applied research as a way to burnish the image of NSF. He gave the go-ahead to spending the full $6 million, talked a lot about it in his appearances before Congress and elsewhere, and eventually approved a punchier new name, RANN, for the program.

McElroy was himself acutely aware of the antagonism in the university community toward NSF's espousing applied research. In an interview with *Science* after he had announced that he was leaving the foundation, McElroy acknowledged that the "academics are suspicious. I know it stirred up the community a bit," said McElroy, "but people who have been critical have not looked carefully at what we're trying to do. Perhaps we made a mistake in calling it applied research. Good science on