

Intervening Variables in the TV Violence-Aggression Relation: Evidence From Two Countries

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Samples of 758 children in the United States and 220 children in Finland were interviewed and tested in each of 3 years in an overlapping longitudinal design covering Grades 1 to 5. For girls in the United States and boys in both countries, TV violence viewing was significantly related to concurrent aggression and significantly predicted future changes in aggression. The strength of the relation depended as much on the frequency with which violence was viewed as on the extent of the violence. For boys the effect was exacerbated by the degree to which the boy identified with TV characters. Path analyses suggested a bidirectional causal effect in which violence viewing engenders aggression, and aggression engenders violence viewing. No evidence was found that those children predisposed to aggression or those with aggressive parents are affected more by TV violence. However, a number of other variables were found to be correlates of aggression and violence viewing. The most plausible model to explain these findings seems to be a multiprocess model in which violence viewing and aggression affect each other and, in turn, are stimulated by related variables. Observational learning undoubtedly plays a role, but its role may be no more important than the attitude changes that TV violence produces, the justification for aggressive behavior that TV violence provides, or the cues for aggressive problem solving that it furnishes.

Antisocial aggressive behavior, like many other behaviors, appears to be overdetermined. Many factors—hereditary, perinatal, hormonal, environmental, familial, and cognitive ones—probably influence how aggressively a child behaves. Severe antisocial, aggressive behavior seems to occur most often when there

is a convergence of a number of these factors during a child's development (Eron, 1982), but no single factor by itself seems capable of explaining more than a small portion of the individual variation in aggression. For example, in a 10-year study of 427 children in New York State (Eron, Huesmann, Lefkowitz, & Walder, 1972; Lefkowitz, Eron, Walder, & Huesmann, 1977), no single variable correlated more highly than about .40 with aggression (16% of the variance). Yet aggressive behavior is reasonably stable over time and can be reliably measured (Olweus, 1979). The technique used to measure aggression in the current study and the Eron et al. 10-year study yielded an internal consistency of .97, a 1-month stability of .91, and a 10-year stability of .38. In Finland, similar findings over a 10-year period have been reported by Pitkänen-Pulkkinen (1981).

One environmental factor to which particular attention has been directed is television violence. In most of the developed countries, the mass media, especially television, have be-

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come socializers that compete in importance with home, school, and the neighborhood. Because violence appears on television to a much larger extent than in real life, the TV provides even more opportunities to experience violence than does real life. Evidence from both laboratory and field studies has led most reviewers to conclude that aggressiveness and viewing violence are interdependent to some degree (Anderson, 1977; Chaffee, 1972; Comstock, 1980; Eysenck & Nias, 1978; Hearold, 1979; Huesmann, 1982a; & Lefkowitz & Huesmann, 1980). More aggressive children watch more violent television. The relation is not strong by the standards used in the measurement of intellectual abilities, but the relation is highly significant statistically and is substantial by the usual standards of personality measurement with children. More important, the relation is highly replicable.

Although the relation between violence viewing and aggression is clear, the reason for the relation is not—nor has it been established that the relation goes in only one direction. Too often researchers have viewed the causal relation between violence viewing and aggression as an either/or proposition when, in fact, the causal effect is probably bidirectional.

Does TV Violence Engender Aggressive Behavior?

There can be little doubt that in specific laboratory settings exposing children to violent behavior on film or TV increases the likelihood that they will behave aggressively immediately afterward. Large numbers of laboratory studies have demonstrated this effect both before and after the 1972 Surgeon General's report appeared (Comstock, 1980). This effect has usually been attributed to *observational learning* (Bandura, 1977; Bandura, Ross, & Ross, 1961, 1963a, 1963b), in which children imitate the behaviors of the models they observe. Just as they learn cognitive and social skills from watching parents, siblings, and peers, they can learn to behave aggressively from watching violent actors. Similarly, children can learn to be less aggressive by watching prosocial models. For example, in Finland, Pitkänen-Pulkkinen (1979) showed that the aggressive behavior of 8-year-old boys could be reduced by watching films depicting constructive solutions

to conflicts that appear frequently in children's everyday life. The question is whether the positive correlations between violence viewing and real aggressive behavior found in the field exist because children are imitating the violent behaviors they see on TV, or because of one of the other processes previously mentioned or for some other reason.

The Lefkowitz, Eron, Walder, & Huesmann study (1977; Eron et al., 1972) provided the first substantial evidence from a field setting that implicated television violence as a cause of aggressive behavior. Without rehashing tired arguments, the results suggested that excessive violence viewing increases the likelihood that a child will behave aggressively. Although many researchers have appropriate reservations about the analyses used to extract causal inferences from these longitudinal observational data (Comstock, 1978; Kenny, 1972), the critiques advocating a complete rejection of the results (e.g., Armour, 1975; Kaplan, 1972) contained such serious errors of reasoning that they have not had a major impact (Huesmann, Eron, Lefkowitz, & Walder, 1973, 1979).

Since the Lefkowitz et al. (1977) study, a number of other observational studies and field experiments have suggested that violence viewing is indeed a precursor of aggression (Belson, 1978; Gransberg & Steinbring, 1980; Hennigan et al., 1982; Leyens, Parke, Camino, & Berkowitz, 1975; Loye, Gorney, & Steele, 1977; Parke, Berkowitz, Leyens, West, & Sebastian, 1977; Singer & Singer, 1981; Stein & Friedrich, 1972; Williams, 1978). The one recent longitudinal study (Milavsky, Kessler, Stipp, & Rubens, 1982) that led its authors to a conclusion of no causal effect has been interpreted by others as suggesting a weak positive effect similar to that found in the above studies and in the current study (Cook, Kendzierski, & Thomas, in press). Even if one considers Milavsky et al.'s results to be negative, it still seems reasonable to conclude that exposure to TV violence increases a child's aggressiveness under many conditions. The major problem with such a conclusion is that the boundary conditions under which the effect occurs, as well as the essential precursor and intervening variables, and the processes through which they affect aggression are not well specified.

Culture, Age, and Sex as Intervening Variables

One can hardly consider the boundary conditions under which media violence might influence a child's behavior without considering the child's culture, age, and sex. Although substantial differences in sociocultural environments exist among the children of any country, many cultural factors remain relatively constant. Therefore, to obtain reasonable variation of these sociocultural factors and to test the generalizability of any model, one would like a sample that includes subjects from several countries. Although a number of researchers have reported results from other countries comparable to those from the United States (e.g., Belson, 1978; Granzberg & Steinbring, 1980; Krebs & Groebel, 1977; Murray & Kippax, 1977; Williams, 1978), only a few have studied the effects of television violence with comparable methodologies in more than one country (e.g., Parke et al., 1977).

Similarly, to determine more precisely how the relation between violence viewing and aggression develops with age, one must examine multiple cohorts of children longitudinally during the periods when the relation is likely to be emerging. A number of researchers have attempted to determine the age at which children are most susceptible to television violence. Eron et al. (1972) argued that once an individual has reached adolescence, behavioral predispositions and inhibitory controls have become crystalized to the extent that a child's aggressive habits would be difficult to change. Collins (1973; 1982; Collins, Berndt, & Hess, 1974; Newcomb & Collins, 1979) consistently found that young children are less able to draw the relation between motives and aggression and, therefore, may be more prone to imitate inappropriate aggressive behaviors. Hearold's (1979) review of the area generally supported these views, but suggested that the relation between violence viewing and aggression may increase again among adolescent boys. Perhaps the more important question, however, is at what age do children begin to be affected by behaviors viewed on TV. McCall, Parke, and Kavanaugh's (1977) experiments indicated that children as young as 2 years were facile at imitating televised behaviors, and some imitation was observed in

even younger children. Singer and Singer's (1981) study, mentioned earlier, provided evidence of adverse effects for television violence on children who were only 3 or 4 years old.

An important finding in early field studies of aggression and television violence was that females were less affected by violence viewing than were males (Bailyn, 1959; Eron, 1963). In our 10-year longitudinal study, conducted between 1960 and 1970, we found no correlation between a girl's violence viewing and her later aggressiveness (Eron et al., 1972). The explanations offered for the difference in results for boys and girls have been speculative but lead to some testable propositions. One hypothesis would be that observational learning was occurring for boys but not for girls because there were no aggressive females portrayed on TV. Because Bandura, Ross, and Ross (1963a, 1963b) and Hicks (1965) reported that both boys and girls more readily imitated male TV actors than female actors in laboratory studies, this explanation seems unlikely. However, the hypothesis can be tested by evaluating observed programs for male and female violence because both types of aggressors now appear on TV. A second hypothesis for sex differences is that females have been socialized so strongly to be nonaggressive that TV violence has little effect on them. Under that theory one might expect girls from cultures in which female aggressiveness is more acceptable to be more influenced by television violence. Thus, an effect might be found now in samples of American girls even though one was not found in the 1960s. Third, sex differences might be due to differences in the cognitive processes of boys and girls. For example, under several of the explanatory models television violence would be more likely to elicit aggressive behavior if the violence depicted were perceived as a realistic response. Because there is evidence that girls think television violence is less realistic than boys do (Lefkowitz et al., 1977), one would expect them to be less affected than boys are under this theory.

Design of the Field Study

In light of these considerations, a longitudinal, cross-cultural field study was undertaken to determine the boundary conditions under

which the television violence/aggression relation obtains, to determine the relevant intervening variables, and to shed light on the process through which television violence viewing relates to aggression. Samples from six countries—the United States ($N = 758$), Australia ($N = 289$), Finland ($N = 220$), Israel ($N = 189$), the Netherlands ($N = 469$), and Poland ($N = 237$) were included, but complete data presently are available only from the United States and Finland. Therefore, the conclusions reported in this article are based on the data from these two countries only.

In Finland and in the United States two cohorts of children (first graders and third graders) were interviewed and tested three times at 1-year intervals. Thus, the span of Grades 1 to 5 was covered with an overlapping longitudinal design. Most children's parents were interviewed during the first wave, and some were interviewed again during the final wave. Because both cohorts of children were interviewed in Grade 3, developmental effects can be separated from cohort effects.

Intervening Variables

The intervening variables selected for attention in this article were chosen for their theoretical relevance to the relation between television violence viewing and aggression. Three have already been mentioned: culture, age, and sex. However, a number of other cognitive, familial, and social variables were also studied.

Frequency of Viewing

One important mediating variable obviously would be the frequency with which a child watches television in general and the frequency with which he or she watches violent programs in particular. A violent program that is viewed only once in a while would not be expected to have as much effect as a violent program viewed regularly. Two studies that were done in areas where television was recently introduced (Granzberg & Steinbring, 1980; Williams, 1978), suggested that frequency of viewing was a crucial variable. In these and in a study by McCarthy, Langner, Gersten, Eisenberg, and Orzeck (1975), amount of television viewed appeared to be a

critical potentiating variable in elucidating the relation between violent television and aggressive behavior.

Sex-Typed Behaviors

The role of culture in socializing the sexes in regard to the appropriateness of aggression has already been mentioned. However, sex is not always a complete measure of sex-typed behavior. Girls who are aggressive might, for example, be more comfortable with the stereotypical male role than with the female role.

Identification With TV Characters

Although the weight of evidence from laboratory studies (Bandura, 1963a; 1963b; Huesmann, 1982a) seemed to indicate that all viewers are most likely to imitate a heroic, white, male actor, individual differences should not be ignored. It may be that some children identify much more with some actors, and this identification mediates the relation between violence viewing and aggressiveness. Such an identification would be important not just in an observational learning model but also in a model that emphasizes norms or standards of behavior. The more the child identifies with the actors who are aggressors or victims, the more likely is the child to be influenced by the scene, believing that the behaviors are appropriate and to be expected.

Fantasy

Fantasizing about aggression has seldom been investigated as a mediator of a positive relation between TV violence and aggression. Some theorists have argued that a child who reacts to television violence by fantasizing about aggressive acts might actually become less aggressive (Feshbach, 1964). However, no researcher has ever reported finding such a negative correlation in a field study. In fact, a more compelling argument exists that fantasizing about aggressive acts should lead to greater aggression by the child. From an information-processing perspective the rehearsal of specific aggressive acts observed on TV through daydreaming or imaginative play should increase the probability that aggressive acts will be performed.

Reality

Another potential mediating variable would be a child's ability to discriminate between fantasy and reality as portrayed on television (Smythe, 1954). Violent scenes perceived as unrealistic by the child should be less likely to affect the child's behavior according to several models, and some evidence for such an outcome has been provided by Feshbach (1976).

Intelligence

Intelligence has often been postulated as a third variable that might account for the association between television-violence viewing and aggression; however, the evidence usually has not supported such a thesis. In many observational studies, researchers have measured and partialled out the effect of intelligence but still detected a significant relation between violence viewing and aggression (Belson, 1978; Eron et al., 1972; Singer & Singer, 1981).

Popularity

Individual differences in popularity among one's peers may also play a role in the aggression/violence viewing equation. Previous studies (Lefkowitz et al., 1977; Schramm, Lyle, & Parker, 1961) have shown that youngsters who are unpopular or have poor social relations spend more time watching television. Furthermore, in the Lefkowitz et al. 10-year study, evidence was presented implicating low popularity as a cause of television viewing.

Parental Roles

Because the parents' social class, education, and aggressiveness might be correlated with the child's aggressiveness, the role of parents as mediating variables must also be examined. More interesting than any of these general social variables, however, would be an examination of the parent's television viewing habits and attitudes and knowledge about the child's viewing. According to a number of theories, the parent's beliefs about the realism of television violence might exacerbate or mitigate the effects television has on the child. Furthermore, whether the parent watches what the child watches might be indicative of the

parent's concern and attitudes about television's effect. A number of experimental studies have suggested that intervention by an adult might mitigate the effect of violence on the child (e.g., Hicks, 1968; Huesmann, Eron, Klein, Brice, & Fischer, 1983); however, no evidence of such an effect has been reported in a field study. Similarly, one would also like to test whether television-viewing habits are transmitted from parent to child. There is some evidence that they are (Soneson, 1979; von Feilitzen, 1976), but the question remains whether parents who watch more violence also have children who watch more violence.

Initial Aggression

Finally, one might want to consider initial aggression as a mediating variable as well. It has often been written that the effect of television violence is more notable among children predisposed to aggression (Rubinstein, Comstock, & Murray, 1972). The theoretical meaning of such a statement is cloudy. If it means that severe aggression is an overdetermined behavior resulting from the convergence of many factors, it is as true a statement about television violence as it would be about any other cause of aggression. If it means that television violence only has a noticeable effect on highly aggressive children, it requires empirical validation. Some evidence is available from laboratory experiments both in favor of the predisposition hypothesis, and contrary to it (Dorr & Kovacic, 1980; Kniveton & Stephenson, 1973; Surgeon General's Advisory Committee on Television and Social Behavior, 1972). In a study by Lagerspetz and Engblom (1979), the aggressive play of aggressive children showed no increase after the viewing of violent film, whereas the aggression of submissive and cooperative children did show an increase. The only available evidence from field studies suggests that the positive relation between violence viewing and aggression occurs among children at all levels of aggression (Huesmann et al., 1973). However, confirmation of this finding in children from cultures differing in attitudes toward aggression would be valuable.

In the next two sections we present data from the U.S. sample and contrast the results with the data from the Finnish sample. In the

final section we integrate the results into a model of the relation between television violence viewing and aggression.

United States Study

Subjects

The original group of subjects in the United States was composed of 672 children in the public schools of Oak Park, Illinois, an economically and socially heterogeneous suburb of Chicago, and 86 children from two inner-city parochial schools in Chicago. The pool from which these subjects were drawn consisted of all the children in the first and third grades of these schools in 1977. The parochial schools were added to increase the ethnic and socioeconomic heterogeneity of the sample, although Oak Park is by no means uniformly middle class. In 1977 it ranked 110th in median family income (\$19,820) among Chicago's 201 largest suburbs. Minority enrollment in the public schools ranged from 5% to 18%, with an average of 14%. Of the two parochial schools, one was composed of a predominantly lower-middle-class Hispanic population and the other a predominantly lower-middle-class integrated population. One of the Oak Park schools was dropped from the study before any data were collected because the principal felt the study would be too disruptive.

Having selected the schools, we compiled class lists of all first- and third-grade children and solicited their parents' permission for them to participate in the study. Through repeated written and personal contacts we raised the final permission rate to 76%.¹ Of the remaining children, 14.8% declined to participate, whereas 9.2% never responded. The response rates were similar in all of the schools. This procedure yielded a final pool of 841 children from which samples could be selected. Eighty-three children were used for pilot testing, leaving a sample of 758 for the study.

Of the 758 subjects, who thus constituted the United States sample at the start of the study in 1977, 384 were girls (207 first graders and 177 third graders) and 374 were boys (194 first graders and 180 third graders). In 1978, for the second wave, 607 children remained in the sample, and in 1979 for the third wave, there were 505 children. Almost all of the sub-

ject attrition resulted from children leaving the school systems.

During the first and second waves of data collection in the United States, parents of 591 children were interviewed (177 both mother and father, 378 mother only, and 36 father only for a total of 768 interviews). After the third wave, one of the parents was reinterviewed for 300 children (285 mother only, 15 father only). An attempt was made to interview at least one parent of every child, and those who were not interviewed represent the more reluctant parents. Thus, the United States parent sample is somewhat biased and excludes less cooperative parents. The effect of this bias is examined in the Results section.

Procedure

The children were initially interviewed and tested in the United States during the spring of 1977. They were retested during the spring of 1978 and 1979. Thus, we obtained data on the original first grade children in the first, second, and third grades, and on the original third grade children in the third, fourth, and fifth grades. This overlapping longitudinal design has the advantage of permitting the test of causal and developmental theories more readily. Parents were interviewed once during the first or second wave and, if possible, again during the third wave.

Data were collected from four sources: the child, the child's peers, the school, and the parents. From each child we collected data on his or her use of fantasy, preferred sex-typed behaviors, self-rating of aggression, favorite television programs, frequency of viewing favorite programs, identifications with TV characters, and judgment of how realistic violent TV programs were. From each child's classmates we obtained a peer rating of popularity

¹ The response rate to our original letter sent in the mail was 55%. Telephone follow-ups raised the rate only to about 65%. Then, a few days before testing was to begin, we gave a prize to each child for whom a letter had been returned, regardless of the decision on the letter. The other children were given another copy of the permission letter to take home and were told that they would receive the same prize if they returned the letter the next day, no matter how it was signed. This procedure raised our final response rate to about 91% and our permission rate to 76%.

and aggressiveness by the peer-nomination procedure used in previous studies (Eron, Walder, & Lefkowitz, 1971). In the parent interviews we collected data on demographic characteristics of the family; child-rearing practices; and parents' personalities, attitudes, and TV preferences. Most of these parent scales had been used in our previous studies. The variables measured included the parents' education and occupations, the parents' aggressiveness as measured by the sum of scales 4 and 9 on the Minnesota Multiphasic Personality Inventory (MMPI), hours of TV viewing and four favorite programs (giving a TV violence score), the parents' own viewing of the child's favorite programs, judgment of how realistic TV violence is, and the parents' estimates of the child's viewing. The final source of data was school records. Data were collected on the older children's standardized achievement test performance during the first wave. The only major change in procedure over the three waves of child interviews occurred between first and second grade. Each first-grade child received the peer-nomination procedure and the television viewing questions in an individual 30-min session. The other measures were administered in group sessions. For the second and higher grades, however, both sessions were group sessions. The individual sessions for first graders were necessitated by their low reading level.

Each group session was conducted by at least two experimenters and contained no more than 25 children. The teacher and children who did not participate in the study were not present except during peer nomination in split-grade classes. In these classes children from the other grades were also used as raters to obtain enough nominators for valid scores. Each page of the interview booklet was a different color, so the monitors could be sure children were on the correct page. Each answer blank was denoted by a different picture, so the children could readily keep their place. Each group session required about 40 min.

The parent interviews were conducted individually by research assistants. Some were conducted in a field office and some in the parents' home. In either case, only the parent and interviewer were present in the room while the questions were being asked. For the most part, the interviewer read the questions and

recorded the parent's answer. However, the MMPI and a few other sensitive test questions were placed at the end of the booklet. The parent read those questions and marked the answers while the interviewer waited. Parents who traveled to the field office for interviews were paid their travel expenses.

Child Measures

Peer-nominated aggression and popularity were measured by a slightly modified version of the Peer-Rating Index of Aggression (Walder, Abelson, Eron, Banta, & Laulicht, 1961): Each subject in the sample names all of the students in his class who have displayed 10 specific aggressive behaviors during the school year. Reliability as well as concurrent, predictive, and construct validity of this measure have been amply demonstrated (Eron, 1980; Lefkowitz et al., 1977). A slight deviation from the previous use of this technique was the instruction that subjects were only to consider behaviors that had occurred during the current school year. A more major modification was that in the first-grade classes the procedure as noted above was conducted individually. These children nominated their peers by naming or pointing to the appropriate child's picture on a class photograph containing individual pictures of each child in the class. Coefficient alpha in the current study calculated only on the United States sample was .97 and test-retest reliability over one month was .91.

The child's self ratings of aggression were based on four items in which the child rated his or her similarity to fictional children described as engaging in specific aggressive behaviors (e.g., "Steven often gets angry and punches other kids." "Are you just like Steven, a little bit like Steven, or not at all like Steven?"). Coefficient alpha was .54. Self-ratings correlated .38 with peer ratings of aggression in the United States and .39 in Finland.

Sex-typed behavior was indicated by preferences for sex-typed toys and games. This measure of preference for sex-typed activities, based on Nadelman's (1974) procedure, made up a booklet of four pages, each of which contained six pictures of children's activities. Two pictures of each set had been previously rated as masculine, two as feminine, and two as neutral by 67 U.S. college students who had

been asked to designate the activities as popular for boys and/or for girls. The task for the children was to select the two activities they liked best on each page; they received a score for the number of masculine, feminine, and neutral pictures they chose. The reason for including a neutral category was that, even though less masculine boys may not like traditionally feminine activities, they might prefer neutral over traditionally masculine ones. Similarly, for girls, we anticipated that those who did not prefer traditionally feminine activities might also eschew masculine activities but would subscribe to neutral ones. Coefficient alpha is not an appropriate measure of reliability for this scale. However, one-month test-retest reliabilities ranged between .55 and .60. Only the masculine and neutral sex-typed preferences are included in the present analyses inasmuch as preference for feminine activities did not relate to aggression, either positively or negatively.

Aggressive fantasy and *active-heroic fantasy* were measured by two scales devised by Rosenfeld, Huesmann, Eron, and Torney-Purta (1982). Each scale has six items, for example, "Do you sometimes have daydreams about hitting or hurting somebody you don't like?" or "When you are daydreaming, do you think about being the winner in a game you like to play?". Coefficient alphas for these scales were .64 and .61, respectively, and one-month test-retest reliabilities, .44 and .62.

The children's *regularity of TV viewing* and *TV violence viewing* scores were derived from their responses to several lists of programs. On each list they were asked to select the one they watched most. For the program selected, they then marked whether they watched it *once in a while* (1), *a lot but not always* (2), or *every time it's on* (3). A child's regularity of TV viewing was computed as the sum of these responses for the selected programs. Thus, the regularity score is a measure of the child's frequency of viewing his or her favorite shows rather than of hours of viewing.

Violence in favorite television programs was determined from the same program selections. Two psychology graduate students, who themselves had small children, rated all programs for the amount of visually portrayed physical aggression on a 5-point scale from *not violent* to *very violent*. Each rater received a paragraph

giving detailed descriptions of what constituted violent behavior (e.g., graphically portrayed physical assaults). Interrater reliability was .75. Previous analyses have shown (Lefkowitz et al., 1977) that this method yields ratings comparable to those obtained from more objective content analyses (e.g., Signorelli, Gross, & Morgan, 1982). A child's TV violence score was the sum of the violence ratings of shows that the child had indicated he or she watched most, weighted by the regularity with which the child reported watching the program.²

In the United States, eight lists of 10 programs each were used to obtain TV frequency and violence scores. The 80 shows used were the most popular ones for children ages 6-11 during the current year (1977, 1978, or 1979) according to Nielsen ratings. The programs were arranged into lists; each list had an equal number of violent programs. The violent and nonviolent programs on a list were equated for popularity. An attempt was made to equate violent and nonviolent programs for time and day of week shown and for sex of the central character. The one-month test-retest reliability was .75 for frequency and .76 for violence viewing.

Realism of television programs was rated by the children. They were given a list of violent shows, including cartoons, and were asked, "How true do you think these programs are in telling what life is really like—just like it is in real life, a little like it is in real life, or not at all like it is in real life?" The subject's total realism score was the sum of the ratings on the items. One-month test-retest reliability was .74; coefficient alpha was .72.

Identification with TV characters was derived from children's ratings that indicated

² Several different weightings for frequency were tried in the test-retest subsample. A multiple regression analysis predicting aggression from the product of the frequency and the violence rating indicated that the strongest relation could be obtained if violence ratings, scaled from *most violent* (4) to *nonviolent* (0), were multiplied by frequency, scaled from *watching every time its on* (10) to *watching only once in a while* (0). This result was cross-validated with the entire first wave of U.S. data separately for boys & girls. Therefore, for all waves these scalings were used to compute the violence viewing scores in both countries. In other words, a program that is only viewed once in a while does not contribute to a child's violence viewing score, no matter how violent the program is.

how much they believed they acted like certain television characters. These characters included two aggressive males, two aggressive females, two unaggressive males, and two unaggressive females. For each character, the children were asked "How much do you act like or do things like the character?" The sum of their responses constituted a reliable "identification with aggressive character" score. Coefficient alpha for this measure was .71 and test-retest reliability over one month was .60.

Parent Measures

The parents reported their own and their spouses' education and occupation. The father's occupation was coded to obtain a social-class score for the family (Warner, Meeker, & Eels, 1960). Each parent's aggression was computed as the sum of Scales 4 and 9 of the MMPI, which has been shown to be a reliable and valid measure of antisocial behavior (Huesmann, Lefkowitz, & Eron, 1978). The parent's TV violence viewing was calculated as the sum of violence scores for the four programs listed as favorites and weighted by the frequency with which the parent reported watching them. The parent's *judgment of TV realism* was derived in the same way as the child's. A measure of how frequently the *parent watched the child's programs* was obtained by asking the parents how often they watched the specific programs their children had selected as their favorites (without telling the parent this). Finally, the parents estimated both their own and their children's weekly hours of TV viewing.

Results

Figure 1 shows how peer-nominated aggression changed for boys and for girls over the course of the 3 years. One can see that in the United States the occurrence of peer-nominated aggressive behavior increased from first to fifth grades as has been reported previously (Eron, Huesmann, Brice, Fischer, & Mermelstein, 1983). To give this graph more substantive meaning, one should remember that an aggression score of .20 indicates that a child was nominated on aggression questions 20% of all possible times.

Within the United States, the amount of violence shown on TV did not change to an

appreciable extent over the course of the 3 years (Signorelli et al., 1982). Furthermore, during each year approximately the same number of violent shows (25%) was included in the 80 programs from which the children made their selections; thus, it is appropriate to compare TV violence viewing from year to year. Figure 2 indicates (as reported previously by Eron et al., 1983) that TV violence viewing in the United States sample peaked in the third grade. This suggests that the third-grade time period would be particularly important in the television violence-aggression association.

Violence-viewing scores are more difficult to interpret than are aggression scores. Because each score represents the product of the amount of violence occurring on the selected shows with the self-reported viewing regularity (i.e., frequency of viewing the shows), the same score can have somewhat different meanings. For example, a score of 80 (the mean score

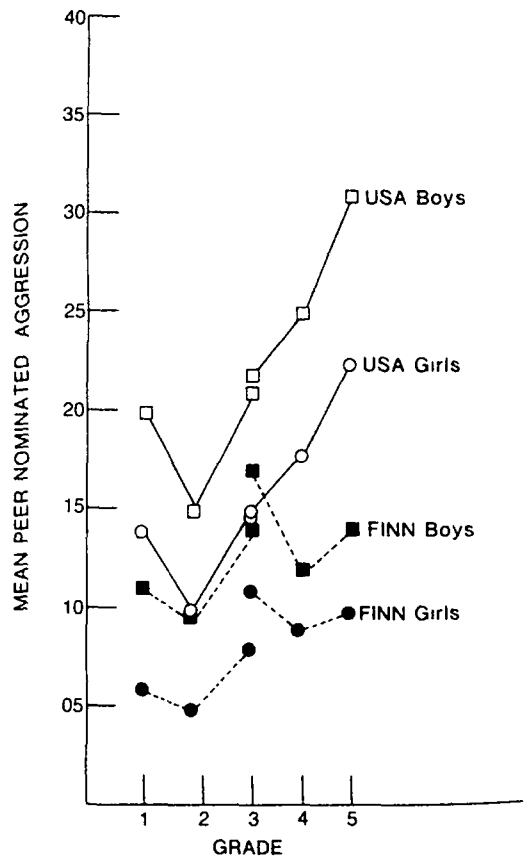


Figure 1. Cohort, grade, and sex differences in aggression.

for third-grade boys) could be obtained if the child reported watching two of the most violent programs every time they were on, or if the child reported watching four of the moderately violent shows every time they were on, or if the child reported watching eight of the slightly violent shows every time they were on. Nevertheless, no child in the United States scored in the upper quartile on violence viewing unless he or she watched at least four highly violent shows regularly.

Because of the overlapping longitudinal design, we could separate out the effects of sex, grade, and cohort on aggression and television violence. A Sex \times Cohort \times Wave repeated measures analysis of variance (ANOVA) confirmed that boys were consistently more aggressive than were girls, $F(1, 486) = 24.3, p < .001$, and watched more television violence than did girls, $F(1, 420) = 26.1, p < .001$. In addition, aggression increased developmentally

with age, as indicated by the significant main effects for both wave, $F(2, 972) = 34.6, p < .001$, and cohort, $F(1, 486) = 22.83, p < .001$. The main effect for cohort, however, cannot be taken as evidence of a *cohort effect*, because it is confounded with age. Rather, one must examine the contrast between the two cohorts' aggression in the overlapping grade (i.e., the third grade). This difference was not significant.

For both aggression and TV violence viewing, significant Wave \times Cohort interactions were obtained, $F(2, 972) = 20.43, p < .001$, and $F(2, 840) = 21.69, p < .001$, respectively. The interactive effect on aggression of wave and cohort is at least partially a result of the change in peer-nomination procedure between first and second grades (from pointing to pictures to crossing out names). However, the interactive effect of wave and cohort on TV violence viewing reflects the obtained peak in the third grade, as shown in Figure 2.

Because of these sex and grade differences in aggression and TV viewing, most of the remaining analyses are conducted separately for each subset of subjects or else grade and sex are used as covariates. In this way, spurious relations due to common age or sex effects on two variables are avoided. Overall correlations that are reported are generally averages of the subsample correlations. This procedure usually yields lower correlations than does using the entire sample together. For example, the correlation between TV violence and aggression among all subjects in the first wave was .221, whereas the average of the correlations for the four grade-sex subsets in the first wave was .185. The overall correlation is heightened because both boys and older children act more aggressively and watch more violence than do girls and younger children.

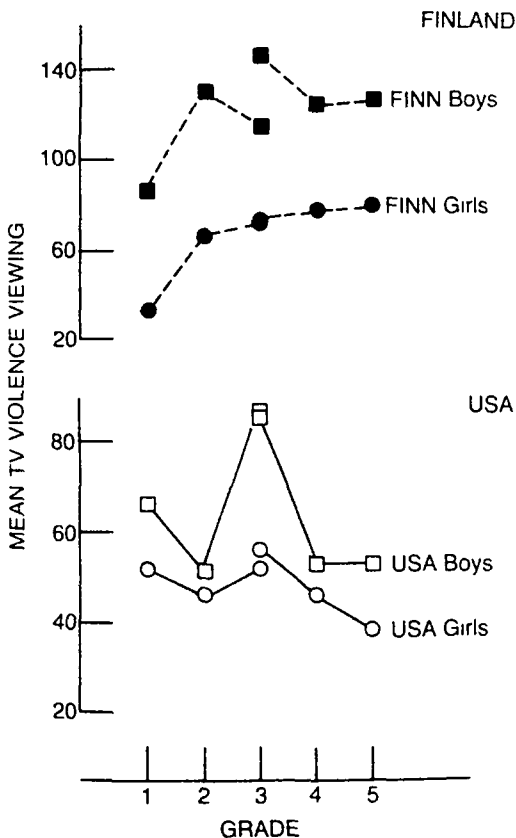


Figure 2. Cohort, grade, and sex differences in TV violence viewing.

Television Violence and Aggression

As Table 1 reveals, positive correlations were found between overall TV violence viewing and peer-nominated aggression in all grades in the United States. A child's overall TV violence score represents how regularly the child is exposed to TV violence. Unlike our previous results, which were significant only for boys (Eron et al., 1972), positive correlations were obtained for both boys and girls. In fact, on

Table 1
Correlations Between TV Violence Viewing and Peer-Nominated Aggression

Cohort	Grade	Males				Females			
		U.S.	N	Finn	N	U.S.	N	Finn	N
First grade	1	.16*	188	.03	55	.22**	201	.14	64
	2	.20*	144	.27*	54	.25*	158	.02	48
	3	.15	114	.09	50	.28***	124	.33**	44
Third grade	3	.24**	167	.04	49	.13†	168	.05	51
	4	.18*	131	.38**	44	.26***	138	-.16	46
	5	.20*	99	.28*	43	.29***	107	.04	41

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. All probabilities are two-tailed.

the average the correlations were somewhat higher for girls. Averaging data over the three waves of measurements, one obtains an overall correlation of .29 ($p < .001$) for girls and .25 ($p < .001$) for boys. Although it might be tempting to attribute the correlations between self-reports of viewing violent programs and aggression to methodological or sociocultural artifacts, such explanations find little support in the data. Response bias due to impulsivity, for example, was measured (Rosenfeld et al., 1982) and does not explain the relation. Furthermore, the validity of the TV-violence measure and these results is supported by the finding that these children's scores, based on their own choices from the program lists, correlated significantly with an alternative violence score based on the parents' reports of the child's four favorite programs ($r = .29$, $N = 572$, $p < .001$).

The correlations between self-reported regularity of viewing favorite shows (regardless of violence) and peer-nominated aggression were also positive and significant for both boys and girls in the United States (average $r = .226$, 11 of 12 significant). In fact, a pure self-reported regularity score correlated as highly with aggression as a violence-viewing score for some grade-sex combinations in the United States. Of course, regularity in this context means the frequency with which the child watches his or her favorite programs, not the total numbers of hours watched per week. As a matter of fact, the child's report of the frequency with which he or she watched his or her favorite program correlated only .20 ($N = 540$, $p < .001$) in the United States with the mother's report of the number of hours her

child watched TV each week, which averaged 15 hours per week. The mother's report of frequency did not correlate significantly with either boys' or girls' aggression. Thus, the relation between violence viewing and aggression seems to depend strongly on the regularity of exposure. Regular exposure to mild violence is associated with higher aggression much more than is infrequent exposure to severe violence.

Rather than use cross-lagged correlations, which have several drawbacks (Huesmann, 1982b; Rogosa, 1980), we use multiple regressions to estimate causal effects. To interpret regression coefficients as causal coefficients, several conditions must be met. First, the criterion (endogenous) variable must not cause any of the predictor (exogenous) variables in the proposed structural model. In the current case, this condition is satisfied by using lagged observations on the exogenous variables, so one knows they cannot have been caused by the endogenous variable. Note that this does not rule out the possibility that the endogenous variable could be causing the exogenous variable's future values. Second, none of the unmeasured causes of the endogenous (criterion) variable can be causes of an exogenous (predictor) variable. This condition certainly is not satisfied in these analyses, though later the effect of adding various third variables into the causal system is discussed. Until each such third variable is introduced, however, a plausible alternative hypothesis to a causal effect is a spurious relation due to the third variable. The third condition required is that the variables must be corrected for their measurement error (i.e., their unreliability, if inferences about causal relations among true scores are

to be made). We present both the corrected and the uncorrected regression coefficients, although most variables are so highly reliable that the corrections make little difference.

Table 2 contains a multiple regression analysis indicating the effect of television violence on later aggression while controlling for earlier aggression. The analysis reveals a significant positive effect of TV violence viewing on later aggression for girls in the United States but only a marginal effect for boys in the United States. The means for girls in Table 3 illustrate these results more clearly. No matter what the initial level of girls' aggression, those who watch more TV violence are likely to become more aggressive than are those who watch less. However, the data do not support a conclusion of unidirectional causality. Regressions predicting TV violence viewing from aggression revealed that those girls who are more aggressive also are more likely to become heavier violence viewers regardless of their initial level of violence viewing. The bidirectionality of

the effect suggests that a simple observational learning model is not sufficient to explain the correlation between violence viewing and aggression for girls.

These regressions also reveal that aggression is a reasonably stable behavior for both boys and girls in the age range studied. The corresponding 3-year longitudinal correlations for aggression were .72 for boys and .57 for girls. The differences in these and in the multiple correlations for boys and girls indicate that aggression is more predictable and stable for boys than for girls. Such a result is consistent with other recent research (Huesmann, Eron, Lefkowitz, & Walder, in press; Olweus, 1979). On the other hand, TV violence viewing was much less stable with longitudinal correlations of .19 for boys and .31 for girls.

Sex of Viewer and of TV-Character Observed

As we have maintained, one possible explanation for differential effects of violence on

Table 2
Multiple Regressions Relating Aggression to TV Violence Viewing, Controlling for Initial Level of the Dependent Variable

Predictor	Standardized regression coefficients							
	Girls				Boys			
	U.S. (N = 221)		Finn (N = 85)		U.S. (N = 191)		Finn (N = 80)	
Dependent variable: Third-wave aggression								
Grade	.251***	(.253)	-.097	(-.106)	.132**	(.132)	-.172*	(-.187)
First wave aggression	.526***	(.526)	.649***	(.671)	.695***	(.714)	.768***	(.792)
TV violence viewing in first and second waves	.135**	(.152)	.012	(.012)	.079	(.086)	.110	(.126)
	$R^2 = .407,$		$R^2 = .390,$		$R^2 = .547,$		$R^2 = .575,$	
	$F(3, 217) = 49.7,$		$F(3, 81) = 17.3,$		$F(3, 187) = 75.3,$		$F(3, 76) = 34.2,$	
	$p < .001$		$p < .001$		$p < .001$		$p < .001$	
Dependent variable: Third-wave TV violence viewing								
Grade	-.216***	(-.249)	-.085	(-.146)	-.364***	(-.429)	-.067	(-.117)
First wave TV violence viewing	.293***	(.298)	.411***	(.566)	.190***	(.257)	.248*	(.346)
Aggression in first and second waves	.257***	(.294)	.148	(.158)	.165*	(.178)	.123	(.147)
	$R^2 = .191,$		$R^2 = .190,$		$R^2 = .170,$		$R^2 = .069,$	
	$F(3, 217) = 17.1,$		$F(3, 81) = 6.35,$		$F(3, 187) = 12.7,$		$F(3, 76) = 1.86,$	
	$p < .001$		$p < .001$		$p < .001$		$p < .15$	

Note The numbers in parentheses are the regression coefficients corrected for the unreliability of the measures.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3
U.S. Girls Mean Peer-Nominated Aggression in the Third Wave as a Function of Their Earlier TV Viewing and Aggression

Initial peer-nominated aggression	TV violence viewing for first two waves	
	Low	High
High	.284 (<i>N</i> = 21)	.334 (<i>N</i> = 42)
Medium	.131 (<i>N</i> = 63)	.167 (<i>N</i> = 56)
Low	.096 (<i>N</i> = 37)	.115 (<i>N</i> = 24)
Total	.147 (<i>N</i> = 121)	.214 (<i>N</i> = 122)

Note. Standard deviations ranged from .10 to .18 and were correlated with means.

boys and on girls is that they respond differently when observing male and female aggressors. To test the hypothesis that girls are affected more by violent programs depicting female aggressors, we scored TV programs separately for the amount of violence perpetrated by males and by females. However, we found that regardless of the sex of the viewer there were higher correlations between the child's aggressiveness and the child's viewing of a male character's violence than between the child's aggressiveness and the child's viewing of a female character's violence. In the United States, the average correlation of a girl's aggression with female aggressor violence was .168 (overall $r = .23$, $p < .001$), compared to .236 (overall $r = .30$, $p < .001$) with male aggressor violence. Thus, it does not seem reasonable to attribute the recent emergence of a relation between violence viewing and aggression in girls in the United States to the appearance of female models on TV.

One of the problems with using gender as a measure of identification with a TV model is that aggression is highly correlated with sex-role orientation (Eron & Huesmann, 1980; Lefkowitz et al., 1977). Girls who are aggressive may in fact identify more with male actors than with most female actors. More important than the sex of the model may be the behaviors the model is performing and, if masculine activities are intrinsically more appealing to some subjects of either sex, then these subjects could

be more likely to attend to male characters and be influenced most by their behaviors.

In the current study, we measured sex role orientation by having children select the activities they preferred most from pictures representing stereotypic male, female, and neutral activities. The results of ANOVAs with these variables did not support the hypothesis that a child's preference for stereotypic male, female, or neutral activities interacted with TV violence viewing to affect aggression. Nevertheless, when we divided girls into those who scored high and those who scored low on preference for stereotypic male activities, we found a greater correlation between violence viewing and aggression among the "high male" girls ($r = .30$, $N = 110$, $p < .001$) than among the "low male" girls ($r = .15$, $N = 130$, $p < .09$). Thus, the emergence of a positive correlation between violence viewing and aggression in girls at this time as opposed to previous times (Eron, 1963) might be explained by a change in sex role norms occurring over this period. However, the most consistent significant finding about sex role and aggression was that a preference for neutral activities (non sex-typed) was associated with lower aggression in both boys (average $r = -.147$, 3 of 6 significant; overall $r = -.24$, $p < .001$) and girls (average $r = -.158$, 3 of 6 significant; overall $r = -.25$, $p < .001$).

Identification With TV Characters

Gender and sex-typed activity preferences tap only one dimension of similarity between a child and a TV character. More specific individual differences were measured by asking the child how much he or she acts like specific TV characters. As Table 4 shows, the extent to which a child thought he or she acted like TV characters was significantly positively correlated with the child's aggressiveness in most age-gender groups, although the effect was more pronounced for boys in the United States (overall $r = .22$, $p < .01$) than for girls in the United States (overall r , *ns*). It is interesting that the correlations are just about the same for "identification with aggressive characters" and for "identification with all characters" (the two variables correlated .87 with each other). Children seem to see themselves either as acting like most TV characters or as being like

Table 4
Correlations Between Identification with Aggressive TV Characters and Peer-Nominated Aggression

Cohort	Grade	Males				Females			
		U.S.	N	Finn	N	U.S.	N	Finn	N
First grade	1	.15*	187	.06	54	.17*	196	.06	50
	2	.18*	140	.36**	54	.26**	157	.16	48
	3	.08	112	.22	43	.18*	122	.59***	37
Third grade	3	.12	164	.25†	48	.10	165	.26†	48
	4	.33***	131	.28†	43	.09	134	.04	45
	5	.35***	97	.18	41	.11	105	.21	37

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. All probabilities are two-tailed

no character. Children who identify most are also those who watch the most TV violence (overall $r = .37$, $p < .001$ for boys; overall $r = .32$, $p < .001$ for girls).

Longitudinally, the correlation between identification with TV characters during the first 2 years and aggression in the 3rd year is highly significant for boys ($r = .23$, $N = 191$,

$p < .001$). Moreover, multiple regressions for boys revealed a significant longitudinal prediction to later aggression from earlier identification. However, the most significant causal coefficients were derived when the multiplicative product of violence viewing, and identification was used to predict later aggression. This critical result is shown in Table 5.

Table 5
Multiple Regressions Relating Boys Aggression to a Multiplicative Composite of TV Violence Viewing and Identification with Aggressive TV Characters, Controlling for Initial Level of the Dependent Variable

Predictor	Standardized regression coefficients			
	U.S. Boys	(N = 191)	Finn Boys	(N = 80)
Dependent variable: Third-wave aggression				
Grade	.151***	(.160)	-.174*	(-.202)
First wave aggression	.679***	(.677)	.747***	(.754)
Product of TV violence viewing and identification with aggressive characters in first and second waves	.152**	(.199)	.205**	(.271)
	$R^2 = .563$, $F(3, 187) = 80.3$, $p < .001$		$R^2 = .604$, $F(3, 76) = 38.6$, $p < .001$	
Dependent variable: Product of TV violence viewing and identification with aggressive TV characters in third wave				
Grade	-.236***	(-.267)	-.080	(-.186)
Product of TV violence viewing and identification with aggressive characters in first wave	.384***	(.612)	.319**	(.528)
Aggression in first and second waves	.102	(.059)	.178	(.213)
	$R^2 = .232$, $F(3, 187) = 18.9$, $p < .001$		$R^2 = .129$, $F(3, 76) = 3.74$, $p < .02$	

Note Numbers in parentheses are the regression coefficients corrected for the unreliability of the measures.
 † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6

U.S. and Finnish Boys Mean Peer-Nominated Aggression in the Third Wave as a Function of Their Earlier TV Viewing and Aggression

Initial peer-nominated aggression	Product of TV violence viewing and identification with aggressive TV characters for first two waves			
	U.S. boys		Finn boys	
	Low	High	Low	High
High	.419 (<i>N</i> = 25)	.427 (<i>N</i> = 49)	.158 (<i>N</i> = 16)	.318 (<i>N</i> = 15)
Medium	.195 (<i>N</i> = 38)	.214 (<i>N</i> = 35)	.119 (<i>N</i> = 10)	.128 (<i>N</i> = 19)
Low	.098 (<i>N</i> = 46)	.148 (<i>N</i> = 27)	.050 (<i>N</i> = 18)	.071 (<i>N</i> = 11)
Total	.206 (<i>N</i> = 109)	.292 (<i>N</i> = 111)	.105 (<i>N</i> = 44)	.177 (<i>N</i> = 45)

Note Standard deviations ranged from .08 to .28 and were correlated with means

Table 5 contains the multiple regressions predicting a boy's later aggression from the product of earlier violence viewing and identification with aggressive characters after initial aggression was partialled out.³ On the basis of the significant regression coefficient for the product, one concludes that those boys who watched violent television and identified with aggressive TV characters became more aggressive 2 years later, regardless of their initial level of aggressiveness. Thus, identification with aggressive characters seems to act like a catalyst, increasing the effect of TV violence in boys. Identification with aggressive TV characters by itself is a good predictor of aggression, but not as significant a predictor as its product with TV violence viewing.

The relation is illustrated by the means for boys in Table 6. Regardless of his initial level of aggressiveness, the boy who watches more violence and identifies with the violent character is more likely to be higher in aggression after 2 years. Furthermore, as Table 5 illustrates, this effect is only weakly bidirectional. Aggression is not as good a predictor of these two TV variables as the TV variables are of aggression. Note that this effect only obtains for boys. For girls there are positive correlations, but the identification variable does not add to the power of the violence-viewing variable in predicting a girl's aggression.

It is particularly interesting that this effect is equally as strong when one uses the variable "identification with all characters" instead of

"identification with aggressive characters." Of course, the two variables are highly correlated. Still, the results show that even the boy who believes he acts like nonviolent TV characters is more likely to increase in aggressiveness after regular violence viewing.

Judgment of TV Realism

The children's perception of television violence as realism declined significantly with age (Eron et al., 1983) but remained substantial in every grade. For example, 45% of first graders thought the program "*Charlie's Angels*" showed life just like it really is, as did 29% of third graders and 7% of fifth graders.

In the earlier 10-year longitudinal study (Lefkowitz et al., 1977) it was found that girls thought television was significantly less realistic than did boys. It was hypothesized that this might be one of the reasons for the lack, at that time, of a significant longitudinal relation between girls' violence viewing and their aggression. In accordance with this hypothesis, girls and boys in the United States, who are now more equally affected by violence, now also perceive television violence to be equally realistic. Furthermore, the relation between a child's aggression and belief that television vi-

³ Such a product captures the linear effects of TV violence and identification with TV character, as well as their interaction. By itself the interactive effect was not significant when the main effects were partialled out.

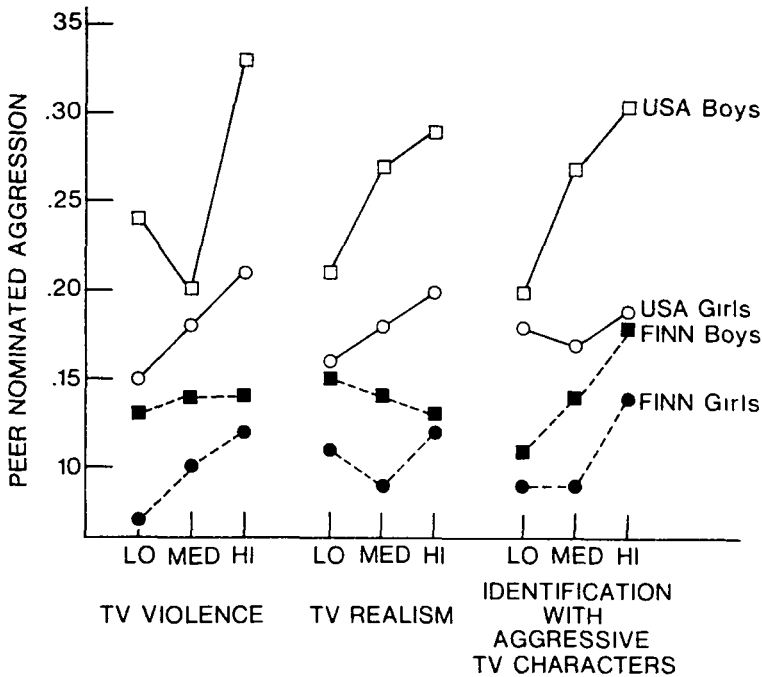


Figure 3 Relation between aggression in the final wave and earlier TV viewing habits and attitudes in Finland and in the United States.

olence represents life as it really is was now significant for both sexes (average $r = .12$, 4 of 6 significant for girls (overall r , *ns*); average $r = .18$, 4 of 6 significant for boys overall $r = .22$, $p < .01$). Similarly, believing that TV violence is realistic was correlated with violence viewing (average $r = .29$, 6 of 6 significant for boys; average $r = .30$, 5 of 6 significant for girls). Although no interactive effect of realism and violence viewing on aggression could be detected with regression analyses, these correlations reveal the interlocking relation of the variables.

In Figure 3, the main effects for each of the TV variables on aggression are summarized. The high, medium, and low groups represent approximately equal portions of the sample in each case. Although the interaction between violence viewing and identification is not illustrated in this diagram, the direct relation between each of the variables and aggression, regardless of gender, is clear.

Aggressive Fantasy

Another potential mediating variable is the extent to which children fantasize about

aggression. Although some catharsis theorists might expect such fantasizing to be negatively related to peer-nominated aggression, we had hypothesized a positive relation. In fact, fantasizing about aggressive acts correlated positively with peer-nominated aggression, especially in the older cohort. In the United States, the average correlation in the older cohort was $.182$ for boys (3 of 3 significant, overall $r = .23$, $p < .001$) and $.261$ for girls (3 of 3 significant, overall $r = .20$, $p < .001$). However, we could find no evidence that high fantasizers were more affected by television violence than were low fantasizers; that is, there was no interactive effect of violence viewing and extent of aggressive fantasy on peer-nominated aggression. Use of aggressive fantasy did not correlate significantly with TV violence, but use of active-heroic fantasy did correlate significantly with violence viewing for girls in the United States (average $r = .154$, 3 of 6 significant).

Aggressive Predispositions

An oft-repeated claim about the relation between TV violence and aggression is that

“only those predisposed to be aggressive are affected.” In fact, the evidence from this field study directly contradicts such a statement if by predisposed one means already aggressive. In analyzing each variable, we controlled for previous level of aggression and still obtained significant results. Tables 3 and 6 show that television violence can affect any child regardless of his or her initial level of aggression. None of the theories that have been proposed to explain the aggression–television–violence relation have provided for a mechanism by which previous level of aggression would interact with TV violence viewing, and no evidence of such an interaction was found in this study. Thus, the claim only makes sense at the more general level—that is, for aggression to become a serious problem, it is necessary that a number of factors be present to increase a child’s aggression. No one factor would probably be sufficient.

Parental Influences

The analysis of the role of the parents in the aggression–television–violence relation must be preceded by a discussion of certain biases introduced by incomplete sampling of parents. In the United States, there were 167 children (22%) for whom there was no parent interview. An attempt was made to interview all parents; so those who were not interviewed were those who were more likely to be absent from the home, less cooperative, and/or less interested in their children. Therefore, it was not surprising to discover that the children of these parents differed in a number of ways from the children whose parents were interviewed. The children of the parents who were not interviewed were significantly more aggressive, $F(1, 592) = 9.26, p < .003$, scored significantly higher on TV violence viewing, $F(1, 558) = 9.95, p < .002$, and frequency of TV viewing, $F(1, 558) = 5.1, p < .025$, and were marginally less popular, $F(1, 592) = 2.91, p < .09$. They thought TV violence was significantly more like real life than did the other children, $F(1, 556) = 32.7, p < .001$, and they identified much more with aggressive characters, $F(1, 541) = 14.6, p < .001$. In other words, due to self-selection, the parent sample is biased in favor of parents of the better adjusted children. This introduces two problems.

First, one could expect observed relations between parent variables and child variables to have been attenuated from the true relations because of the restrictions in the range that the sampling produced. Second, one must be concerned whether any relation discovered is representative of all children or only of the better adjusted children. A comparison of the within-child correlations in the two samples provides some assurance at least on this latter concern. For example, in the United States, the overall first wave correlation between violence viewing and aggression among children whose parents were interviewed was .255, compared to .237 for children whose parents were not interviewed. Of course, it is impossible to know whether the same consistency would hold for correlations with parent variables.

One might also be concerned that the children who dropped out during the course of 3 years were significantly different from the children who remained. However, there was no significant difference in TV violence viewing or aggression between those children who completed the study and those who dropped out; although the drop outs did score significantly higher in identification with TV characters and judgment of TV realism. It is possible that parents and children who cooperated throughout the study represent a higher socioeconomic level (SES); thus, the relation between SES and other variables may be attenuated.

Parents' Aggression

Recall that our measure of parent aggression was the sum of Scales 4 and 9 on the MMPI (Huesmann et al., 1978). For boys in the United States, we found a significant relation between peer-nominated aggression and mothers' MMPI scores ($r = .245, N = 248, p < .001$). For girls, the correlations between mothers' MMPI scores and aggression were not significant although they were positive. Similarly, no significant relation with fathers' MMPI scores was found for either sex, although the correlations were consistently positive.

The positive relation between the mother's score on Scales 4 and 9 of the MMPI and her son's aggression is particularly notable because

the mother's aggression is based on self-report of attitudes, opinions, and behavior, whereas the child's aggression score is based on peer observations. It is unlikely that the mother's scores on the MMPI are affected much by the child's behaviors. A causal regression analysis did not yield a significant causal coefficient for mother's MMPI on child aggression, or vice versa. It may be that the effect of mother's personality on the child's aggression exerts itself when the child is younger. Therefore, although the overall level of aggression of a 6- to 11-year-old child would correlate with mother's aggressiveness, changes in aggression during these ages would not.

Although mother's and son's aggression were correlated, we found no evidence that the parents' aggression either exacerbated or mitigated the effect of TV violence on their children. Neither parent's aggressiveness was significantly correlated with the child's violence viewing, and no significant interactive effect was found for parent aggression and child TV violence viewing on child aggression. There was no evidence to support the hypothesis that children of more aggressive parents are affected more by TV violence.

Parents' TV Viewing

As described earlier, a parent's report of child's violence viewing correlated with his or her child's report, lending validity to the measures. However, the parent's own self-reported violence viewing was uncorrelated with the child's. This was somewhat surprising inasmuch as one might expect the entire family to be watching the same programs. The parents' reported hours of TV viewing did correlate positively with the child's hours as estimated by the parents ($r = .38, N = 582, p < .001$) in the United States, and less significantly with the child's frequency as estimated by the child. Also, in the United States, the more hours of TV a child watched and the more frequently a child watched his or her favorite programs, the more the parents reported watching the child's programs themselves ($r = .30, N = 556, p < .001$ and $r = .17, n = 556, p < .001$). Given these correlations, the lack of a relation between parent and child TV violence scores suggests that at least some families treat violent programs differently from

other programs. Further evidence in support of this hypothesis is developed below in the section on social class. The only other significant correlation between parent's and child's viewing habits was between the parent's and the child's perceptions that violent shows tell about life just like it really is. The more a parent believed this, the more the child believed it, though the effect was not large ($r = .14, N = 564, p < .001$). Despite these modest relations between parent and child viewing, no correlations between parent viewing and child aggression were discovered.

Social Class, Parents' Education, and Child Achievement

Correlations of the parents' education and social class with child aggression and TV viewing are displayed in Table 7. One can see that there are consistent, if weak, effects of both social class and parent education on the child's TV viewing and aggression. Socioeconomic status of the family was defined for the study by the father's occupation. In the United States, the lower the parents' education and SES, the more aggressive was the child, the more the child watched TV and TV violence, the more the child believed the violent shows tell about life like it is, and the more the child identified with TV characters. Similarly, the lower the parents' education and social status, the more aggressive they were, the more they watched TV, and the more they believed TV was realistic. Unexpectedly, however, the more poorly educated and lower-status parents watched less TV violence and more of their children's programs than did the better educated and higher status parents. Higher status parents watched less TV, but more of what they watched was violent.

Although the child's intelligence was not measured directly, academic achievement was measured by the California Achievement Test (Tiegs & Clark, 1970) during the first wave of the study for the older cohort in the United States. The correlations of achievement with aggression and TV violence viewing are shown in Table 7. One can see that academic achievement was significantly inversely related to the child's aggression and violence viewing. The lower the child's academic performance, the greater was the child's aggression, the more

violence the child watched, and the more the child thought that TV violence was like real life. The correlation between achievement and aggression in the United States was one of the highest correlations obtained for aggression. Low achievement may be both a frustrator, instigating aggressive responses, and a marker of a reduced capacity to deal intelligently with difficult social situations. Aggression, in turn, may interfere with intellectual development (Huesmann, Eron, & Yarmel, 1983). The low-achieving child may turn to TV violence to obtain vicariously the successes that he or she cannot obtain in school. In turn, increased TV viewing and increased aggression may contribute to a further decline in academic

achievement. In considering such speculations, however, one must remember that low achievement is correlated with lower SES ($r = .25$, $N = 268$, $p < .001$) and lower parental education ($r = .35$, $N = 258$, $p < .001$) in the United States. Thus, the relation between achievement and aggression is confounded with the relation between social class and aggression.

As we mentioned, the social-class variables unexpectedly correlated positively with parental violence viewing. One can see from Table 7 that the same is true of the child's academic achievement. Although the child's achievement correlates negatively with the child's violence viewing and negatively with

Table 7

Relation of the Parent's Social Class^a and Education and the Child's Academic Achievement^b to the Child's Aggression and TV Viewing Habits

	United States			Finland		
	Social class	Parent's education	Child's achievement	Social class	Parent's education	Child's achievement
Social class	1.0			1.0		
Parent's education	.59***	1.0		.48***	1.0	
Child's achievement	.24***	.34***	1.0	—	—	1.0
Child						
Aggression	-.17***	-.09*	-.40***	—	—	-.23**
TV violence	-.11*	-.15***	-.20***	—	—	—
TV regularity	-.14**	-.16***	-.23***	—	—	—
Judged TV realism	-.21***	-.28***	-.31***	—	—	—
Identification with TV characters	-.21***	-.23***	—	-.16*	—	-.24**
Parents						
Mother's aggression	-.12**	-.09*	—	—	-.15†	—
Father's aggression	-.16*	—	—	—	—	—
TV violence	—	.09*	.16**	—	—	—
TV frequency	-.27***	-.31***	-.12†	-.20**	-.18**	-.16*
Judged TV realism	-.11**	-.13**	-.12†	—	—	—
Watch child's TV programs	-.25***	-.27***	—	-.18*	—	—
Report of child's TV frequency	-.24***	-.27***	-.13*	.13†	-.14†	-.14†

^a Social class was recoded from father's occupation; therefore, a high score means higher socioeconomic status.

^b Achievement was measured by scores on the California Achievement Test in the United States and by reading grades in Finland.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. All probabilities are two-tailed.

all other parent and child viewing measures, the child's achievement correlates positively with the parent's violence viewing. These results are consistent with the fact that parental violence viewing is uncorrelated with child violence viewing in our population. Together, these results suggest that violent shows are treated differently than other shows by many families. It may be that, on the average, violent shows appeal more to sophisticated adults. These more highly educated adults eschew the type of shows their children watch. At the same time, these adults, concerned about the violence, discourage their children from viewing the programs. Although such a hypothesis cannot be tested with the current data, it is consistent with the correlations.

To test whether education, SES, and intelligence might completely account for the relation between violence viewing and aggression,

these variables were added to the multiple regression equations predicting later aggression from earlier violence viewing (and for boy's, earlier identification with TV characters). In Table 8, both the raw regressions and the regressions corrected for the unreliability of the measures are shown. Unfortunately, because of the incomplete survey of parents and school achievement records, the samples were greatly reduced in size for these analyses. However, the causal coefficients for the reduced sample were approximately the same as for the total sample before the covariates were introduced, and the introduction of achievement, education, and social class did not change them much.

Popularity

The final intervening variable to be examined is the child's popularity. In the United

Table 8

Multiple Regressions Showing Effects of Socioeconomic Variables and Academic Achievement on the Relation Between TV Violence Viewing and Aggression

Predictor of third-wave aggression	Standardized regression coefficients							
	Girls				Boys			
	U.S.	(N = 89)	Finn	(N = 76)	U.S.	(N = 84)	Finn	(N = 81)
Grade ^a	—	—	-.094	(-.105)	—	—	-.140	(-.138)
First wave aggression	.341***	(.318)	.650***	(.667)	.731***	(.782)	.673***	(.665)
TV violence viewing for girls in first and second waves	.169*	(.193)	.049	(.057)	—	—	—	—
Product of TV violence viewing and identification with aggressive TV characters for boys in first and second waves	—	—	—	—	.188*	(.292)	.210**	(.303)
Parents' socioeconomic status	.059	(.165)	.154	(.210)	.034	(.036)	-.166	(-.282)
Parents' educational status	.080	(.175)	-.022	(.021)	-.031	(.012)	-.087	(-.145)
Child's academic achievement	-.340***	(-.375)	.059	(.081)	.045	(.121)	-.129	(-.152)
	$R^2 = .342,$		$R^2 = .432,$		$R^2 = .593,$		$R^2 = .564,$	
	$F(5, 83) = 8.63,$		$F(6, 69) = 8.75,$		$F(5, 78) = 22.7,$		$F(6, 74) = 16.0,$	
	$p < .001$		$p < .001$		$p < .001$		$p < .001$	

Note Numbers in parentheses are the regression coefficients corrected for the unreliability of the measures. Because achievement data were only available for third-grade subjects in the United States, grade was not a predictor for them.

* $p < .05$. ** $p < .01$. *** $p < .001$.

States, popularity was negatively correlated with aggression in every grade among both boys (average $r = -.347$, 6 of 6 significant) and girls (average $r = -.295$, 5 of 6 significant).

In the United States, regressions similar to those in Table 2 demonstrated that earlier aggression was predictive of later unpopularity even after initial popularity was partialled out ($B = -.19$, $p < .001$ for girls; $B = -.14$, $p < .02$ for boys). At the same time, earlier unpopularity was found to be predictive of later aggression ($B = -.10$, $p < .08$ for girls; $B = -.14$, $p < .01$ for boys). Thus, aggression seems to lead to unpopularity, and unpopularity to aggression in the United States.

Although unpopularity did not interact with violence viewing to effect aggression, unpopularity among girls in the United States was correlated with higher levels of violence viewing (average $r = .161$) and increased frequency of viewing (average $r = .120$). Furthermore, a longitudinal regression analysis revealed that for both sexes unpopularity led to an increase in TV violence viewing over the 2 years, but TV violence viewing did not lead to a decrease in popularity. It may be that unpopular youths in the United States turn to a heavier diet of TV violence to experience vicariously the social rewards that TV heroes obtain.

Finland Study

There are major differences between the populations of the United States and Finland that may be very important for this study. To begin with, Finland has only 4.7 million inhabitants, and the presence of a nonCaucasian among their inhabitants is extremely rare. Socioeconomic differences in Finland, as calculated by income, have a smaller range of variation than in the United States. At the same time, although Finland is a friendly neighbor of the Soviet Union, it is a capitalistic country with much Western influence, reflected in its mass media. In fact, Finland has one of the highest standards of living in the world. The Finnish language belongs to the Fenno-Ugrian group, which is not related to the Indo-European languages. The children in the current study had not yet learned other languages well and thus were not able to understand the dialogue of the programs im-

ported from other countries, even the other Scandinavian ones, because imported programs always have subtitles and are never dubbed.

Subjects

The original group of subjects in Finland was composed of 220 children from two public schools in the Turku area. Turku is the third largest city in Finland with about 160,000 inhabitants. As Finland's "gate to the West," Turku is a passenger and freight port with shipbuilding, food, and textile industries. It was the capital of Finland until 1812 and is presently an educational center for two universities. Founded in 1229, Turku has the oldest cultural traditions in Finland.

One of the schools investigated was situated in the center of the city and the other was in a suburb. Both were public schools, as are almost all schools in Finland, and there were no obvious social class differences between the school populations.

In Finland, children enter the first grade in the year of their seventh birthday. Thus, the subjects were on the average about 9 months older than were their U.S. counterparts. However, the procedure used to select the subjects was very similar to that used in the United States. In Finland, the final permission rate was 83% of the children. Most of the others declined to participate; only a few never responded.

Of the 220 subjects who constituted the Finnish sample during the first wave in 1978, 115 were girls (64 first graders and 51 third graders) and 105 were boys (56 first graders and 49 third graders). In 1979, for the second wave, 192 children remained in the sample, and in 1980, for the third wave, there were 178. Again, subject attrition was primarily due to children changing schools. The mortality rate in Finland (19%) was substantially lower than in the United States (33%), reflecting the greater mobility of the U.S. population. In Finland, parents of 193 children were interviewed during the first or second waves (144 both mother and father, 47 mother only, and 2 father only, for a total of 337 interviews). Of these children, 134 had at least one parent reinterviewed after the third wave (61 both

mother and father, 47 mother only, 16 father only).

Procedure

The procedure in Finland was essentially identical to that used in the United States. The children were seen for the first time in 1978 and subsequently in 1979 and 1980. A few of the child measures were changed slightly to reflect cultural differences and requirements. For measuring TV viewing preferences only five lists of seven programs each were used because of the lower number of programs available in Finland. Similarly, only 7 violent programs were evaluated for TV realism compared to 10 in the United States. A few of the pictures used in measuring preferences for sex-typed activities were altered on the basis of ratings of stereotypicality made in Finland. Nevertheless, the computed reliability of every variable used in Finland was comparable to that in the United States.

The comparability of the TV violence measures used in Finland with that used in the United States cannot be established with certainty because of programming differences. However, interrater reliability for evaluating the violence of TV shows was comparable to that found in the United States (.75). The Finnish raters received the same training and instructions as the raters in the United States; that is, only graphically portrayed physical aggression was seen as violence. In addition, most of the violence on Finnish TV occurred in imported programs. Indeed, on the average, one fourth of the shows used in the Finnish lists appeared on the United States lists.

Results

As in the United States, peer-nominated aggression increased over the course of Grades 1 through 5 in Finland. The developmental increase shown in Figure 1 is indicated by significant main effects for both wave, $F(2, 348) = 8.40, p < .001$, and cohort, $F(1, 174) = 4.45, p < .04$. Also, boys were again consistently more aggressive than were girls, $F(1, 174) = 8.70, p < .004$, and watched significantly more violence than did girls, $F(1, 174) = 43.5, p < .001$. The difference between the

aggression score of the two cohorts in Finland in Grade 3, $F(1, 190) = 6.31, p < .02$, seems to be due to both retesting and subject attrition. For example, when one compares only those subjects present for all three waves, the difference is still substantial ($p < .06$), indicating that even after attrition is removed as an explanation, the effect remains.

The means for violence viewing in Finland are diagrammed in Figure 2. Because of programming differences in the two countries, direct numerical comparisons with the United States are inappropriate. In Finland, there are only two channels and they operate primarily in the evening hours. In the Chicago area, there are five VHF channels in addition to several UHF channels and cable TV, each of which is available to the subjects at least 16 hours per day. This difference is reflected in the mothers' report of how frequently their children watch TV. For example, in the older cohort, children in Finland were reported to watch an average of 10.12 hours per week, whereas in the United States they watched an average of 14.99 hours per week. Nevertheless, the data in Figure 2 do suggest substantial violence viewing among Finnish children. For example, to obtain a score of 120 (the mean for third-grade boys in 1978), a child would have had to watch at least three highly violent programs every time they were shown.

An ANOVA of these data revealed that boys watched significantly more violence than did girls in Finland, $F(1, 174) = 43.5, p < .001$. Furthermore, in contrast to the United States, where violence viewing peaked in the third grade, average viewing increased from the first to fifth grades in Finland, as indicated by significant main effects for wave, $F(2, 348) = 4.42, p < .013$, and cohort, $F(1, 174) = 5.91, p < .016$.

The overall level of aggression was significantly lower in Finland than in the United States for all grades and both sexes, $F(1, 664) = 44.8, p < .001$; however, this difference is difficult to interpret. The substantially higher levels of peer-nominated aggression in the United States might represent real differences in aggression or could represent differences in the children's propensities to nominate peers. Because scores on other variables based on peer nominations (popularity) did not differ

between countries, the latter is an unlikely explanation, but it cannot be eliminated.

TV Violence and Aggression

The correlations between violence viewing and aggression in Finland are shown in Table 1. Although less consistent than in the United States, the correlations are mostly positive and replicate the U.S. results, especially for boys. However, only one of the correlations was significant for girls. The greater variation is perhaps a function of the smaller sample size and the fewer numbers of TV programs used in measuring violence viewing in Finland. The overall correlations were .22 for boys ($p < .04$) and .16 for girls (*ns*).

Although children's self-reported regularity of viewing their favorite programs correlated with aggression in the United States, this was not the case in Finland. Frequency-weighted violence viewing was a much better predictor of aggression than was regularity of viewing alone (.22 vs .14 for boys).

The regressions testing the antecedent-consequent relation of violence viewing and aggression in Finnish children are included in Table 2. The effect of a boy's earlier violence viewing on his later aggression is positive but weak, as in the United States. However, the effect for girls is completely insignificant. Although there are significant bidirectional effects for girls in the United States, the only effect in Finland is a weak trend for earlier aggression to engender later violence viewing. At the same time, as in the United States, the predictability of aggression is lower for girls ($R^2 = .39$) than for boys ($R^2 = .58$), although aggression is again reasonably stable for both.

These results suggest, as do U.S. data, that multiple processes are operating and intervening variables should be examined.

Sex of Viewer and TV Character Observed

Just as in the United States, the average correlation of girls' aggression with their viewing of aggressive female characters was no higher than was the correlation with aggressive male characters. Thus, the lack of a relation between violence viewing and aggression in girls cannot be attributed to paucity of female characters on Finnish television.

In Finland, a child's preference for sex-typed activities related to aggressiveness in much the

same way as in the United States. Most notably, a preference for neutral activities was associated with lower aggression in both boys (average $r = -.193$, 2 of 6 significant, overall $r = -.33$, $p < .001$) and girls (average $r = -.158$, 3 of 6 significant, overall $r = -.20$, $p < .06$). However, preference for sex-typed activity again did not interact with violence viewing to affect aggression.

Identification with TV Characters

Perhaps the most interesting result in the United States data was that a boy's identification with TV characters (how much he thinks he acts like TV characters) interacted significantly with violence viewing to affect aggression. As the correlations in Table 4, regressions in Table 5, and means in Table 6 indicate, almost identical effects were found in Finnish boys. Longitudinally, the correlation between a Finnish boy's identification with aggressive TV characters during the first 2 years of the study and his aggression in the 3rd year was .38 ($N = 189$, $p < .001$). However, the interactive product of violence viewing and identification was again the best predictor of later aggressiveness. Also, as in the United States the effects were as strong or stronger for identification with all characters as for identification with aggressive characters (overall $r = .43$ between aggression and identification with all characters). Identification with TV characters is the one variable that seems to exacerbate the effect of violence viewing among boys in both countries.

Judgment of TV Realism

As reported above, in the United States, boys and girls perceived TV to be equally realistic. In contrast, Finnish girls perceived TV violence to be less realistic than did Finnish boys, $F(1, 151) = 10.53$, $p < .002$. The children in Finland also seemed to perceive violent television as being more realistic than did their peers in the United States, $F(1, 580) = 135$, $p < .0001$, and did not decrease their judgment with age as did the children in the United States. However, these latter two differences were probably methodological artifacts.⁴

⁴ Because several of the same programs appeared on the realism lists in both countries, these differences could not be attributed solely to program differences. Also, the

We found in Finland, as in the United States, weak but significant positive relations between the child's aggression and how much the child believed that violent shows tell about life like it is (average $r = .20$, 4 of 6 significant for Finnish girls; and average $r = .08$, 1 of 6 significant for Finnish boys). Similarly the child's realism score again correlated with his or her violence viewing (average $r = .22$, 1 of 6 significant for boys; average $r = .19$, 2 of 6 significant for girls). Thus, in both countries violence viewing, belief in the realism of TV violence, and aggression mutually covary.

Aggressive Fantasy

Fantasizing about aggressive acts, in Finland as in the United States, correlated positively with peer-nominated aggression among subjects in the older cohort (average $r = .22$, 1 of 3 significant for boys, average $r = .16$, 1 of 3 significant for girls). However, we could again find no evidence that aggressive fantasizers were more affected by TV violence.

Parental Influences

In Finland, we obtained parent interviews for 88% of the children and could find no significant differences between those children

differences were very likely not due to differential calibration of the questions because the children in the two countries scored the same when asked the question, "How true do you think newspapers are in telling what life is really like?" However, most of the violent programs on the lists presented to the Finnish children were imported programs coming from other countries (e.g., the United States, Australia, France, and England). Thus, the language spoken by the characters was unintelligible to the Finnish children. Furthermore, the imported films show remote places and cultures that the children probably have never seen. In responding to the realism questions, the Finnish youngsters might have interpreted the referent for the questions to be the country of origin of the programs and not Finland, and they might very well believe that the films depict life just as it is in these foreign countries.

To test this theory, a subsample of 190 Finnish children were retested in the fall of 1981. They were asked two questions about each of three violent programs: "How accurately does the program depict life in Finland?" and "How accurately does the program depict life in the country of origin (England, Germany or the United States)?" The mean for the first question was significantly lower than the mean for the second question. Furthermore, it was not significantly different than the children's mean realism judgment for programs in the United States. Thus, children in both countries have about the same perception of how realistically TV violence portrays life in their country.

whose parents were interviewed and those who were not. The correlation between mother's aggressiveness and child aggression was positive but not significant, unlike the case in the United States, where it was significant. In Finland as in the United States, neither parent's aggressiveness was significantly correlated with the child's violence viewing,⁵ and no evidence was obtained to support the hypothesis that children of more aggressive parents are more affected by television violence.

The parent's own self-reported television violence viewing did not correlate with the child's (as in the United States), even though the parents' total hours of viewing did correlate with their estimate of the child's total viewing ($r = .40$, $N = 146$, $p < .001$). Again, no evidence could be found that parent TV viewing exacerbated or mitigated the relation between the child's violence viewing and aggressive behavior.

Social Class, Parent's Education, and Child's Achievement

One can immediately see from Table 7 that social class and parent's education in Finland had little effect on a child's aggression and TV habits. In fact, they also had little effect on the parent's own aggression and TV habits. Nevertheless, most of the correlations are in the same direction as in the United States, and the lack of significant relations may reflect the greater homogeneity of Finnish society.

On the other hand, academic achievement was just as strongly related to a child's aggression and TV habits as in the United States. Particularly notable is the negative relation between both parents' and child's frequency of TV viewing and academic achievement. Although low achievement was related to low SES ($r = .26$, $p < .01$) and to low parental education ($r = .22$, $p < .05$), this confounding cannot explain the relation between aggression and achievement because the social class variables did not correlate with aggression. More-

⁵ In Finland, a self-report measure of parental aggression that included statements about feelings (e.g., "I feel like swearing") and statements about behaviors (e.g., "I lose my temper at people") did correlate significantly positively with the child's violence viewing ($r = .24$, $N = 134$, $p < .01$). However, it did not correlate significantly with the child's aggression or the parents' own violence viewing.

over, the regressions in Table 8 illustrate that the relation between violence viewing and aggression cannot be explained by either the social-class variables or the child's academic achievement. In Finland and in the United States TV variables retain their significant relation to later aggression even when these third variables are partialled out.

Discussion

Positive relations were obtained between TV violence viewing and aggression among boys in both Finland and the United States and among girls in the United States. Although a number of other environmental, TV-viewing, cognitive, and parental variables correlated with aggression, only a boy's identification with TV characters seemed to exacerbate the effect of the violence viewing on aggression. These results for boys were remarkably similar in both countries, and path analyses suggested that the effect was strongest from violence viewing to aggression; that is, the combination of a boy's violence viewing and identification with TV characters is a better predictor of later aggression than aggression was of later violence viewing and identification. For girls, however, such an interactive effect was not obtained and the relation between violence viewing and aggression was clearly bidirectional. The finding that identification with TV characters is an important mediator for boys is consistent with the results of an intervention designed to mitigate the effect of TV violence on aggression (Huesmann et al., 1983). In this intervention, those children whom the intervention affected most were those children who identified least with TV characters.

The longitudinal relation between violence viewing and aggression was found to be mostly independent of the child's perception of how realistic the violence is, the child's use of aggressive fantasy, the sex of the aggressive character, and the parent's TV viewing habits. The more a child watched a preferred violent show, however, the more effect it had. In the United States, the regularity with which the child watched TV shows (i.e., the self-reported regularity) seemed to be as important a predictor of aggression as was the level of violence in the shows. In Finland, the violence content was clearly more important. This difference

may reflect the greater variety of TV programming and pervasiveness of violence in TV programming in the United States.

The hypothesis that only those children who are already aggressive are affected by TV violence received little support. The strength of the longitudinal relation varied little as a function of the child's preexisting level of aggression or as a function of the child's parents' aggression.

There was also little support for the hypothesis that the significant relation now appearing between a girl's violence viewing and her aggression is due to the recent increase in the number of female aggressors on TV. It seems more plausible that the recent greater emphasis on the need and desirability for females to be assertive has caused girls to have fewer inhibitions about performing the aggressive behaviors they observe on TV. In this study, those girls in the United States who preferred more masculine activities exhibited a stronger correlation between violence viewing and aggression than did girls with more feminine or neutral preferences. In other words, a significant relation has emerged for girls, probably because girls in the United States are behaving more like boys behave than they have in the past.

Although for boys, the TV variables were better longitudinal predictors of aggression than aggression was of the TV variables, the process actually appears to be circular for both sexes. Television violence viewing for girls and violence viewing catalyzed by identification with TV characters for boys leads to heightened aggressiveness, which in turn leads to more TV violence viewing. A number of mediating variables appear to play a role in this cycle. In both countries, those children who were less successful in school watched more TV, perhaps because they found it more satisfying than schoolwork. They preferred the more violent shows, they identified more with TV characters, and they believed that the violence they observed on TV reflects real life. They are exposed to more violence and have more opportunity to learn aggressive acts. Because their intellectual capacities are more limited, the easy aggressive solutions they observe may be incorporated more readily into their behavioral repertoire. In any case, the heavy viewing isolates them from their peers

and gives them less time to work toward academic success. Similarly, at least in the United States, children who behave aggressively are less popular. Perhaps because their relations with their peers tend to be unsatisfying, less popular children (at least less popular girls) watch more television and view more violence. The violence they see on television may reassure them that their own behavior is appropriate or may teach them new coercive techniques, which they then attempt to use in their interactions with others. Thus, they behave more aggressively, which in turn makes them even less popular and drives them back to television. The cycle continues with aggression, academic failure, social failure, and violence viewing feeding on each other.

A number of the other variables may have similar circular relations to TV violence viewing and aggression. Although none of these interacted significantly with violence viewing to affect aggression, they correlated with both variables. For example, it was found that the more a parent believes TV violence is realistic, the more the child believes it is realistic; and the more a child believes this, the more the child views violence and acts aggressively. The violence the child views and the aggression the child commits may combine to increase the child's belief in the reality of violence, which in turn would increase the likelihood of the child behaving aggressively. Similarly, a child's frequency of aggressive or active-heroic fantasy was correlated with the child's aggression in both countries and with violence viewing among girls in the United States. Thus, the hypothesis that aggressive fantasizing serves as a rehearsal process for aggressive acts remains plausible. Finally, children of either sex who preferred less strongly sex-typed activities were less aggressive and watched less violence.

An interesting and unexpected finding was that parental violence viewing did not correlate with child violence viewing in either country despite many other parent-child viewing similarities. Furthermore, those parents who were more educated, had higher status jobs, and had children who were achievers watched somewhat more violence. Only speculative reasons can be offered for these parents' preferences for violent programs; however, the obtained data demonstrated that their children usually were not watching the same violent

programs, either because of parental controls or other factors. This result coupled with the failure of the sociocultural variables to explain the TV violence/aggression relation reinforces our conviction that television violence can affect children from all strata of society.

Cultural Differences

In interpreting the results of the study, some readers may be concerned that the meaning of high violence viewing is quite different in Finland than in the United States. This is certainly true in the sense that no ratio scale comparison is possible between the countries. The violence viewing situation for the Finnish child is quite different because most violent shows are foreign without a dubbed soundtrack. However, these differences should not be of great concern for they only highlight the impressive communalities found between the two countries. The results for boys were very similar despite the differences in the viewing environment. Among other things, this suggests that the visual presentations of aggressive acts, independent of plot and dialogue, may be sufficient to engender aggression.

Although the longitudinal effects for boys are very similar in the United States and Finland, the results for girls are not. Furthermore, the correlations of behavior with the TV variables are much less consistent in Finland. Although it is impossible to state with certainty which cultural differences cause these inconsistencies, differences in television programming and attitudes toward aggression in women are two possibilities.

Regular TV broadcasting did not start in Finland until 1955, but by 1981 the TV network covered 99.9% of the country and reached 98.8% of the population. The number of TV sets per capita in Finland in 1976 was the ninth highest in the world: 300 sets per 1,000 persons. The United States had the highest frequency with 571 sets per 1,000 persons. In Finland, radio and TV broadcasting is carried out by the National Broadcasting Company (Oy Suomen Yleisradio Ab). The government owns 99.9% of the shares of this company and 0.1% are owned by 60 different organizations. The National Broadcasting Company rents broadcasting time to the Commercial Broadcasting Company (Mainos-

TV), which broadcasts about 20% of the programs, typically including films, series, and entertainment. The frequency of violence is deliberately limited. However, some highly violent shows are broadcast. The violence has for the most part been included in foreign series and in films. In 1976, 37% of all programs were imported and these included virtually all of the violent programs shown on Finnish television. Most of the imported films and series came from the United Kingdom, the United States, France, and Sweden. The imported programs show remote places and people that the Finnish children have perhaps never seen in real life. As a result, the children may have difficulty judging the reality of these shows. Furthermore, foreign language programs are never dubbed (they have subtitles), so the characters in them speak a language the children do not understand unless they are able to read the Finnish subtitles.

The viewers in Finland have fewer opportunities to view violence on TV than do viewers in the United States. Because there are only two channels, a person cannot choose to observe violence every time he or she wants to. The maximum exposure to violence on TV thus may not be as high for a child in Turku as it is for a child living in the Chicago area. For example, a systematic observation of the two channels in Turku during one week in May, 1981, revealed that only 47 cases of violent aggressive acts were depicted during the week's 77 hours of programming (an average of 0.61 acts per programming hour or 6.7 per day). This compares to a much greater frequency of violent acts on TV in the United States. Gerbner and Gross (1981) found that violent acts occur on TV in the United States at a rate of 5 acts per prime-time hour and 18 acts per weekend daytime hour. These statistics have not changed much in the last 10 years. Furthermore, because there are a greater variety of shows available in the United States, children can watch violence almost always if they wish.

The substantially lower level of violence on TV may account for the greater inconsistencies in the Finnish data. When there are only a few violent programs, a child's violence score becomes more susceptible to distortion by the other specific stimulus properties associated with the programs. Thus, we suspect that the

true relation between violence viewing and aggression is probably just as strong for boys in Finland as for boys in the United States. However, the differences for girls cannot be so easily explained. One possibility is that Finnish society might be placing less emphasis on training girls to be aggressive than is American society. Such aggressiveness might be unnecessary because women in Finland obtained a more equalitarian social status many years ago. For example, Finland was the second country in the world to give women the right to vote (in 1906). Women's and men's roles have long been less differentiated in Finland than in the United States. A large proportion of professionals in Finland are women, and the women's liberation movement has not been a strong force in Finland. At the same time, in Finland as in most Western countries, femininity is considered a desirable trait for women. As a result, Finnish girls may be more encouraged to inhibit whatever aggressive behaviors are stimulated by TV violence than are Finnish boys. This hypothesis is supported by the finding that Finnish girls perceived TV violence as less realistic than did Finnish boys, whereas they were no sex differences in the United States. This pattern of results for Finnish girls resembles that found in the United States before the women's liberation movement emerged as a major force (Eron & Huesmann, 1980; Lefkowitz et al., 1977).

Conclusion

Antisocial aggressive behavior in children is most often the result of a number of precipitating factors. These factors provide the learning conditions under which aggressive responding becomes habitual. Although no single factor can make a child aggressive, each contributes. In the current study we have examined the conditions under which exposure to media violence is most likely to lead to heightened aggressiveness.

Samples of 758 children in the United States and 220 children in Finland were interviewed and tested in each of 3 years in an overlapping longitudinal design covering Grades 1 to 5. For girls in the United States and boys in both countries, TV violence viewing was significantly related to concurrent aggression and significantly predicted future changes in

aggression. The strength of the relation depended as much on the regularity with which violence was viewed as on the quality of the violence. For boys, the effect was exacerbated by the degree to which the boy identified with TV characters. Path analyses suggested a bi-directional causal effect in which violence viewing engenders aggression and aggression engenders violence viewing. No evidence was found that only those children already aggressive or those with aggressive parents are affected by TV violence. However, a number of other variables were found to be correlates of aggression and violence viewing. In both countries, the child most likely to be aggressive would be one who (a) watches violent programs most of the time they are on, (b) believes these shows portray life just like it is, (c) identifies strongly with the aggressive characters in the shows, (d) frequently has aggressive fantasies, and (e) if a girl, prefers boys' activities. In addition, such a child is likely to (a) have a more aggressive mother, (b) have parents with lower education and social status, (c) be performing poorly in school, and (d) be unpopular with his or her peers.

The most plausible model to explain these findings seems to be a multiprocess model in which violence viewing and aggression mutually encourage each other and are enhanced by these related variables. Observational learning undoubtedly plays a role, but its role may be no more important than are the attitude changes produced by TV violence, the justification for aggressive behavior provided by TV violence, or the cues for aggressive problem solving furnished by TV violence.

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