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Psychological Processes Promoting the Relation Between Exposure to Media Violence and Aggressive Behavior by the Viewer

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A developmental theory is presented to account for the relation between increased exposure to media violence and increased aggressive behavior. It is argued that the effect of media violence on individual differences in aggression is primarily the result of a cumulative learning process during childhood. Aggressive scripts for behavior are acquired from observation of media violence and aggressive behavior itself stimulates the observation of media violence. In both childhood and adulthood, certain cues in the media may trigger the activation of aggressive scripts acquired in any manner and thus stimulate aggressive behavior. A number of intervening variables may either mitigate or exacerbate these reciprocal effects. If undampened, this cumulative learning process can build enduring schemas for aggressive behavior that persist into adulthood. Thus, early childhood television habits are correlated with adult criminality independently of other likely causal factors. It is concluded that interventions directed at mitigating the effects of media violence on delinquency and criminality should focus on the preadolescent years.

The question of whether media violence "causes" people to behave more violently has been a major topic of concern to psychologists, communication scientists, and policy makers for well over 15 years. And it was a topic of concern to at least a few scientists more than 50 years ago when movies first became widely distributed. By now, an enormous body of research has emerged,

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much of which is summarized in this issue. It is implausible to believe at this point that any single new study is going to change the balance much. Those who believe media violence has little or no effect on either children's or adults' violent behavior are unlikely to be convinced by one more study with positive results. Those who believe media violence plays a significant role in increasing at least some children's or adults' antisocial behavior are unlikely to be influenced greatly by one more study with negative results.

Almost all researchers would agree that more aggressive children generally watch more television and prefer more violent television. This appears to be true of children in societies with rigidly controlled media and little media violence as of children in free societies with substantial media violence. It also is as true today of girls in the United States as of boys. In fact, the relation disappears only when children are denied individual choice about what is viewed and subjected to strong group norms about how to react to what is viewed—e.g., among kibbutz children—(Huesmann & Eron, 1986). Most readers would also agree that the behavior of adults and children immediately after viewing a violent scene is more likely to be violent than at other times. The disagreements revolve around *why* these relations obtain, *whether* these relations are large enough to be of concern, and *whether* the so-called violent behaviors represent significant antisocial threats.

One reason why these controversies have persisted is that many researchers have taken too simplistic a view of the possible reasons for the relations. Instead of attempting to explain the relations as the outcomes of psychological processes, many have taken a shallower sociological or statistical perspective, and have simply asked whether it is more plausible that aggressive behavior is a linear function of television habits or that television habits are a linear function of aggressive behavior. In fact, both may be true. The most important question is not which comes first, the television habit or the aggressive habit; the main question is through what psychological processes do these two behaviors become related and stay related.

In this article, I present a model for explaining why increased exposure to media violence in childhood is related both to increased childhood aggressiveness and to increased aggressiveness in adulthood. The model emphasizes the role of the subject's cognitions in determining how the subject processes information observed in the media. It draws heavily on recent thinking in cognitive social psychology. However, it is not asserted that the model encompasses all the possible psychological processes through which exposure to media violence and aggressive behavior become related. Nor is it asserted that the "most important" determinants of aggressive behavior are all represented in the model. Rather, the model provides an explanation, consistent with observed data and established cognitive social theory, of how certain psychological processes contribute to a cyclical process in which exposure to media violence and aggressive behavior mutually engender each other.

Causes of Aggressive Behavior

Aggression as a characteristic way of solving social problems usually appears early in life. Like many other pathologies, it appears multiply determined. Neurological, hormonal, or other physiological abnormalities stemming from genetic, perinatal, traumatic, or other causes undoubtedly play a role in many cases. However, the presence of environmental, familial, and cognitive characteristics that promote the learning of aggressive responses is probably more important in most cases (Eron, Walder, & Lefkowitz, 1971). The conditions most conducive to the learning of aggression seem to be those in which the child has many opportunities to observe aggression, in which the child is reinforced for his or her own aggression, and in which the child is the object of aggression. Nevertheless, in such situations only some children become seriously aggressive. 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, but no single factor by itself seems capable of explaining more than a small portion of the individual variation in aggression. Indeed, it has been rare in studies of aggressive behavior to find any factor (other than previous aggression) that correlates much above .40 with aggression.

Childhood Aggression and Adult Criminality

Despite the considerable evidence that severe antisocial behavior is multiply determined and is greatly affected by environmental conditions, there is accumulating evidence that each individual develops a characteristic level of aggressiveness in childhood and that this aggressiveness remains relatively stable across time and situations into adulthood (Huesmann, Eron, Lefkowitz, & Walder, 1984). This does not mean that situational factors are unimportant. Certain circumstances make aggression more likely for anyone, and at different ages different forms of aggression become more likely. The stability is in one's relative position in the population. The more aggressive child very likely becomes the more aggressive adult. In his review of 16 separate studies with lags ranging from 6 months to 21 years, Olweus (1979) reported disattenuated stability coefficients ranging from .36 for Kagan and Moss's (1962) study of 36 five-year-olds who were followed for 18 years, to .95 for his own (1977) study of 85 13-year-olds followed for 1 year. More recently, in a study of 632 children followed from age 8 to age 30, Huesmann, Eron et al. (1984) estimated the stability of aggression to be about .46 over that period.

The Huesmann, Eron et al. (1984) study is particularly notable in that it linked childhood aggressive behavior in school to adult criminality. The subjects' aggressiveness at age 8 was evaluated on the basis of peer nominations. The more aggressive child was one who, according to his or her peers, pushes and shoves other children, starts fights over nothing, always gets into trouble,

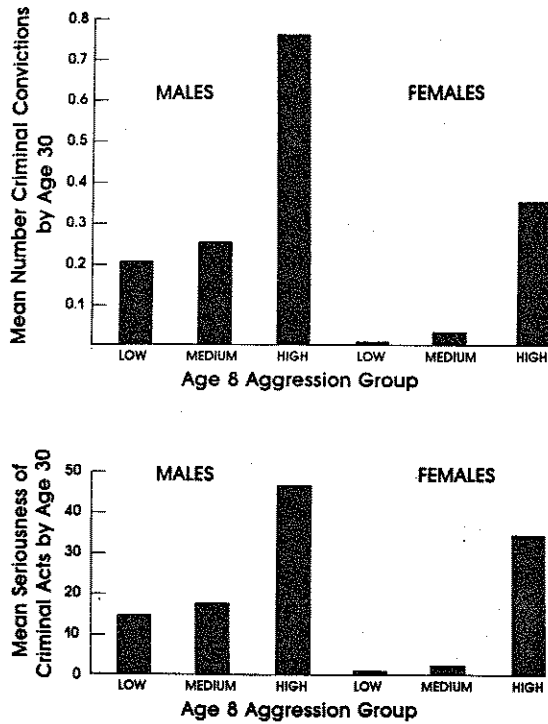


Fig. 1. The relation between age 8 peer-nominated aggression in school and criminal behavior at age 30. High and low subjects at age 8 were in the upper and lower quartiles.

etc. This study revealed that the children who were rated as more aggressive by their peers at age 8 were more likely to be convicted of crimes by age 30, and if convicted, had on the average committed more serious crimes. They were also more likely to abuse physically their spouses and children, and more likely to have been convicted of moving traffic violations including drunk driving. The relation between early aggression and later criminality is illustrated in Fig. 1.

These results are particularly important to the investigation of media violence and aggression because the viewing of media violence has most often been related to the type of childhood aggression measured in the Huesmann, Eron et al. (1984) 22-year study. Some have argued that such childhood aggression is of only a transitory nature and far removed from adult antisocial behavior. Therefore, they argue, one need not be very concerned about whatever effects media violence might have in stimulating childhood aggressiveness. The results of the Huesmann, Eron et al. 22-year study (1984) convincingly counter this argument. Aggressive habits seem to be learned early in life, and once established, are

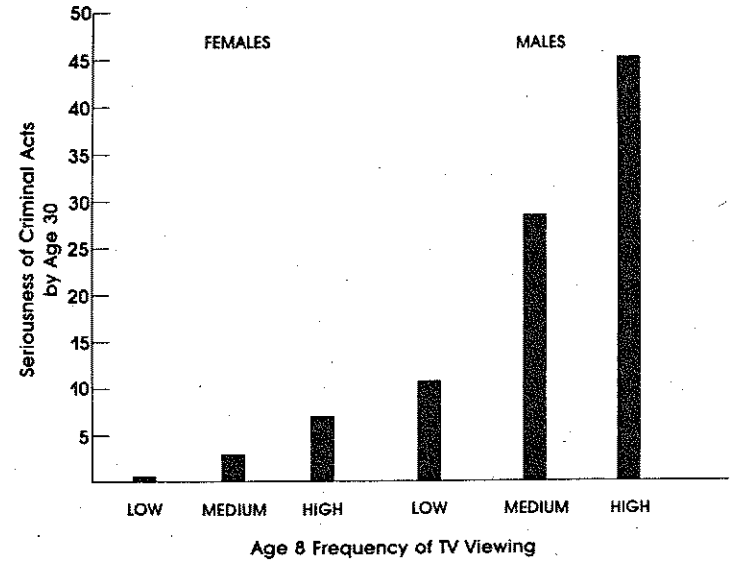


Fig. 2. The relation between age 8 frequency of television viewing and seriousness of criminal convictions at age 30. High and low subjects at age 8 were in the upper and lower quartiles.

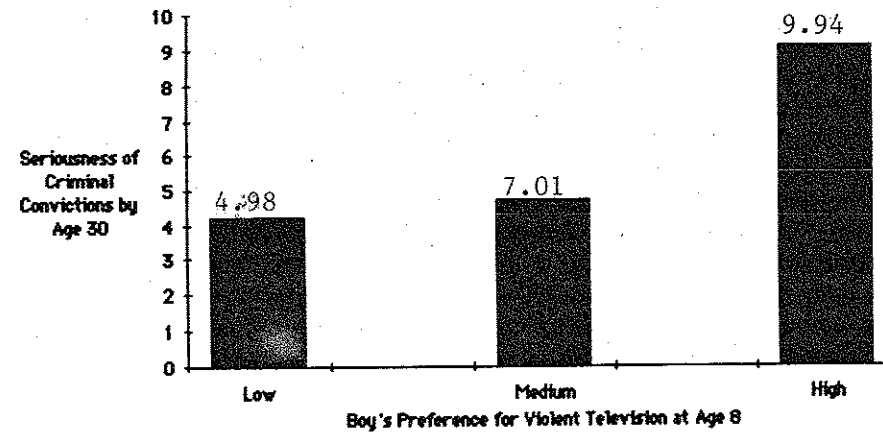


Fig. 3. The relation between a boy's preference for violent television shows at age 8 and the seriousness of his criminal convictions by age 30.

resistant to change and are predictive of serious adult antisocial behavior. If a child's observation of media violence promotes the learning of aggressive habits, it can have harmful lifelong consequences. Consistent with this theory, early television habits are in fact correlated with adult criminality, as Figs. 2 and 3 illustrate.

Learning Aggressive Behavior from Violence Viewing

How does a child's exposure to media violence promote aggressive behavior by the child? A number of different theories have been proposed over the past two decades, all of which hypothesize a learning process (Huesmann, 1982). The theories have differed in terms of exactly what is learned—specific behaviors, cue-behavior connections, attitudes, or arousal patterns. In all cases, though, exposure to media violence is seen as increasing the chances that a child will respond to frustration and victimization with aggression. The transformation of the child's initial aggressive behavior into habitual aggressive behavior, of course, may depend as much on the responses of the child's environment to the aggression, the continuance of the precipitating factors, and the convergence of other causal factors, as on the exposure to the media violence.

In the remainder of this article I attempt to describe in more detail the developmental process by which exposure to media violence, aggressive behavior, and other factors interact to produce an habitual style of aggressive responding in a child. I focus on the cognitive, social, and emotional changes rather than on the physiological changes that exposure to violence seems to engender, not because the physiological changes are less important, but because my own research has not touched on them. Let me begin by outlining the information-processing perspective on social behavior that underlies the proposed model.

The Control of Social Behavior

Social behavior is controlled to a great extent by "programs" for behavior that have been learned during a person's early development. These programs can be described as cognitive *scripts* that are stored in a person's memory, and are used as guides for behavior and social problem solving. These scripts must be encoded and stored in memory in much the same way as are programs and strategies for intellectual behavior. By *encoding* I mean the "formation of a representation of an external stimulus in the memory system" (Kintsch, 1977, p. 485). The scripts may be closely associated with specific cues in the encoding context or they may be abstractions unconnected to specific cues. To encode a particular script, a child must attend to it. Thus, scripts with particularly salient cues for the child are more likely to be encoded. To maintain the script in memory, the child would probably need to rehearse it from time to time. The

more elaborative, ruminative type of rehearsal characteristic of children's fantasizing is likely to generate greater connectedness for the script, thereby increasing its accessibility in memory. Also, through such elaborative rehearsal the child may abstract higher order scripts representing more general strategies for behavior than the ones initially stored. In order for a script to influence future behavior, it not only must be encoded and maintained in memory, but it also must be retrieved and utilized when the child faces a social problem. The same laws for recall would apply here as apply for verbal material. Thus, for example, a script is much more likely to be utilized if the same specific cues are present in the environment at retrieval time as were present at encoding time.

Within this framework, an habitually aggressive child is one who regularly retrieves and employs scripts for social behavior that emphasize aggressive responding. But why does this child retrieve mostly aggressive scripts? In some situations it may be that the cues present in the environment trigger the recall only of aggressive scripts. However, the regular retrieval and use of aggressive scripts would also suggest that more aggressive scripts were stored in memory.

The Learning of Aggressive Scripts

One possibility is that the child has tried various social strategies and only the aggressive ones have resulted in positive reinforcement. These strategies, therefore, have been rehearsed most and are the most readily accessible. Certainly, if a specific aggressive response is reinforced, the script that suggested that response is more likely to be retrieved and to be employed in the future. Furthermore, the effect of the reinforcement may generalize to scripts that are abstractions of the specific script promoting a generalized disinhibition of aggression. The boy who solves a social problem successfully by hitting will be more likely in the future not just to hit, but to kick, punch, or push. Nevertheless, it is difficult to believe the complex scripts for social behavior that children rapidly acquire are the results of random emission and selective reinforcement. The laboratory evidence—see Geen Thomas (1986) and Rule & Ferguson (1986)—suggests that, on the contrary, scripts for social behavior are often encoded from patterns of behaviors observed in others. Just as a boy may encode a motor program for throwing a football from observing others throw, a boy may encode a script for hitting those who victimize him from observing others hit those who victimize them.

According to this model, children are constantly observing others, encoding what seems salient, and integrating these observations into encoded scripts for behavior. Not every aggressive behavior they observe is encoded or stimulates the encoding of an aggressive script. Not every aggressive script is retained or remains accessible for long. The more initially salient an observed aggressive scene is to the child, and the more the child ruminates upon, fantasizes about,

and rehearses the observed scene, the more likely it is that an aggressive script based on that scene is recalled and followed in a social problem-solving situation. The more the aggressive scene is consistent with the scripts for behavior that the child has already acquired, the more easily it is integrated into memory. The more the aggressive scene is perceived as realistic and the more the child can identify with an aggressive actor in the scene, the more salient the scene seems to the child. The child constructs scripts for behavior that have subjective utility as potential strategies for social problem solving. Aggressive acts perceived as unreal and performed by actors with whom the child cannot identify do not fulfill this requirement.

The likelihood that a child will access a script for specific aggressive behaviors is certainly dependent on how many relevant cues are present in the environment at recall time. Theoretically, the most important cues are characteristics of the environment (even seemingly irrelevant ones) that are identical to those present when the script was encoded. However, other cues for general aggressive behavior (e.g., guns) may also trigger the recall of specific scripts for aggressive behavior even if they were not associated with the scene at encoding. Finally, a generalized disinhibition of aggression could occur when a child forms a general aggressive behavior script on the basis of his or her observation of numerous scenes of specific aggressive behaviors. If the aggressive script becomes associated with successful social problem solving, new aggressive behaviors may emerge that are unrelated to the original observed behaviors.

Cumulative and Immediate Effects of Violent Scenes

It is clear from the other articles in this issue that the majority of laboratory and field studies indicate that a child's viewing of media violence is both correlated with aggressive behavior and a precursor of increased aggressive behavior. The script model explains this correlation primarily as the outcome of a cumulative learning process in which the child's observation of violence eventually leads to the child employing more aggressive scripts for behavior. In accord with such a cumulative model, most longitudinal field data seem to indicate that the relation between earlier violence viewing and later aggression becomes larger as the lag between measurement periods increases (Eron, Huesmann, Lefkowitz, & Walder, 1972; Huesmann, Lagerspetz, & Eron, 1984; Milavsky, Kessler, Stipp, & Rubins, 1982).

Whereas media violence seems to exert its cumulative long-term effect on children by providing examples of aggressive scripts, it also seems to exert short-term effects on adults and children by cueing the retrieval of already-learned aggressive scripts. Though they both increase aggressiveness, the two effects are quite different psychologically. One represents an acquisition process, the other,

a retrieval process. The same intervening variable might play quite different roles in the two processes. For example, one would expect younger children to be more susceptible to acquiring new aggressive scripts while older children would have a greater repertoire of aggressive scripts that might be triggered by a nonspecific cue. In fact, the highest correlations between habitual violence viewing and habitual aggression do seem to be obtained for children under 11 years, but immediate aggression in response to media violence has been displayed even by adults.

Intervening Variables in the Link Between Violence Viewing and Aggression

Thus far I have avoided the question of which comes first, the violence viewing or the aggression. The reason is that, within the framework of the proposed information-processing model for the acquisition, maintenance, and retrieval of scripts, the distinction is unimportant. As described above, media violence both provides examples of new aggressive scripts to be acquired, and cues the use of existing specific or general aggressive scripts. Aggressive behavior is increased as a result. But, of course, the aggressive behavior has consequences. One of the major consequences of a child's behaving aggressively is that the child becomes more likely to see new scenes of violence both in the media and in his or her environment. Other consequences stem from the response of the child's environment to aggression and from the effects of aggression on a number of intervening variables linked to both television viewing and aggression. Five such variables seem to play particularly important roles in maintaining the television viewing-aggression relation. These variables are the child's intellectual achievement, the child's social popularity, the child's identification with television characters, the child's belief in the realism of the violence shown on television, and the child's fantasizing about aggression.

Intellectual achievement. Children who have poorer academic skills behave more aggressively, watch television more regularly, watch more television violence, and believe violent programs tell about life as it really is (Huesmann & Eron, 1986). This is true in most Western countries, particularly for boys but also for girls. If one controls statistically for intellectual achievement, the relation between television viewing and aggression usually is still significant but diminished. Poor intellectual achievement contributes to the association between violence viewing and aggression, but it does not fully account for it.

Why is low intellectual achievement related to aggression? At a young age (e.g., under eight), intellectual failures may frustrate a child and stimulate aggression. However, recent research (Huesmann, Eron, & Yarmel, 1986) has shown that from age 8 to adulthood, aggressiveness seems to interfere with

intellectual achievement much more than intellectual failures stimulate aggression. Perhaps aggressiveness interferes with the social interactions with teachers and peers that a child needs in order to develop his or her academic potential.

Why is slow intellectual achievement related to heightened television violence viewing? Heightened television viewing in general may interfere with intellectual achievement; Lefkowitz, Eron, Walder, and Huesmann (1977) reported such a longitudinal effect over 10 years. However, it may also be that children who cannot obtain gratification from success in school turn to heroic television shows to obtain vicariously the successes they miss in school. As the lower achieving children also perceive television violence as more like life "really is," they may be more likely to encode the violent scenes as scripts for future behavior.

Social popularity. A second intervening variable that seems important in maintaining the reciprocal relation between television viewing and aggression is popularity. In most societies, more aggressive children are substantially less popular with their peers (Huesmann & Eron, 1986). This is particularly true in societies emphasizing the importance of prosocial cooperative behavior, e.g., kibbutz societies (Huesmann & Bachrach, 1985). Longitudinal regression analyses, however, suggest that the relation between unpopularity and aggression is bidirectional, at least in the United States (Huesmann et al., 1984); not only do more aggressive children become less popular, but less popular children seem to become more aggressive. In addition, less popular children view more television and see more violence on television. In this case, the relation is mostly unidirectional. TV viewing per se is not predictive over time of lower popularity.

Identification with television characters. Children who identify more with television characters, (e.g., by perceiving themselves as like television characters) are more likely to be influenced by the aggressive scripts they observe (Huesmann et al., 1984). This is particularly true for boys, for whom the longitudinal effects of violence viewing are clearly enhanced when they identify with aggressive characters (Huesmann et al., 1984). At the same time, more aggressive children tend to identify more with more aggressive television characters, and those who identify more with television characters tend to watch more television. Thus, aggression, violence viewing, and identification with television characters are all intercorrelated and all influence each other.

Belief in the realism of television violence. Since the earliest investigations of television violence, the realism of the violence has been hypothesized to be an important intervening variable (Feshbach, 1972). For a script to be encoded and maintained through rehearsal, it must be salient to the child. A violent action that a child perceives to be totally unrealistic is unlikely to receive the attention

necessary to be encoded and maintained. In fact, children's belief in the realism of television violence is positively related to both their own aggression and the amount of television violence they watch. As with identification with television characters, the relation between violence viewing and aggression is exacerbated for children who believe the violence is representative of real life (Huesmann et al., 1984).

Fantasizing about aggression. Although some have suggested that aggressive fantasizing might decrease the chances of aggressive behavior in a child through a cathartic process, the script model would suggest otherwise. The retrieval and rehearsal of an aggressive script through fantasy would strengthen the encoding of the script and increase the likelihood that it would be retrieved. Particularly elaborate fantasies might even generate new scripts in memory. In fact, children's self-reports of aggressive fantasy are positively correlated with both their aggression and their television viewing (Huesmann & Eron, 1986). More aggressive children fantasize more about aggression, and children who watch more television fantasize more about both heroic and aggressive acts. The children who report the most heroic and aggressive fantasies are those who watch a lot of television, see a lot of violence, believe the violence is realistic, and identify with television characters.

Reciprocal Processes Promoting the Television Violence-Aggression Relation

Taken together, these relations suggest a reciprocal process through which aggression and violence viewing perpetuate themselves and each other. Children who are heavy viewers of television violence regularly observe characters behaving aggressively in order to solve interpersonal problems. To the extent that the children (particularly boys) identify with the aggressive characters, the children may encode in memory the aggressive solutions they observe. I have hypothesized that social behavior is controlled to a great extent by cognitive scripts, schemas, and strategies that the child observes, encodes into memory, and uses as a guide for behavior. The child constantly exposed to violence is more likely to develop and maintain cognitive scripts emphasizing aggressive solutions to social problems. These violent scenes may also stimulate aggressive fantasies in which the encoded aggressive scripts are rehearsed, making them more likely to be recalled and utilized in the future. If the aggressive behaviors are emitted in the appropriate situations, the aggressive behaviors may be reinforced with desirable outcomes, making their future occurrence more likely. However, as the aggression becomes habitual, it must eventually interfere with both social and academic success. The more aggressive child becomes the less popular child and the poorer academic achiever in school. These academic and social failures may become frustrators instigating more aggressive responses. In addition, however,

children who are less successful in school and less popular become the more regular television viewers. Perhaps they can obtain the satisfactions vicariously from television that they are denied in school and in their social life. They may also be better able to justify their own previous aggression after seeing more aggression in the media.

These less popular, less intellectually able children watch more television violence, identify more with television characters, and believe the violence they observe on television reflects real life. All these conditions promote the learning of new aggressive schemas from television and the reinforcement of old ones. Since these children's intellectual capacities are more limited, the easy aggressive solutions they observe may be incorporated more readily into their behavioral repertoires. Heavy television viewing isolates them from their peers and gives them less time to work toward academic success. 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, violence viewing, and fantasizing about aggression mutually facilitating each other. This reciprocal process is diagrammed in Fig. 4.

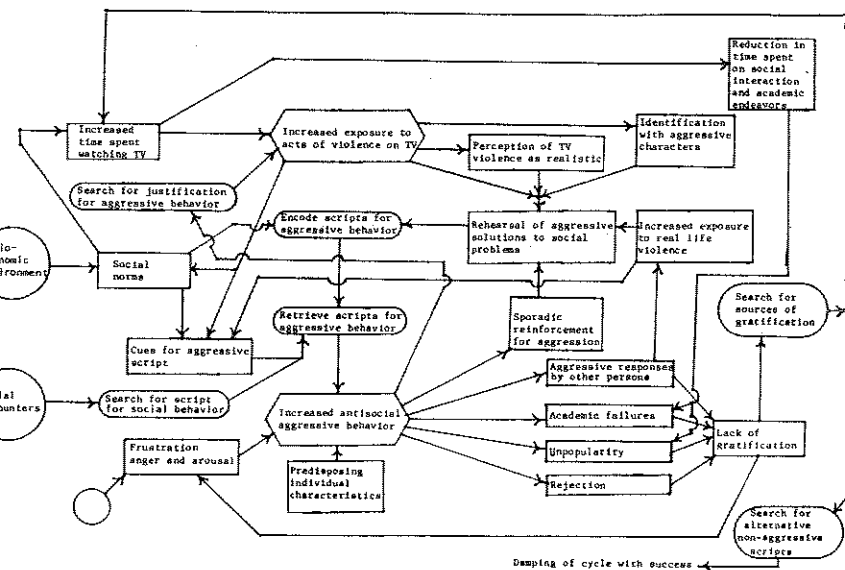


Fig. 4. The reciprocal effects model describing the role of intervening variables in the relation between exposure to media violence and aggressive behavior.

The Role of Parental Factors

From the above model one might mistakenly conclude that parents do not play an important role in the media violence-aggression relation or in the development of aggression. Nothing could be further from the truth. Parental television habits are correlated with their children's television habits, and parents' aggression and child rearing behaviors are correlated with their children's aggressiveness (Eron et al., 1971; Huesmann & Eron, 1986). Parents provide critical input into both sides of the equation that relate violence viewing to aggression. The proposed model describes how the reciprocal process, once started, can become self-perpetuating, with more and more scripts for aggressive behavior being learned and employed. The parents can, of course, also play an

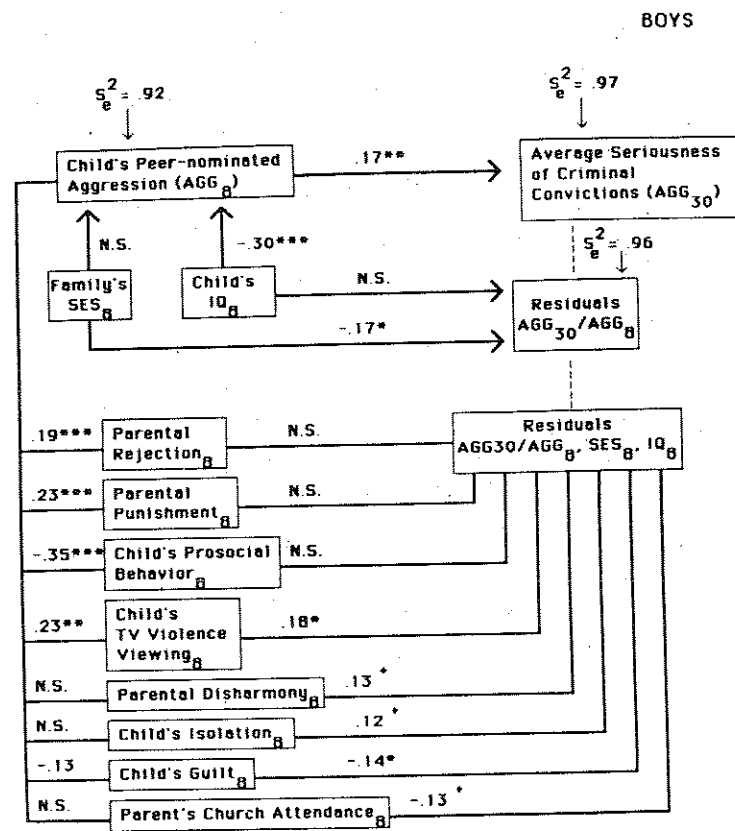


Fig. 5. A hierarchical regression analysis showing the relation of early television violence viewing to adult criminality when early aggression, IQ, and SES are controlled.

important role in dampening the cycle once it starts. Parents can intervene to moderate their children's television viewing, to convince their children that the violent solutions to social problems portrayed on television are not realistic, and that the violent television heroes are not ones that their children should emulate. This would reduce the likelihood that the children would encode the aggressive scripts they see. Parents can also intervene to help their children learn prosocial scripts that will compete with aggressive scripts as guides for behavior.

In conclusion, it must be noted that, while parents' behaviors, the child's sociocultural environment, and many other factors contribute to both the child's aggressive behavior and the child's television habits, none of these variables can "explain away" the relation between violence viewing and aggression as an artifact or as unimportant to the development of long-lasting aggressive habits. In Fig. 5, a new hierarchical structural analysis of Huesmann, Eron et al.'s (1984) 22-year data is shown. The criterion measure is the average seriousness of a subject's criminal convictions by age 30. Most subjects had no convictions and scored zero, of course. In this analysis early aggression was first partialled out of later criminal behavior, to which it related very significantly. Then the effects of the child's IQ and the family's socioeconomic status were partialled out. IQ related to criminal behavior only through early aggression; but SES related to criminal behavior directly.

Finally, a number of child and parent variables measured at age eight were correlated with the remaining variance in the criterion variable. As one can see, early violence viewing was one of the most significant correlates. Apparently, the aggressive scripts learned at an early age perpetuate themselves, as described in the reciprocal-effects model, and persist into adulthood regardless of IQ or social class. Thus, the critical years for any intervention aimed at reducing the cumulative long-term effects of violence viewing must be the preadolescent years.

Summary

A developmental theory is presented to account for the linkage between increased exposure to media violence and increased aggressive behavior. It is argued that the effect of media violence on individual differences in aggression is primarily the result of a cumulative learning process during childhood. Aggressive scripts for behavior are acquired from observation of media violence and aggressive behavior itself stimulates the observation of media violence. In both childhood and adulthood, certain cues in the media may trigger the activation of aggressive scripts acquired in any manner and thus stimulate aggressive behavior. A number of intervening variables may mitigate or exacerbate these reciprocal effects. However, if undampened, this cumulative learning process can build enduring schemas for aggressive behavior that persist into adulthood.

Thus, early childhood television habits are correlated with adult criminality independently of other likely causal factors. Therefore interventions directed at mitigating the effects of media violence on delinquency and criminality should focus on the preadolescent years.

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