Media Violence and Children

A COMPLETE GUIDE FOR PARENTS AND PROFESSIONALS

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CHAPTER 5

Theory in the Study of Media Violence:

The General Aggression Model

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A large portion of this book reviews empirical research on the effects of media violence. Researchers have used many tools in this effort to understand the media violence phenomenon. Creative lab designs and advancement of technology have allowed laboratory researchers to manipulate exposure to media violence and view the short-term results of brief exposure. Cross-sectional and longitudinal studies have allowed the research world to document the "real life" consequences of repeated exposure to large amounts of filmed violence. Although these empirical research tools have resulted in great advances in understanding by media violence researchers, it is important to remember that the theories guiding and being revised by such research are as important to the scientific enterprise as the data they generate.

Theory is typically defined as an organized set of hypotheses that allow a scientist to understand, explain, and predict a wide variety of phenomena (Shaw & Costanzo, 1982). Theory serves the scientist in a number of ways. First, theory organizes a researcher's thoughts, hypotheses, and existing knowledge. Such organization has many benefits, such as making the researcher more efficient in developing a strategic plan of analysis.

Not only does a good theory help organize concepts, but it also indirectly organizes researchers and their products. Think of knowledge as a tower of building blocks, with each block constituting a small piece of empirical knowledge. The more blocks there are, the more is known about a subject. Without theory to guide them, researchers are forced to individually build their own knowledge about a subject, starting from the ground up. However, with one theory guiding several researchers, they are empowered to build on each other's blocks, with theory establishing the foundation and basic structure for

scientific advancement. With scientists able to add blocks to one single tower and indirectly work as a team, the amount of knowledge grows at a greater rate and with greater efficiency than if the scientists were working at individual levels.

In every field of science, including psychology, the purpose of research is to gain an understanding of a particular phenomenon, with the end result being the ability to predict future outcomes involving the phenomenon and to influence those outcomes, depending on how much control exists over particular variables (Shaw & Costanzo, 1982). Theory is useful in this respect because it attaches meaning to the data collected, enabling researchers to look beyond the numbers and understand the phenomenon at a deeper level. This understanding and advancement of knowledge make both prediction and control more accurate and useful.

As Kurt Lewin noted over 50 years ago, "There is nothing so practical as a good theory" (Lewin, 1951, p. 169). Of course, although a "good" theory is eminently practical, a "bad" theory can lead to major mistakes, ranging from poor individual decisions to public policy blunders that affect large populations (e.g., Anderson & Arnoult, 1985; Anderson & Sechler, 1986; Gilovich, 1991; Janis & Mann, 1977). This chapter is not the place for detailed discussion of good theory-building practices, but a key element of a good theory is its ability to account for (and then predict) empirical data obtained from rigorous scientific research.

The purpose of this chapter is to examine past and current theories in the aggression domain. Particular attention will be paid to the theories that have been used to explain media violence effects, identifying both their strengths and their weaknesses. Finally, the General Aggression Model will be introduced as a comprehensive theory that employs central elements from several of the earlier aggression theories. The chapter concludes with a brief section on applying current theory to public policy discussions.

EARLY AGGRESSION THEORIES

Human aggression was a much-discussed topic throughout the twentieth century, in part because of the two world wars. Several broad theories of aggression emerged in the early part of the century, and persisted (especially in the popular mind) despite a lack of scientific support for and considerable scientific evidence against their applicability to human aggression.

Instinct Theories

In his early writings, Freud (e.g., 1909) proposed that all human behavior stems from the life-giving or self-preservation instinct, called eros. "Libido" was defined as the energy of this life-giving instinct. Freud initially did not posit the presence of an independent instinct to explain the darker side of

human nature. He wrote: "I cannot bring myself to assume the existence of a special aggressive instinct alongside the familiar instincts of self-preservation and of sex, on an equal footing with them" (Freud, 1909, p. 140). World War I, however, changed his views. By 1920, Freud had proposed the existence of a truly independent death or self-destruction instinct (the "death wish"), called thanatos. Freud viewed aggression as the redirection or displacement of the self-destructive death instinct away from the individual toward others. In a similar vein, Nobel prizewinner Konrad Lorenz (1966) suggested that animals (including people) possess an aggressive or fighting instinct. His evidence came primarily from observation of animal behavior and from evolutionary arguments.

Although the catharsis idea can be traced to the early Greeks, the modern notion comes from both Freud and Lorenz, particularly their hydraulic metaphors for the necessity of releasing aggressive energy by aggressing against others. Indeed, the catharsis notion is the only part of these broad models that is relevant to the modern issue of media violence. The main catharsis ideas are that: (a) instinctive self-destructive (Freud) or aggressive (Lorenz) energy is continually added to a closed emotional or energy system; (b) observing, enacting, or releasing aggressive behavior or aggressive emotions against others releases some of this energy, thereby reducing pressure on the system; and that (c) without such releases, the pressure will build until the system explodes, either in self-destructive behavior (e.g., suicide) or extreme violence against others (e.g., homicide, war). There is no scientific evidence of an instinctual death wish or aggressive energy, of a closed (hydraulic) emotional or motivational pressure system, or of behavioral catharsis (see Bushman, 2002; Geen & Quanty, 1977). Indeed, one major problem with Freud's and Lorenz's catharsis theory is that its basic tenets are largely empirically untestable, due to the inability to measure or detect variables such as thanatos or aggressive energy. Furthermore, the most important testable aspect of catharsis theory, the idea that observing or enacting aggressive behavior will reduce later aggression, has been repeatedly disconfirmed (Bushman, 2002; Geen & Quanty, 1977). Nonetheless, this idea persists and has been perhaps one of the most damaging "bad" theoretical ideas in all of psychology. It is still invoked by the purveyors of violent entertainment media to children, and is frequently cited by parents, school officials, and public policymakers as justification for exposing youth to violent media, promoting violent sports, and downplaying the significance of aggressive playground behavior (i.e., bullying).

Frustration

A much more empirically testable approach emerged in the form of the frustration-aggression hypothesis (Dollard, Doob, Miller, Mowrer, & Sears, 1939): (a) "the occurrence of aggressive behavior always presupposes the ex-

istence of frustration" (p. 1), and (b) "the existence of frustration always leads to some form of aggression" (p. 1). Miller (1941) revised the second statement to "Frustration produces instigations to a number of different types of response, one of which is an instigation to some form of aggression" (p. 338). The scientific framing of this theory enabled better empirical testing and subsequent revision than the instinct theories of Freud and Lorenz. It has also fared considerably better over time (Berkowitz, 1989). For instance, Dill and Anderson (1995) demonstrated that even a fully justified frustration can produce an increase in aggressive behavior, as predicted by Berkowitz's reformulated frustration-aggression model (1989). Despite its importance to the understanding of human aggression in general, the frustration-aggression model has little relevance to media violence effects, other than the methodological implication that media violence experiments need to account for potential frustration-inducing properties of their violent and nonviolent stimuli.

Learning

The extensive literature on learning essentially began in 1898 with E. L. Thorndike's *Animal Intelligence* and continues in various forms to the present day. Here, we confine ourselves to a discussion of the learning theories that emerged from Thorndike's time through B. F. Skinner's. At the risk of oversimplifying, two types of learning were seen as the building blocks of all animal behavior, including human aggression. These two types are respondent (or classical) conditioning and operant (or instrumental) conditioning. (See Hilgard & Bower, 1975, for an excellent overview of this work.) Classical conditioning consists of pairing an unconditioned stimulus with a conditioned stimulus until the unconditioned response (which is automatically elicited by the unconditioned stimulus) is elicited by the conditioned stimulus. Operant conditioning is stimulating (or inhibiting) a behavior based on the reward or punishment received after the behavior. The contributions made by these early theories to the understanding of human behavior are both impressive and important, but they fall far short of constituting comprehensive explanations of human aggression or other forms of human behavior. The most obvious problem is that they do not adequately account for the huge effects that the development of language has on human behavior. Despite this obvious limitation of traditional learning theories, they do contribute to our understanding of the processes underlying some media violence effects.

RECENT THEORETICAL DEVELOPMENTS

In the following sections, each of the modern theories that have been utilized to explain the effects of media violence will be discussed. It is important to note that none of these theories have been developed to specifically examine media violence effects; however, each has contributed to our understanding

on the effects of watching simulated violence in television, movies, and video games.

Social Learning Theory and Social Cognitive Theory

Social learning and social cognitive theories (e.g., Bandura, 1973, 1983; Mischel 1973; Mischel & Shoda, 1995) contend that children learn behavioral responses by observing others or through direct experience. Furthermore, these approaches emphasize how a person "construes" events is also learned and is crucial in determining how that person responds to those events. Children witness social interactions from numerous sources: parents, peers on the playground, older siblings, and fictional characters on television and in movies. Along with these behaviors, children also witness the repercussions of these behaviors. Children are more likely to imitate a witnessed behavior if they also witness a reward for the action, and they are less likely to imitate a witnessed behavior if they witness the action being punished (e.g., Bandura, 1965; Bandura, Ross, & Ross, 1963). Over time children learn how to perceive and construe events in their social environment and start to assemble a detailed set of rules of behavior. These rules of behavior are then reinforced or inhibited based on the results they encounter in their own social interactions.

The primary strength of both social learning theory and social cognitive theory is that they can account for the acquisition of novel or unusual aggressive behaviors even in the absence of immediate rewards. For example, seeing someone else rewarded or punished is sufficient to "learn" the likely consequences of a particular behavior (even if the portrayed consequences are inaccurate, as is frequently the case with media violence). Another strength is that the theory provides an excellent set of constructs to understand thoughtful behavioral choices. In this sense, it works especially well for instrumental types of aggression (usually defined as thoughtful, planned, or goal-oriented aggression).

Cognitive-Neoassociation Theory

Berkowitz (1989, 1993) proposed that a variety of aversive events (i.e., frustrations, provocations, loud noises, uncomfortable temperatures, unpleasant odors) could lead to negative affect, and subsequently to aggression. Negative affect becomes linked (through learning and conditioning during other life experiences) to a variety of thoughts, memories, expressive motor reactions, and physiological responses. When negative affect becomes linked to these other responses, it automatically activates them when negative affect is present. These responses give rise to two immediate and simultaneous tendencies, fight or flight. The fight associations give rise to rudimentary feelings of anger, whereas the flight associations give rise to rudimentary feelings of fear. If the

fight tendency is the stronger of the two, the individual will most likely aggress. If the flight tendency is stronger, aggression will be inhibited.

Cognitive-neoassociation theory contends that cues present during the initial aversive events become linked with the thoughts, memories, and motor reactions through processes like classical conditioning. If these cues are present later in different situations, they may trigger those same thoughts and emotions present during the initial aversive event. For example, Geen and Berkowitz (1966; also Berkowitz & Geen, 1967) showed that the effect of watching a boxing match on subsequent aggression in a different context was larger when the aggression target in that later context had the same name as the losing boxer. In other words, the boxer's name served as an aggression cue in the later context.

In addition, cognitive-neoassociation theory takes into account higher-order cognitive processes, such as appraisal and attribution processes. If motivation is present, people may use these higher-order cognitive processes to further analyze their situations. For example, they might think about how they feel, make causal attributions for those feelings, and consider the consequences of acting on their feelings. This more deliberate thought produces more clearly differentiated feelings of anger, fear, or both. It can also suppress or enhance the action tendencies associated with these feelings.

Script Theory

Borrowing from the cognitive and artificial intelligence literature (e.g., Schank & Abelson, 1977), Huesmann (1986, 1998) proposed that people's behavior is guided by the acquisition, internalization, and application of scripts. Scripts are sets of particularly well rehearsed, highly associated concepts, often involving causal linkages, goals, and action plans (Abelson, 1981; Anderson, Benjamin, & Bartholow, 1998; Schank & Abelson, 1977). Scripts define situations and guide behavior in the following way: the person first selects a script that most closely resembles the current situation and then assumes a role in the script. Once a script has been learned, it may be retrieved at a later time as a guide for perception, interpretation, and behavior.

One factor involved in the retrieval and implementation of a script is the similarity of the current situation to the situation in which encoding originally occurred. As a child develops, he or she may observe cases in which violence has been used as means of resolving interpersonal conflicts. If the child is then presented with his or her own conflicts, an aggressive script may be selected as a guide of an appropriate behavioral response. Retrieval of a particular script depends on the similarity between the cues encoded in the original script and the cues present in the current situation.

Script theory also utilizes some ideas from established cognitive-associative models that describe memory as a network consisting of nodes and links (Anderson et al., 1998; Berkowitz, 1993; Collins & Loftus, 1975). In these net-

work models, it is assumed that each concept in memory has an activation threshold. A concept can receive activation energy from the various sources to which it is linked. When the total activation exceeds the threshold, the concept is activated and used. Concepts with similar meanings (e.g., hurt and harm), and those that frequently are activated simultaneously (e.g., shoot and gun), develop strong associations. When a concept is activated, its activation energy spreads to related concepts, as a function of how strongly they are associated. When items are so strongly linked that they form a script, they may be thought of as a unitary concept in semantic memory as well. Semantic memory is defined as "general knowledge of facts and concepts that is not linked to any particular time and place" (Schacter, 2000, p. 170). A frequently rehearsed script gains accessibility strength in two ways: increasing the number of paths by which it can be activated and increasing the strength of the links themselves. Thus, a child who has witnessed several thousand TV instances of using a gun to settle a dispute is likely to have a very accessible conflict–gun–resolve conflict script, one that has generalized across many situations. In other words, the script becomes chronically accessible.

Research has confirmed several aspects of script theory. Of course, the early social learning theory studies of learning aggressive behavior from observation of violent television and movie clips can readily be reinterpreted in script theory terms (e.g., Huesmann & Miller, 1994). Individual differences can also be interpreted as scriptlike phenomena. For example, one study (Dill, Anderson, Anderson, & Deuser, 1997) found that aggressive individuals were more likely to complete ambiguous story stems with aggressive content than nonaggressive individuals. Similarly, Bushman and Anderson (2002) found that playing a violent video game increases the amount of aggressive content in this same story-completion task. Completing a story stem is essentially a script-completion task, and violent media are essentially violent scripts.

Excitation Transfer Theory

Excitation transfer theory (Zillmann, 1983) rests on the fact that physiological arousal dissipates slowly. If two arousing events are separated by a short period of time, some of the arousal caused by the first event may transfer to the second event and add to the arousal caused by the second event. When this occurs, arousal from the first event may be misattributed to the second event. If the second event is related to anger, then the additional arousal should make the person even angrier. The notion of excitation transfer also suggests that anger may be extended over long periods of time, if the person has attributed their heightened arousal to anger. Thus, even after the arousal has dissipated the observer may remain ready to aggress for as long as the self-generated label of anger persists. The relevance to understanding media violence effects derives from the fact that violent entertainment media are generally arousing. Zillmann's work goes further, however, in predicting that

nonviolent media may also increase aggression via excitation transfer principles if they increase arousal. Studies have confirmed this prediction (Bryant & Zillmann, 1979; Zillmann, 1971). For example, Zillmann (1971) found that arousal from viewing an erotic film can increase provoked aggression.

Cultivation Theory

All of the modern theories discussed so far have been theories of general behavior that have been applied to media violence. Cultivation theory is somewhat different because it has been more specifically developed to examine effects of exposure to media violence. A central assumption of cultivation theory is that the number of different messages produced by the media is a fairly small, consistent set. For example, prime time dramas display over ten times as much crime as actually occurs in the real world (Gerbner, Gross, Morgan, & Signorielli, 1982). Police officers, lawyers, and judges are overrepresented as occupations on television while engineers or scientists are rarely shown (Gerbner et al., 1982).

When these messages are presented consistently over long periods of time, viewers can come to believe the messages they see in the media reflect the real world. Research has shown that exposure to heavy amounts of television can lead people to overestimate amounts of crime and victimization and conclude the world is a violent place (e.g., Bryant, Carveth, & Brown, 1981; Gerbner, Gross, Jackson-Beeck, Jeffries-Fox, & Signorielli, 1978).

These distortions of reality can have a variety of effects on the viewer. Potentially, overestimations of the amount of violence in the real world could lead to feelings of fear, anxiety, and suspicion. Combined with inaccurate estimations of violence in society, these feelings of fear and anxiety can have numerous effects on an individual's other beliefs and behaviors. It is reasonable to speculate that people who are overestimating the amount of crime in the world are more likely behave in a more defensive manner, such as purchasing extra locks or firearms for protection, restricting travel to certain areas they believe are high crime areas, or being more suspicious of strangers. Gerbner, Gross, Morgan, and Signorielli (1980) surveyed television viewers in suburban neighborhoods concerning their media usage and perceptions of danger in their neighborhood. Results showed that among both low and high-income groups, people who consistently view larger amounts of television consider their own neighborhoods to be more dangerous than people who view smaller amounts of media. Another study by Gerbner and his associates has shown that heavy television viewers have stronger beliefs than light viewers that more money needs to be spent on fighting crime (Gerbner et al., 1982).

Desensitization Theory

Techniques of systematic desensitization have been used in the treatment of anxiety disorders for decades. Wolpe (1958) describes systematic desensitization in two parts: first, relaxing the patient through both physiological and emotional relaxing procedures, and then introducing a weak anxiety-producing stimulus. After several series of exposures, the stimulus loses its anxiety-invoking abilities. After desensitization of the initial stimulus has occurred, relatively stronger anxiety-producing stimuli are introduced and also treated through the same manner (Wolpe, 1958). There have been refinements and variations in therapeutic techniques. For example, Bandura has emphasized the utility of modeling and guided participation techniques (e.g., Bandura, 1971, 1973). These techniques have been proven to be effective in reducing (and in many cases eliminating) avoidance behavior of individuals with phobic fears of snakes, spiders, dogs, and flying, among others. Without doubt, these techniques are extremely effective.

Similar desensitization processes appear operative in the media violence context. In this context, desensitization is defined as the process of becoming less physiologically and emotionally aroused to media violence due to extended exposure (Anderson & Huesmann, in press). This phenomenon has been demonstrated by measuring both the decrease in physiological responsiveness to violence (Carnagey, Bushman, & Anderson, under review; Cline, Croft, & Courrier, 1973; Lazarus, Speisman, Mordkoff, & Davison, 1962; Linz, Donnerstein, & Penrod, 1988; Thomas, 1982; Thomas, Horton, Lippincott, & Drabman, 1977) and emotional responsiveness (Smith & Donnerstein, 1998). Although a reduction in anxiety is a positive outcome in many contexts, such as when a fear of spiders is so extreme as to prevent an individual from taking walks or going on picnics, the reduction that occurs in the media violence context is viewed with concern for at least two reasons. First, in choosing among various behavioral alternatives in a conflict situation, anxiety associated with violent alternatives usually serves to inhibit such behaviors. Therefore, a reduction in that anxiety may well increase aggressive behavior (e.g., Anderson & Huesmann, in press). Second, such reductions in anxiety reactions to violence create an emotional blunting that may lead to an underestimation of the seriousness of observed violence, and may therefore reduce the likelihood of coming to the aid of a victim of violence (e.g., Bushman et al., under review). Other research has shown that after viewing several sexually violent movies, participants rated the last movies in the set as less violent (e.g., Cline et al., 1973; Linz et al., 1988) and showed less sympathy for and attributed more responsibility to a rape victim compared to those who viewed nonviolent movies (Dexter, Penrod, Linz, & Saunders, 1997; Linz et al., 1988).

THE GENERAL AGGRESSION MODEL: AN INTEGRATION

All of the recent theories discussed in the previous section have made important contributions. For example, one strength of social learning theory is

that it can account for the acquisition of novel or unusual aggressive behaviors even in the absence of immediate reward. However, each theory focuses on a relatively narrow aspect of aggression. For example, Berkowitz's (e.g., 1993) cognitive-neoassociation theory does an excellent job of integrating much of the large body of affective-aggression literature, but has somewhat less to say about instrumental aggression. What is needed is a theory that incorporates the strengths of the theories discussed earlier, thereby accounting for a broader range of aggression. Such a theory must also avoid the pitfalls of the early, broad aggression "theories," which were largely not subject to empirical testing.

A theory developed in recent years, the General Aggression Model (GAM) (see Anderson & Bushman, 2002; Anderson & Huesmann, in press), is an integration that combines key ideas from earlier models: social learning theory and related social-cognitive theory concepts (e.g., Bandura, 1971, 1973; Bandura, Ross, & Ross, 1961, 1963; Mischel 1973; Mischel & Shoda, 1995); Berkowitz's Cognitive-Neoassociationist Model (1984, 1990, 1993); Dodge's social information-processing model (e.g., Crick & Dodge, 1994; Dodge & Crick, 1990); Geen's affective aggression model (1990); Huesmann's script theory (Huesmann, 1986); and Zillmann's excitation transfer model (1983). GAM describes a cyclical pattern of interaction between the person and the environment. Three main points compose the cycle: *input variables* of person and situation, *present internal state* of the individual, and *outcomes* resulting from various appraisal and decision processes.

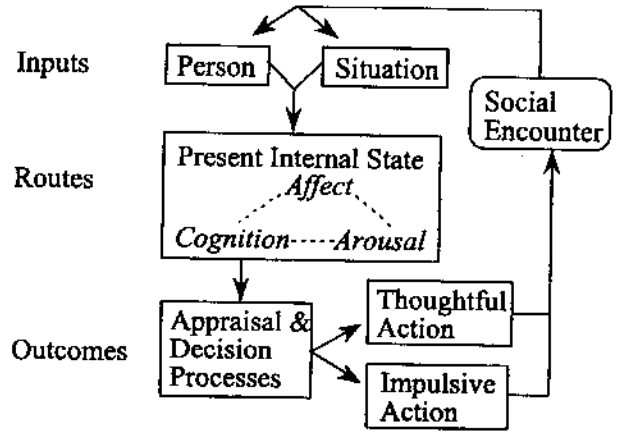
Input Variables

GAM suggests that a person's behavior is based on two main kinds of input variables: the person and the situation (see Figure 5.1). The person variables are composed of all the things a person has with them when they enter a particular situation, including traits, current states, beliefs, attitudes, values, sex, scripts, and aggressive personality. The situation variables are simply composed of the environment surrounding the individual, including factors in the environment that could affect the person's actions, like aggressive cues, provocation, pain, rewards, and frustration.

Routes

Input variables, sometimes interactively, affect an individual's appraisal of a situation and ultimately affect the behavior performed in response to that appraisal, primarily by influencing the present internal state of the individual. According to GAM, there are three main routes of impact in which present internal states may be altered: cognition, affect, and arousal.

Figure 5.1
The General Aggression Model: Episodic Processes



Cognition

Input variables can influence internal states by making aggressive constructs more readily accessible in memory. Constructs can be either temporarily or chronically accessible (e.g., Bargh, Lombardi, & Higgins, 1988; Sedikides & Skowronski, 1990). As a construct is repeatedly accessed, its activation threshold decreases. This means that the construct requires less energy necessary for activation, making it chronically accessible. A situational input (e.g., a violent film) results in a temporary lowered threshold of activation, making the construct accessible for a short time. This temporary increase in the accessibility of a construct is often called "associative priming."

As script theory has contended, situational variables may also activate aggressive scripts (Huesmann, 1986). As noted earlier, activating aggressive scripts can bias the interpretation of a situation and the possible responses to that situation. Similar to aggressive constructs, repeated access of aggressive scripts makes them more readily accessible and more likely to be activated in future situations.

Affect

Input variables can also influence affect, which in turn can have an impact on later behavior. For example, pain increases state hostility (anger) (K. Anderson, Anderson, Dill, & Deuser, 1998). Uncomfortable temperatures produce a small increase in general negative affect and a larger increase in the more specific affect of state hostility (C. Anderson, Anderson, & Deuser, 1996). Exposure to violent movie clips also increases state hostility (Anderson, 1997; Bushman, 1995; Bushman & Geen, 1990; Hansen & Hansen, 1990).

Many personality variables are also related to hostility-related affect. For example, trait hostility as measured by self-report scales is positively related to state hostility (Anderson, 1997; K. Anderson et al., 1998).

Arousal

There are three main ways in which increases in arousal can affect aggressive behavior. First, an increase in arousal can strengthen the already present action tendency, which could be an aggressive tendency. If the person has been provoked or otherwise instigated to aggress at the time this increased activation occurs, aggression will be a likely outcome. Geen and O'Neal (1969) provided an early example of this phenomenon by showing that loud noise increased arousal and aggression. A second possibility was already mentioned when discussing excitation transfer theory. Arousal elicited by other sources (e.g., exercise) may be mislabeled as anger in situations involving provocation, thus producing anger-motivated aggressive behavior. A third, and as yet untested, possibility is that unusually high and low levels of arousal may be aversive and may therefore stimulate aggression in the same way as other aversive or painful stimuli.

Interaction between routes

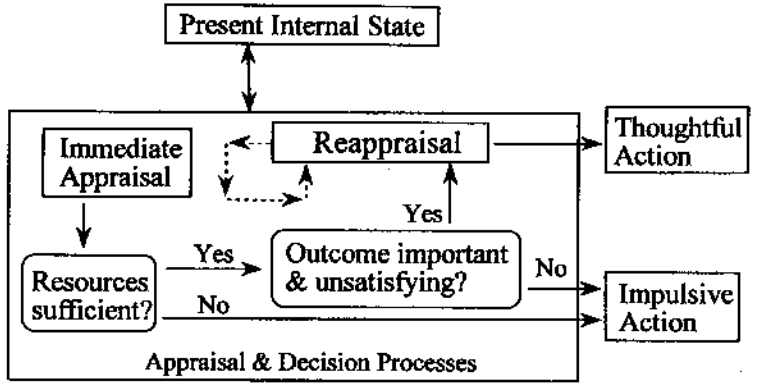
As mentioned earlier, input variables can influence cognition, affect, and arousal, but these three routes may also influence one another. The idea that cognition and arousal influence affect dates back all the way to William James (1890) and was first popularized among social psychologists by Schachter & Singer (1962). Affect also influences cognition and arousal (Bower, 1981). Research has shown that people often use their affective state to guide inference and judgment processes (Forgas, 1992; Schwarz & Clore, 1996). At a theoretical level, one can view affect as a part of semantic memory that can be primed via spreading activation processes. Thus, hostile cognitions might make hostile feelings more accessible, and vice versa.

Outcomes

Figure 5.2 presents a more detailed look at the appraisal aspects of GAM. Typically, before a behavior is emitted the individual will appraise the current situation and then select a behavior appropriate for the situation. Depending on the situational variables present, appraisals may be made hastily and automatically, without much (or any) thought or awareness, resulting in an impulsive behavior. However, frequently the individual will have the time and resources to reappraise the situation and perform a more thoughtful action. Of course, impulsive behavior may be aggressive or nonaggressive, just as thoughtful action may be either aggressive or nonaggressive.

Immediate appraisals are automatic, which means they are spontaneous, relatively effortless, and occur without awareness of the underlying process.

Figure 5.2
The General Aggression Model: Expanded Appraisal and Decision Processes



As Krull and colleagues have demonstrated, the spontaneous inference process is a flexible one; its outcomes depend largely on the perceptual set of the perceiver (Krull, 1993; Krull & Dill, 1996). Under some circumstances a behavior of another person is likely to be identified and attributed to that person simultaneously (e.g., Uleman, 1987). For example, if the target person has been thinking aggressive thoughts and is bumped by another person (actor), the target is likely to perceive the "bump" as an aggressive act by the actor. If the target person has been thinking about how crowded a room is, the same bump is likely to be perceived as an accidental consequence of the crowded situation.

However, what occurs after immediate appraisal depends on the resources available to the individual. If the person has sufficient time and cognitive capacity, and if the immediate appraisal outcome is both important and unsatisfying, then the person will engage a more effortful set of reappraisals. If resources are insufficient, or if the outcome of immediate appraisal is unimportant or satisfying, then action will be dictated by the immediate appraisal and the knowledge structure accessed in that appraisal.

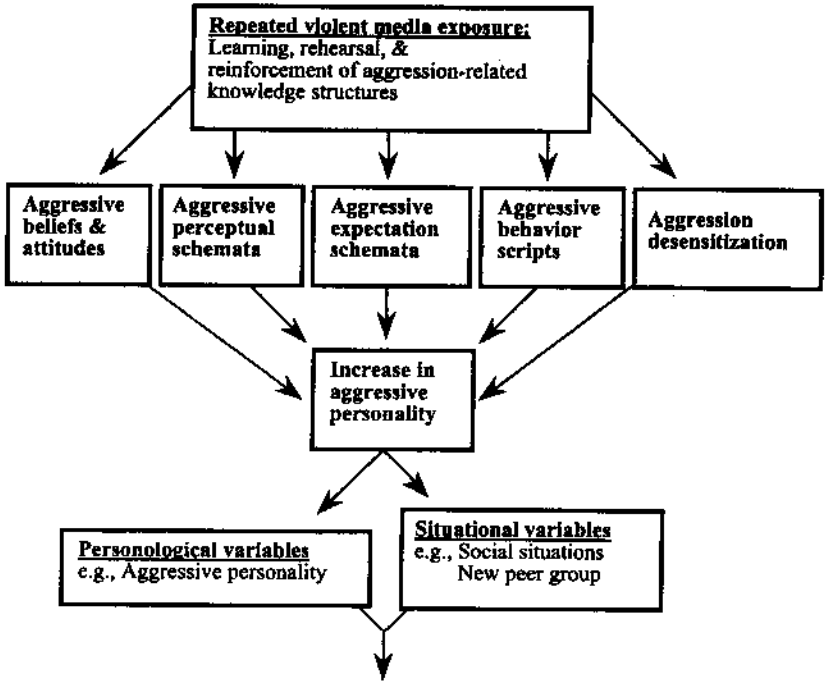
Reappraisal consists of searching for additional information in order to view the situation differently. Reappraisal can include a search for relevant information about the cause of the behavior, a search for relevant memories, and a search for features of the present situation. The outcome of reappraisal determines, in part, affective, cognitive, motivational, and behavioral responses. The reappraisal process itself may go through a number of cycles as alternatives are considered and discarded, as long as resources are sufficient and the outcome of each cycle is both important and unsatisfying. At some point, of course, the recycling process ceases, and a thoughtful course of action occurs (including the possibility of "not reacting" to the provocation).

Regardless of immediate appraisal or reappraisal, a decision about the situation will be made and a behavior will soon follow. This action will then be followed by a reaction from the environment, which is typically other people's response to the action. This social encounter will alter the input variables, depending on the environment's response. This encounter could then modify the situation variables, the person variables, or both, resulting in a reinforcement or inhibition of similar behavior in the future (Anderson & Bushman, 2002).

Short-term vs. Long-term Effects

Even though GAM has a central focus on the episode, GAM is not restricted to short-term effects. The cyclical process of GAM lends itself to addressing long-term effects of exposure to media violence. With repeated exposure to certain stimuli (e.g., media violence), particular knowledge structures (e.g., aggressive scripts) become more readily accessible. Figure 5.3 displays this process and several common types of long-term changes that may occur. Over time, the individual will employ these knowledge structures and possibly receive environmental reinforcement for their usage; these knowledge structures will then become strengthened and more likely to be used in later situations. Research supports this notion by demonstrating that repeatedly exposing children to media violence produces aggressive adults (Huesmann & Miller, 1994). Such long-term effects result from the development, automatization, and reinforcement of aggression-related knowledge structures. In essence, the creation and automatization of these aggression-related knowledge structures and the desensitization effects change the individual's personality. Long-term consumers of violent media, for example, can become more aggressive in outlook, perceptual biases, attitudes, beliefs, and behavior than they were before the repeated exposure, or would have become without such exposure.

Figure 5.3
The General Aggression Model: Personality Processes



Applying GAM to Media Violence

This model can be used to interpret the effects of virtually anything the person comes into contact with in his or her environment, including exposure to violent media. Theoretically, violent media can affect all three components of internal state. By itself, the relatively small research literature on violent video games has shown that playing them can temporarily increase aggressive thoughts, affect, and arousal (Anderson & Bushman, 2001). For example, Anderson & Dill (2000) showed that playing a violent video game increased the speed with which the person could read aggression-related words (aggressive thoughts). Similarly, Kirsh (1998) and Bushman & Anderson (2002) found that playing a violent video game subsequently increased hostile interpretations of ambiguous social events (aggressive schemata). And as noted earlier, exposure to violent media can reduce arousal to subsequent depictions of violence. Playing a violent video game can also influence the person's internal state through the affective route by increasing feelings of anger, and through the arousal route by increasing heart rate (Anderson & Bushman, 2001).

In sum, GAM accounts for the wide variety of effects seen in the media violence literature, including both short- and long-term effects on aggressive thoughts, feelings, and behaviors; on anxiety desensitization and subsequent declines in prosocial behavior; and on changes in the social environment that occur as the developing child becomes more habitually aggressive. There are two other media violence domains that have not been specifically discussed in past presentations of GAM—the effects of media violence on fear, and broader societal issues concerning the role of violent media in modern society. The former can easily fit into GAM, as will be seen in the next section. The latter falls outside the intended domain of GAM, and will be discussed in a later section.

Fear

Exposure to media violence can initially cause sleep disturbances, anxiety, and fear (e.g., Cantor, 1998, 2001; Harrison & Cantor, 1999; Owens et al., 1999; Singer, Slovak, Frierson, & York, 1998). Cantor (1994) has identified several moderating factors (see also Cantor, chapter 10, this volume). First, violent media are more likely to evoke fear in viewers if the stimuli are similar to real-life fears. For example, live-action sequences of violence are more likely to produce fear in viewers than animated cartoon violence (Gunter & Furnham, 1984; Osborn & Endsley, 1971; Surbeck, 1975). Second, motivation for viewing potentially frightening scenes of violence also affects whether the stimuli will evoke fear. People who seek out frightening material may voluntarily reduce their own cognitive defenses to enable themselves to be frightened. Those who try to avoid scary scenes may try to discount them when confronted with scenes of violence. A third set of factors that can contribute to fear while viewing media violence is other characteristics connected to the presentation, such as stressful music and sound effects (Cantor, 1994). Whereas all of these factors may contribute to an individual being frightened by viewing particular scenes of violence, the most recognized factor is developmental maturity.

As children mature, their fears develop as well, changing from fears of the dark and intangible monsters, to fears of personal injury, to fears of global and political issues (see Cantor, Wilson, & Hoffner, 1986). Based on her research, Cantor has developed some broad generalizations concerning developmental maturity and viewing fear-evoking violence (Cantor, 1994). First, Cantor contends that as a child matures, the importance of perceptible characteristics of media violence decreases. This means that younger children are more likely to become frightened of stimuli that look scary, but could be harmless, whereas older children base their fears on more conceptual information (Cantor & Sparks, 1984; Sparks & Cantor, 1986). As children mature, they develop the ability to distinguish fantasy from reality. Due to this development, children are also likely to develop more realistic fears (e.g., war, kidnappings) as fantasy fears (e.g., monsters under the bed) depicted in the media diminish (Cantor & Sparks, 1984; Cantor & Wilson, 1984; Sparks & Cantor, 1986). Third, as children mature they become more frightened of abstract concepts portrayed in media, such as nuclear attack and its consequences (Cantor, Wilson, & Hoffner, 1986).

All of these fear effects fit neatly into the early stages of GAM. For instance, some of the diminution of fantasy fears likely arises from standard desensitization effects. More broadly, as children develop, the knowledge structures they use to perceive and understand media violence also change and develop in predictable ways.

BROADER ISSUES

There is a host of media violence issues that fall outside of the domain of the General Aggression Model. One set of these issues is nicely described by Potter's Lineation Theory (1999). Another set more directly involves public policy issues.

Lineation Theory

Lineation theory (Potter, 1999) examines five major facets of the media violence situation: content of media, media industry practices, psychological processing of media violence messages, factors influencing media violence effects, and the effects of viewing media violence. The General Aggression Model fully addresses the psychological processes underlying media violence effects raised by Potter (1999), and other behavioral science research has examined the content of the U.S. media landscape (e.g., Wilson et al., 1997, 1998). However, behavioral sciences have not thoroughly addressed the practices of the media industry. These issues, however, are important ones that should be addressed.

It is not clear to us how one should go about an empirical examination of how the media industry decides to include violence in its movies, television programs, and video games. Such an effort falls well outside our range of expertise. However, Potter's book provides some interesting ideas on this topic, and a recent book by James Steyer (2002) gives an insider's view of the processes, a quite disturbing view indeed. Interested readers should certainly examine these works carefully.

Although empirical examination of the media industry from a behavioral science perspective may not be possible, information from behavioral science may be one way in which social scientists can influence the industries. For example, Bushman and colleagues (Bushman & Bonacci, 2002; Bushman & Phillips, 2001) have found that violent and sexual content in television shows reduces the viewer's recall of advertisements in that show.

Public Health and Public Policy

Scientifically derived findings concerning media violence are relevant to public health issues, and therefore are relevant to public policy. Media violence researchers find themselves drawn into these debates despite a reluctance to participate in them. Such researchers sometimes must defend themselves from well-financed attacks by individuals and groups who have no training or real expertise in conducting media violence research, but have considerable funding and expertise in influencing public opinion and public policy. Perhaps even more damaging are those behavioral scientists who have made careers out of attacking media violence research despite having never conducted a major original empirical study of media violence effects. Their scholarly credentials (albeit in other domains) make them particularly attractive partners to the media industries who produce and profit from violent media, and they are frequently supported by those industries.

Despite the unpleasantness often associated with such nonscientific en-

counters, we believe that it is important for legitimate researchers to remain involved. After all, what is the point of doing good research if it is going to be either misrepresented to the general public or totally ignored by public policymakers? This section outlines some of the issues, one of which concerns the role of theory in such debates.

What is the proper role for media violence researchers in such public policy debates? We don't pretend to have an answer for all such researchers. However, we believe that in our role as scientists, it is important to provide an accurate and unbiased assessment of the scientific state of knowledge to any group that requests it, whether it is the local PTA, a state psychological association, child advocacy groups, the U.S. Senate, or even the Entertainment Software Association (though they haven't asked us yet). We also believe that most behavioral scientists (including ourselves) are not very good at this, largely because we often fail to hear the question that is being asked. Here are several things we have learned in such encounters.

First, many participants in public debates about media violence fail to make the crucial distinction between psychological science versus relevant personal values. The result, all too often, is a concerted effort by the media violence industry and their supporters to denigrate the scientific enterprise as well as the scientists involved. Similarly, child advocacy groups occasionally claim that the scientific research itself directly supports certain public policy actions. In fact, such public policy issues revolve around a host of factors, only one of which is the media violence research literature. Media violence researchers should be willing to share their special expertise concerning the scientific issues. However, media violence researchers do not have special expertise concerning legal issues or concerning a host of personal values that are also relevant to making an informed (and personal) decision about appropriate public policy. Reasonable people may well have different personal values relevant to a given issue, and so may come to very different conclusions concerning public policy even if they agree on the scientific conclusions. For example, two people can agree that repeated exposure of children to violent media leads to a significant increase in their propensity to aggress as adults, while simultaneously disagreeing about whether the government should impose restrictions on the kinds of video games youngsters can purchase or rent without parental consent. One person may value children's rights to choose so highly that they are willing to accept higher societal violence rates in order to let children choose. Another may decide that children need protection in this domain, and may be willing to reduce children's right to choose (and thereby increase parents' rights to control access to their children) in order to have a less violent society. Our role as behavioral scientists is to answer the question concerning what the research tells us about violent media effects, but we cannot tell others how highly they should value children's rights versus parents' rights or societal violence rates. For this reason, we try very hard to not make public statements

about what politicians or other public policymakers ought to do, and instead confine our contributions to the scientific ones in our areas of expertise.

Second, the role of theory in such public policy debates is often misrepresented or underutilized. Sometimes this happens for fairly obvious motivational reasons, such as when the 40-plus years of research on TV and movie violence is categorically dismissed by the video game industry as irrelevant. Good psychological theory about how exposure to media violence influences aggression makes that larger and more developed research literature very relevant. After all, the practicality of a good theory derives from the fact that good decisions in the design of interventions, treatments, or programs—their success in achieving desired results—depends on well-integrated theories whose basic principles generalize.

Third, the entertainment media industries are using essentially the same tactics that the tobacco industry used for many years. One major tactic is to separate each type of video game study from the rest, and then attack each type individually. So laboratory experiments are "bad" because no one is actually killed in such studies; cross-sectional studies are "bad" because they are merely correlational; and longitudinal studies of violent video games don't yet exist. Similarly, studies with college students are "irrelevant" because they are legally adults and we're really only concerned about kids; studies with children are "irrelevant" because the industry already provides age ratings of video games. This divide-and-conquer strategy is very effective in misleading an audience about the true overall state of scientific knowledge. What researchers must do, in our view, is not allow such tactics to divert us (or our audiences) from the scientific strategy of looking at the totality of the empirical evidence and the strength (or weakness) of the theory guiding the integration of that evidence.

Good theory generalizes, and therefore cannot be ignored. GAM provides one integrative framework for understanding the empirical research on media violence, and for guiding future research and development of intervention strategies. As other chapters in this volume demonstrate, the totality of research and theory on media violence effects is extensive, coherent, and amazingly consistent when one takes the broad view. The public needs to understand this so that the public policy debate can move to legitimate discussions of which public policy options (if any) are appropriate.

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