
Media Violence and Children: A Complete Guide for Parents and Professionals, Second Edition
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Chapter 4

The Role of Theory in the Study of Media Violence: The General Aggression Model

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Much of this book reviews empirical research on the effects of media violence. Researchers have used many tools in this effort to understand the phenomenon of media violence. 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 media 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

Theory is typically defined as an organized set of hypotheses that allows a scientist to understand, explain, and predict a wide variety of phenomena ([Shaw & Costanzo, 1982](#)).

Theory serves the scientist in a number of ways. For example, 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.

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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 working 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. This is where the scientific meaning of “theory” diverges so greatly from the lay meaning. To many nonscientists (including judges, politicians, and public policy leaders, as well as the general public), “theory” means nothing more than a haphazard guess, or a politically inspired ideological position. This view is one reason why so many attacks on media violence findings (or evolution, global warming, tobacco/cancer, for example) ignore basic theory and tons of empirical findings on which relevant theories are built. Findings on the addictive and cancer-causing properties of substances found in cigarette smoke on lab rats were widely ridiculed by smokers, comedians, and, of course, the tobacco industry for years. Such findings were seen as irrelevant, in part because the lay understanding of “theory” bears little resemblance to the scientific enterprise behind the creation, testing, and modification of good theory. In the media violence domain, this *theory-ignorant* approach to attacks on laboratory studies (as “artificial” or “trivial”), cross-sectional correlational studies (“correlation is not causation”), and longitudinal studies (“what, you didn’t use homicide as the outcome variable?”) may be motivated by pure ignorance, by threatened self-identity as a gamer or game producer, or by the monetary aspects of the media industries. Regardless of motivation, such attacks are as wrong-headed as joking about how many Marlboro cigarettes a rat has to smoke to get cancer. 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

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is its ability to account for (and then predict) empirical data obtained from rigorous scientific research.

The purpose of this chapter is to examine the 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 World Wars I and II. 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 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 again considered the existence of a truly independent death or self-destruction instinct (the "death wish"), called thanatos. This view, which Freud himself did not appear to wholly support, sees aggression as the redirection or displacement of a self-destructive death instinct away from the individual toward others. In a similar vein, Nobel Prize winner 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 idea of catharsis 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 of 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: (1) instinctive self-destructive or aggressive energy is continually added to a closed emotion or energy system; (2) observing, enacting, or releasing aggressive behavior or aggressive emotions against

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others releases some of this energy, thereby reducing pressure on the system; and that (3) 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). Unfortunately, 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 [Anderson, Gentile, & Buckley, 2007, Chapter 9](#); [Bushman, 2002](#); [Geen & Quanty, 1977](#); [Gentile, 2013](#)). Indeed, one major problem with 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 either 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 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](#)): (1) "the occurrence of aggressive behavior always presupposes the existence of frustration" (p. 1), and (2) "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. For example, a frustrating game can increase aggressive tendencies simply because it is frustrating, regardless of violent content. Therefore, to properly test the theoretical hypothesis that violent content can increase aggressive tendencies, one must be sure that the comparison violent and nonviolent games are equated on frustration.

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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 involves stimulating (or inhibiting) a behavior based on the reward or punishment received after the behavior.

The contributions made by these early theories to understanding human behavior are impressive and important, but they are not comprehensive explanations of human aggression or other forms of human behavior. One problem is that they do not adequately account for the huge effects that the development of language has on human behavior. Nonetheless, they do contribute to our understanding of some of the processes underlying some media violence effects. For example, repeatedly pairing violence with the idea of fun entertainment helps to explain desensitization effects.

RECENT THEORETICAL DEVELOPMENTS

The following sections discuss modern theories of media violence effects. Note that none of these theories were developed to specifically examine media violence effects; however, each has contributed to our understanding of 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 and through direct experience. Furthermore, these approaches emphasize that how a person "construes" (understands) events is also learned and is crucial in determining how that person responds to those events. Children witness social interactions of parents, peers, siblings, and fictional characters on television and in movies. Children also witness the repercussions of these behaviors. Children are more likely to imitate the witnessed behavior if they also witness rewards for the action and less likely to imitate if they witness the action being punished

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(e.g., [Bandura, 1965](#); [Bandura, Ross, & Ross, 1963](#)). Over time, children learn how to perceive and construe events in their social environments 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 social/social cognitive theories is that they account for the acquisition of novel or unusual aggressive behaviors even in the absence of immediate reward. For example, seeing someone else rewarded or punished is sufficient to “learn” the likely consequences of particular behavior (even if the portrayed consequences are inaccurate, as is usually 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 (e.g., frustrations, provocations, loud noises, uncomfortable temperatures, unpleasant odors) can 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 whenever negative affect is induced. 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. If flight or escape from the situation is blocked, then the fight tendency may become dominant; if aggressive attempts are blocked or thwarted (e.g., initial attempts to overcome the target), then flight tendency may take over.

Cognitive-neoassociation theory contends that cues present during an initial aversive event become linked with 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 affect that were 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 the earlier context. In other words, the boxer’s name served as an aggression cue in the later context.

Cognitive neoassociation theory also 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 also can suppress or enhance the action tendencies associated with these feelings. Though aggression and violence scholars usually associate thoughtful processes with reductions in aggression,

theoretically (and empirically) it is clear that thoughtful processes can also increase aggression, as in the case of rumination (e.g., [Bushman, 2002](#); [Vasquez et al., 2013](#)).

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, 1983](#); [Anderson, Benjamin, & Bartholow, 1998](#)). Scripts define situations and guide behavior in the following way: the person first selects (usually unconsciously) a script that 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 aggression 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 network models, it is assumed that each concept in memory has an activation threshold. A concept can be activated by 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 fully activated, its activation 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

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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. The early social learning theory studies of learning aggressive behavior from observation of violent television and movie clips can also readily be reinterpreted in script theory terms (e.g., [Huesmann & Miller, 1994](#)). Individual differences can also be interpreted as script-like phenomena. For example, one study ([Dill, Anderson, Anderson, and 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. Still other research has shown how scripts can generate intentions for one's own behavior and expectations about others' behaviors (e.g., [Anderson & Godfrey, 1987](#)).

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, 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 his or her heightened arousal to anger. Thus, even after the initial 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](#)). For example, [Zillmann \(1971\)](#) found that arousal from viewing an erotic film can increase provoked aggression.

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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. A central assumption of cultivation theory in its initial development is that the number of different messages produced by the media is a fairly small, consistent set. For example, prime-time dramas display over 10 times as much crime as actually occurs in the real world ([Gerbner, Gross, Morgan, & Signorielli, 1982](#)). Police officers, lawyers, and judges are over-represented 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 that the messages they see in the media reflect the real world. Exposure to large amounts of television can lead people to overestimate the amount of crime and victimization that exists 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 to behave in a more defensive manner, such as purchasing extra locks or firearms for protection, not traveling to certain areas that 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 neighborhoods. 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 have 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](#)).

In more recent years, as viewer choices have proliferated via cable TV and the Internet, cultivation theory has also changed. The early finding that most television presented the same basic messages to all viewers is less true today. Now, people tend to select a narrow type of preferred shows and movies, and the preferred types of shows vary from person to person. One may watch only (or primarily) sports shows, another only crime shows, and yet another only news shows. This may even exaggerate the cultivation effect, if one specifically restricts the types of portrayals to just one or two.

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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 exposure, 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 in the same manner ([Wolpe, 1958](#)). There have been refinements and variations in therapeutic techniques. For example, Bandura emphasized the utility of social 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 in airplanes, among others. Without doubt, these techniques are extremely effective.

Similar desensitization processes operate in the media violence context. In this context, desensitization is defined as the process of becoming less physiologically and emotionally aroused to scenes of violence (real or mediated) due to extended exposure ([Carnagey, Anderson, & Bushman, 2007](#)). This phenomenon has been demonstrated by finding a relative decrease—during the viewing of violence—in physiological arousal, such as heart rate and skin conductance (e.g., [Carnagey et al., 2007](#); [Cline, Croft, & Courier, 1973](#); [Lazarus, Speisman, Mordkoff, & Davison, 1962](#); [Linz, Donnerstein, & Penrod, 1988](#); [Thomas, 1982](#); [Thomas, Horton, Lippincott, & Drabmann, 1977](#)); emotional responsiveness (e.g., [Bartholow, Anderson, Carnagey, & Benjamin, 2005](#); [Funk, Baldacci, Pasold, & Baumgardner, 2004](#); [Sakamoto, Yukawa, Shibuya, & Ihori, 2002](#); [Smith & Donnerstein, 1998](#)); and brain activity assessed by fMRI or EEG (e.g., [Bailey, West, & Anderson, 2011](#); [Gentile, Swing, Anderson, Rinker, & Thomas, in press](#); [Hummer et al., 2010](#); [Mathews et al., 2005](#); [Weber, Ritterfeld & Mathiak, 2006](#)).

Although a reduction in anxiety or other negative emotion 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, 2003](#); [Bartholow, Bushman, & Sestir, 2006](#)). Second, such reductions in anxiety reactions to violence creates an emotional blunting that may lead to an underestimation of the seriousness of observed violence, and may therefore reduce the

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likelihood of coming to the aid of a victim of violence (e.g., [Bushman & Anderson, 2009](#)). 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 the recent theories discussed earlier 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 the large affective aggression literature but has somewhat less to say about instrumental aggression. What was needed was a theory that incorporates the strengths of all the earlier theories and thereby could account 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 test.

The General Aggression Model (GAM) was developed for that purpose (e.g., [Anderson & Bushman, 2002](#); [Anderson & Huesmann, 2003](#); [Anderson & Carnagey, 2004](#); [DeWall, Anderson, & Bushman, 2011](#)). GAM is an integration that combines key ideas from earlier models: social learning and social cognitive theory (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](#)). As a biosocial-cognitive theory, 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 4.1](#)). The person variables are composed of all the things a person brings with him or her when entering a particular situation, including genetics, traits, current states, beliefs, attitudes, values, sex, scripts, and aggressive personality. The situation variable is composed of the environment surrounding the individual, including factors

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in the environment that could affect the person's actions, like aggressive cues, provocation, pain, rewards, and frustration.

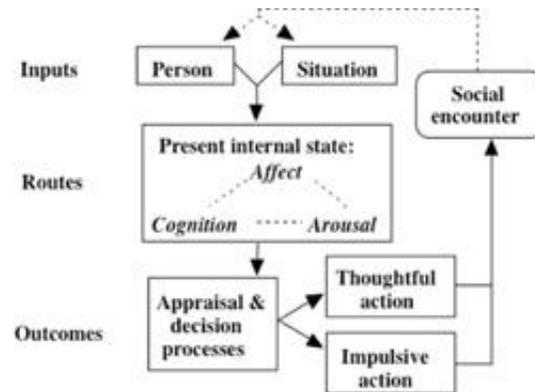


Figure 4.1

The General Aggression Model Episodic Processes

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.

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 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

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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 influence 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 states may also influence one another. The idea that cognitions and arousal influence affect dates back all the way to William [James \(1890\)](#) and was first popularized among social psychologists by [Schachter and 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.

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Outcomes

[Figure 4.2](#) presents a more detailed look at the appraisal aspects of GAM. Typically, before a behavior is performed the individual will appraise the current situation and then select a behavior appropriate to the situation. Depending on the situational variables present, appraisals may be made hastily and automatically, without much (or any) thought or awareness, resulting in 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 that they are spontaneous and relatively effortless, and occur without conscious awareness of the underlying process. 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 the 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 likely 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. In essence, this is a type of dual process model, in which relatively effortless automatic processes underlie more effortful controlled processes, but also operate in parallel ([Strack & Deutsch, 2004](#)).

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 possibly of “not reacting” to the provocation).

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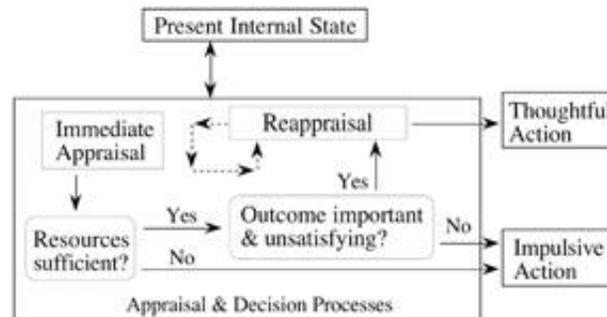


Figure 4.2

The General Aggression Model: Expanded Appraisal and Decision Processes

Whether immediate or reappraisal, a decision is made and a behavior follows. This action is then followed by a reaction from the environment, which is typically other people’s responses to the action. That environmental reaction may reward the action, for example, by giving the person some sought-after object (e.g., money) or status (e.g., respect). Or, the environmental reaction may be punishing in some way, such as pain encountered by the other person fighting back. This round of the social encounter modifies the situation variables in the present but also influences longer-term person variables (such as expectations, attitudes, scripts) resulting in a reinforcement or inhibition of similar behavior in the future. Thus, both long-term and short-term effects of social encounters are very dynamic, adjusting and changing to situations and to one’s life history.

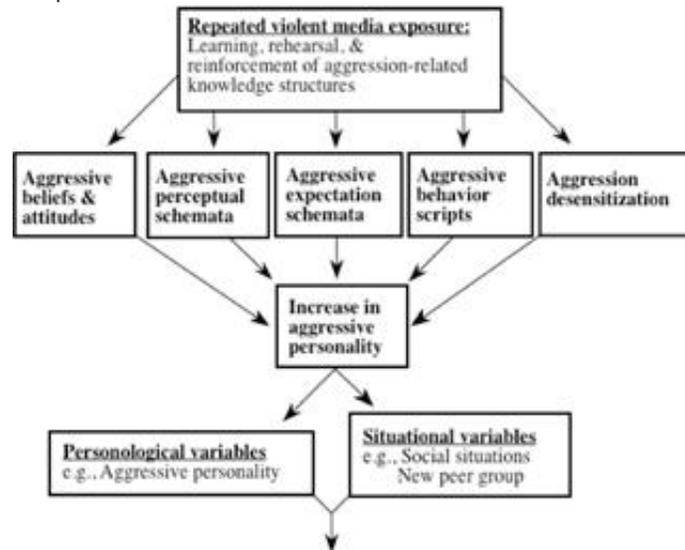
Short-Term vs. Long-Term Effects

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 4.3](#) displays this process and several common types of long-term changes that may occur. Over time, the individual will employ these knowledge structures and receive environmental reinforcement for their usage. Over time, these knowledge structures become modified, strengthened, and more likely to be used in later situations. Research supports this notion by demonstrating that repeatedly exposing children to media violence produces more aggressive adults (e.g., [Huesmann & Miller, 1994](#)). Such long-term effects result from

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the development, automatization, and reinforcement of aggression-related knowledge structures. In essence, the creation and automatization of these aggression-related knowledge structures and 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.



General Aggression Model, as in Figure 4.1

Figure 4.3

The General Aggression Model: Personality Processes

Recent Advances in GAM

Since the original publication of this volume in 2003, GAM has been expanded and applied in several ways. The utility of GAM has been more clearly illustrated as a way of understanding more extreme forms of physical aggression, namely *violence*. Under this broad heading, GAM has been applied to personality disorders ([Gilbert & Daffern, 2011](#)), effects of global warming on violence ([Anderson & DeLisi, 2011](#)), war and terrorism ([DeWall & Anderson, 2011](#); [DeWall et al., 2011](#)), intimate partner violence and suicide

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([DeWall et al., 2011](#)), interventions to reduce aggression (e.g., [Barlett & Anderson, 2011](#)), male-on-female aggression and violence (e.g., [Anderson & Anderson, 2008](#)), and violence among criminal offenders ([DeLisi et al., 2010](#); [DeLisi, Vaughn, Gentile, Anderson, & Shook, 2013](#); [Saleem & Anderson, 2012](#)).

Another type of range expansion has been to more fully delineate the role of biological factors and how they influence aggression, sometimes in interactive ways (e.g., [Anderson & DeLisi, 2011](#); [Anderson & Carnagey, 2004](#); [Anderson & Huesmann, 2003](#)). This area needs more work, but there are no known theoretical problems with further integration of biological models with GAM.

A third type of range expansion has to do with underlying processes involved in human aggression, essentially ways that personal and environmental variables combine to lead to aggression. For example, our work on male aggression against women shows that the

constellation of variables identified by Malamuth’s confluence theory of sexual aggression ([Malamuth, Linz, Heavey, Barnes, & Acker, 1995](#)) can be integrated into the GAM framework. Furthermore, doing so results in additional new predictions and confirming results ([Anderson & Anderson, 2008](#)). For example, men at high risk for sexual aggression against women are also likely to be relatively more aggressive against women in nonsexual contexts, but are less likely to aggress against other men.

The processes underlying GAM are inherently interactive in several ways ([Anderson & Carnagey, 2004](#)). Perhaps most obvious is the fact that person factors, such as personality traits and different life histories, may interact with situational factors to yield different outcomes. For example, Bartholow and colleagues explored the weapons effect (i.e., the finding that people often behave more aggressively in the presence of a gun or other weapon) from GAM’s perspective, and found both situational effects (e.g., increases in aggressive thoughts and behavior in the presence of a weapon prime) and more interestingly, interactions between one’s life history as a hunter (vs. nonhunters) and type of gun prime. For hunters, photos of hunting weapons led to more positive affect, lower aggressive thought accessibility, and lower aggression than did photos of assault weapons, whereas the opposite pattern occurred for nonhunters ([Bartholow et al., 2005](#)).

GAM also views situations as inherently dynamic (interactive) as well. We first illustrated this dynamic process in 2004 (see [Figure 4.4](#)), by means of how a social encounter can escalate over a series of actions and reactions ([Anderson & Carnagey, 2004](#)). Later, we demonstrated one such escalation cycle in a carefully controlled laboratory study of how highly aggressive people (relative to nonaggressive people) take ambiguous situations and over a series of interactions make them into aggressive encounters ([Anderson, Buckley, and Carnagey, 2008](#)). This escalation cycle applies not only to individuals in dyadic interactions but also to variously sized groups of people, including countries, and the instigation of war and terrorism.

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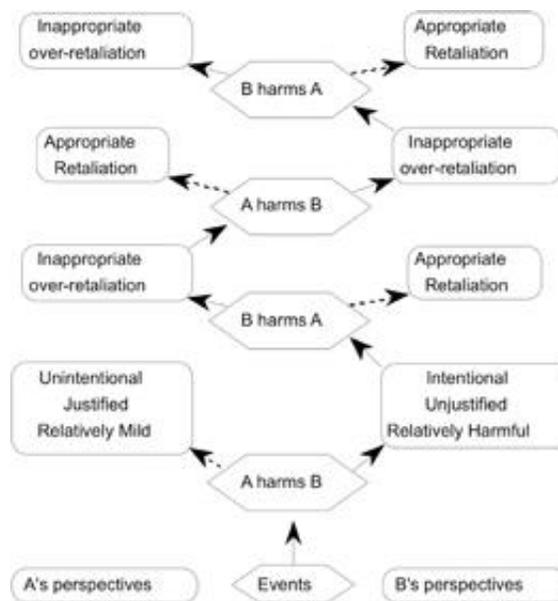


Figure 4.4
The Escalation Cycle

Finally, note that interactions are allowed and expected by GAM between multiple levels of

analysis. For example, certain genetic risk factors for violence (biological level) are likely to result in observed high violence rates primarily when certain environmental risk factors (family level) are also present ([Caspi et al., 2002](#)).

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. The research literature on violent video games has shown that playing them can temporarily increase aggressive thoughts, affect, and arousal ([Anderson et al., 2010](#)). 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,

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[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 et al., 2010](#); see Anderson & Gentile, this volume, for more details on video game effects).

In sum, GAM can help to explain and predict 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 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 be easily fit into GAM, although the latter falls outside the intended domain of GAM.

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 & Riddle, 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 concerns 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](#), for review). Based on her research, Cantor 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

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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. Thus, children become more likely to develop realistic fears (e.g., war, kidnappings) at the same time as fantasy fears (e.g., monsters under the bed) 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 et al., 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, their fears also change and develop in predictable ways.

Broader Issues

There are 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. GAM 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.

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 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](#))

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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

Ideologically Driven Attacks on Research

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 who 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 little or no training in such research and never succeeding in publishing an original empirical study of media violence effects in a top-tier scientific journal. Their scholarly credentials (albeit in other domains) make them particularly attractive partners to the media industries that produce and profit from violent media, largely because journalists and the general public can't (or don't) distinguish between them and legitimate experts. For example, one vocal critic (Christopher Ferguson) and the video game industry frequently claim bias by specific research teams (ours and Brad Bushman's), biases both in reporting original research findings and in meta-analytic reviews. Yet those claims are not backed up by evidence of any kind. For instance, if the Anderson and Bushman research groups are engaging in biased data reporting practices, then results of their studies should be systematically larger (i.e., finding more harm) than similar studies conducted by other research teams. A recent meta-analytic study ([Greitemeyer & Mügge, 2014](#)) found that the Anderson and Bushman studies of violent video game effects yield results that are almost identical to those found by other researchers around the world; indeed, they are slightly *smaller* (see [Table 4.1](#)). Interestingly, it is the research of this critic that appears wildly discrepant with the rest of the research world ([Table 4.1](#)).

Table 4.1

Average Effects of Violent Video Game Exposure on Overall Social Outcome (Combined Behavior, Cognition, Affect, and Arousal) as a Function of Research Group

Author group	N	K	Effect size and 95% CI			Test of null (two-tailed)	
			Point estimate	LL	UL	Z	p
Anderson/Bushman	8,595	20	.19	0.14	0.24	7.39	.000
Ferguson	2,444	7	.02	-0.05	0.10	0.61	.540
Others	23,415	58	.20	0.16	0.23	11.50	.000

Note: N = total number of study participants, K = number of independent studies, LL = Lower limit of the 95% confidence interval for the effect size estimate, UL = Upper limit of the 95% confidence interval for the effect size estimate, Z = standardized z-score, p = probability value

Source: From Greitemeyer & Mügge, 2014. Reprinted by permission.

Concerning meta-analysis bias, the facts are again very different from what the vocal critics would have you believe. The most recent comprehensive meta-analysis of the violent video game literature ([Anderson et al., 2010](#)) included 381 effect sizes ("studies") with over 130,000 participants. For the aggressive behavior outcome variable there were 140 independent effect sizes with over 68,000 participants. Meta-analyses by Ferguson and colleagues in 2007 through 2009 report 25 or fewer "relevant" effect sizes with fewer than 4,500 participants. Interestingly, five years earlier we identified 38 independent effect sizes on aggressive behavior

with over 7,000 participants ([Anderson et al., 2004](#)). It also is interesting that the average effect sizes Ferguson and

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colleagues reported were only slightly smaller than what we reported, at least before he inappropriately applied bias correction procedures that involved adding in hypothetical missing studies. Finally, even when given an opportunity to publicly identify bias in our meta-analytic samples ([Ferguson & Kilburn, 2010](#)), the critics were unable to find even one “missing” study that was relevant ([Bushman, Rothstein, & Anderson, 2010](#)).

Recently the critics have attacked GAM, social learning theory, and other social cognitive models of aggression and social behavior. Detailing and responding to the many inaccuracies is beyond the scope of this chapter. It should be noted that GAM and other social-cognitive models are dynamic, not static models; they take into account individual differences, and genetic and other biological factors (especially GAM); they have been successfully applied to extreme behaviors, including personality disorders, criminality, and violence; and they are widely accepted as useful tools throughout psychology. Because they are testable and falsifiable, they may also undergo revision as new data become available.

Role of Theory

We believe that it is important for legitimate researchers to remain involved in the public debate. After all, what is the point of doing good research if it is either going to be misrepresented to the general public or is going to

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be ignored by makers of public policy? 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, the 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 its 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. Thus, 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 their own entertainment. The other may decide that children need protection in this domain, and may be willing to reduce children's rights to choose (and thereby increase parents' rights to control video game 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 makers of public policy 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

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motivational reasons, such as when the 50-plus years of research on TV and movie violence is categorically dismissed by the video game industry as irrelevant to their medium. 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 as 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 they take place in artificial settings; cross-sectional studies are "bad" because they are merely correlational; and longitudinal studies violent video games because homicide rate was not the outcome variable. 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 should not 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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