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Media Violence, Aggression, and Public Policy

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Two questions have dominated public debate about media violence since the 1930s: (1) Does exposure to violent media have harmful effects on youth? (2) How should society handle this problem? Even before the explosive growth of television in the 1950s, research on potentially harmful effects of movie violence was indeed discovering such effects (e.g., Blumer & Hauser, 1933; see Wartella & Reeves, 1985, for an historical overview). The public debate still rages, despite numerous governmental and nongovernmental health organization reviews and reports, all of which have concluded that the research shows significant harmful effects (e.g., the 1954 Kefauver hearings, the 1969 National Commission on the Causes and Prevention of Violence, the 1972 Surgeon General's report *Television and Growing Up* [U.S. Surgeon General's Scientific Advisory Committee, 1972], the 1982 National Institute of Mental Health [NIMH] report *Television and Behavior*, and Eron, Gentry, & Schlegel's 1994 report for the American Psychological Association).

For example, in 1972 U.S. Surgeon General Jesse Steinfeld testified before Congress that "the overwhelming consensus and the unanimous Scientific Advisory Committee's report indicates that televised violence, indeed, does have an adverse effect on certain members of our society" (Steinfeld, 1972, p. 26). The 1982 NIMH report reinforced this conclusion, and numerous professional health organizations have taken a similar position in viewing media violence as a serious threat to public health because it stimulates aggressive and even violent behavior by youth. Six medical and public health professional organizations held a Congressional Public Health Summit on July 26, 2000. At the conclusion of the summit they issued a *Joint Statement on the Impact of Entertainment Violence on Children*. This statement noted that "entertainment violence can lead to increases in

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aggressive attitudes, values, and behavior, particularly in children" (Congressional Public Health Summit, 2000, p. 1). The statement also concluded that the research points "overwhelmingly to a causal connection between media violence and aggressive behavior in some children" (p. 1). The six signatory organizations were the American Academy of Pediatrics, American Academy of Child and Adolescent Psychiatry, American Medical Association, American Psychological Association, American Academy of Family Physicians, and American Psychiatric Association. The most recent comprehensive review of research on exposure to media violence was conducted by a panel of experts brought together by the U.S. Surgeon General for an upcoming report on youth violence (Anderson et al., 2003). This panel concluded that, "Research on violent television and films, video games, and music reveals unequivocal evidence that media violence increases the likelihood of aggressive and violent behavior in both immediate and long-term contexts" (Anderson et al., 2003, p. 81).

To what extent have these scientific conclusions entered into common knowledge? Not much. Given the unanimity among the many expert scientific panels, it is puzzling that the general public appears to believe that the scientific evidence is equivocal. Additional ironies abound. Although about three-quarters of American parents agree that children who watch a lot of violent TV are more aggres-sive than children who watch less TV (Gentile, 1999), only 13% of American households with children have *any* sort of rules about the content that may be watched (Roberts, Foehr, & Rideout, 2005). Furthermore, over half of parents agree that their children are affected by the violence they see in movies or on TV (57%) or in video games (51%), yet parents are between 6 and 11 times more likely to believe that the media have less influence on their children compared to other children than they are to believe that media have more influence on their children (Gentile, 1996; Gentile, 1999; Gentile & Walsh, 2002). The media rating systems facilitate parental control over the media their children watch/play, but parents do not seem to exercise this control. For example, in a survey of 657 4th through 12th grade students, fewer than half said that their parents understand the video game ratings and only one out of four said that a parent has *ever* stopped them from getting a game because of its rating (Walsh et al., 2005). The statistics do not change much even after removing the 52 participants who were 17 or 18 years old. One reason that parents might not use the ratings to restrict game access might be that

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children only play age-appropriate games, but this is not so. In this same sample of 605 9- to 16-year-olds, 7 out of 10 report playing M-rated ("Mature") video games, and 61% own M-rated games. Almost half ~~say~~ they bought M-rated games themselves, and only slightly over half ~~say~~ that a parent was present the last time they bought an M-rated game.

Similarly, a nationally representative sample of 7th through 12th graders found that 65% reported having played the M-rated game Grand Theft Auto (Roberts et al., 2005). Furthermore, of those who are supposedly too young to gain access to this game (12–16-year-olds), 75% of the boys and 51% of the girls reported having played this game (Joanne Cantor, personal communication, February 20, 2006). There is a large disconnect here – even if parents claim to believe the scientific evidence about the effects of media violence, that belief does not transfer into action, which suggests that the belief is not deeply held.

There are several reasons why the conclusions of numerous expert panels have not been fully understood or adopted by the general public. First, the media industries spend a lot of money on public relations experts who issue press releases, write op-ed pieces for newspapers, ~~and~~ give interviews in which they deny that any valid research shows any negative effects of violent media, and occasionally claim positive effects. Second, the media industries routinely promote (and sometimes fund) their own "experts," often academicians without true expertise in media violence research. These "experts" denounce as poorly conducted any research that finds harmful effects, but praise the occasional study with nonsignificant findings (see Huesmann & Taylor, 2003). Third, since 1980 news media reports on media violence effects have moved in the opposite direction of the research findings. That is, as the evidence for harmful media violence effects has grown stronger, news reports about harmful effects have grown weaker (Bushman & Anderson, 2001). Fourth, and most relevant to this chapter, is the possibility that media violence researchers have been less than clear in articulating their findings and the public policy relevance of their findings to news reporters and the general public. Part of the problem is that neither the general public nor most media violence researchers understand the role of science in good public policy planning. Another part of the problem has been miscommunication between media violence researchers and the general public, a miscommunication based on differences in use of language. Still other aspects of the problem involve differences between scientific experts and the

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general public in their understandings of causality, expertise, and the scientific enterprise.

Science, Communication, and Public Policy Beyond Common Knowledge

Four inputs to public policy

Scientifically derived information does not and can not *automatically* translate into appropriate and effective public policy. We are not public policy experts, but we believe that there are at least four very different and important sources of information underlying the formulation of effective public policy: scientific, legal, political realities, and personal values (Gentile & Anderson, 2006). Few people understand this, and one reason so many First Amendment proponents, video gamers, and industry officials attack existing media violence research is because they do not understand these distinct sources of relevant information.

The *science facts* category refers to the relevant scientific knowledge base, consisting of relevant theory that has been created, revised, and supported by a diverse and converging set of empirical studies generated (and later summarized) by appropriate expert research scientists, in this case, truly expert media violence scientists. Though the basic meaning of this category is obvious, there are several important issues to which we will return shortly. The *legal issue* category concerns legal (e.g., constitutional) limits on potential public policies. One major legal issue in the media violence domain concerns U.S. Constitution First Amendment questions about the legality of government-imposed restrictions on access and exposure to violent materials by children and young adolescents (e.g., under the age of 21 or 18). Though the question of government restrictions lies outside our expertise, we note that there are government restrictions on children's access to pornography, and some leading First Amendment scholars have written persuasive accounts of how certain forms of government restrictions on children's access to violent media would pass all legal tests (e.g., Saunders, 2003a, b). The third category concerns *political realities.* What is likely to be popular with voters? Who has the money and clout to influence legislators and the executive and judicial branches of local, state, and federal government? The fourth category, concerning *personal values*, seems less clear than the other three. In a democracy it is perfectly legitimate and rational for an individual to oppose a

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potential policy that he/she believes would be good for society if it conflicts with a personal value held as more important. For example, a person who believes that exposure to media violence increases aggression and violence in youth and that reduction of aggression and violence by youth would be good for society could rationally oppose government restrictions on children's access to violent media, if that person places a higher value on having a totally open media landscape than on having a less violent society.

Science facts and theories

Public policy makers, judges, and the general public often have a different understanding of scientific facts and theories than scientists do; most people neither know of nor understand these differences. Social scientists rarely use the word *fact*, a tacit acknowledgement that scientific findings, theories, and concepts should be open to revision in the light of new discoveries. ~~But~~ public policy makers, judges, and the general public frequently ask scientists for the "facts." Nonscientists typically also do not understand the role of good theory in science. Whereas most scientists view a good theory as one that is falsifiable, has been tested and revised repeatedly, and provides a causal understanding of the phenomenon, nonscientists oftentimes think that *theory* means an idiosyncratic guess (e.g., public debates about theories of evolution and creationism).

What nonscientists are seeking is information about what the bulk of the scientific evidence shows on a specific question, that is, "Does exposure to violent media have harmful effects on youth?", and they seek it in their own nonscientific language. When media violence researchers answer with the hedging and the convoluted language that may be appropriate at a scientific conference, they are actually misinforming their nonscientific questioner. Indeed, the legal standard for what constitutes a scientific fact is "a reasonable degree of scientific certainty," usually interpreted to mean that most true experts in the domain will agree. In our view, a reasonable degree of scientific certainty has been reached on many basic questions concerning media violence effects, in large part because true experts realize that the research domain has satisfied four criteria: (1) There is a good theoretical basis; (2) the data fit the theory; (3) different research methodologies converge on the same conclusion; and (4) there are no remaining (i.e., un-debunked) plausible alternative explanations that can account for any substantial portion of the findings, let alone all of them (Anderson & Bushman, 2002b). This does not mean that

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there are no unresolved issues about a host of finer theoretical and methodological points; rather, the main questions of interest have been answered about whether there are harmful effects.

Probabilistic versus necessary/sufficient causality: The risk factor approach

The major public health problems in modern society result from an accumulation of multiple causal factors, and for this reason the public health approach to understanding and dealing with those problems is the risk factor approach. In other words, modern science, especially in public health domains, is largely probabilistic. For example, most people agree that prolonged exposure to tobacco smoke causes lung cancer. Of course, not all who smoke get lung cancer, and some who do not smoke do get lung cancer. Exposure to tobacco smoke is neither a necessary nor a sufficient cause of lung cancer. Technically, smoking causes an increase in the likelihood of getting lung cancer; it is a probabilistic cause. Unfortunately, many people who seem to understand the probabilistic nature of causality in medical domains have great difficulty in the media violence domain (Anderson & Bushman, 2002b; Potter, 2003). This difficulty is not limited to non-scientists, but in fact many good social scientists have difficulty using the "C" word in writings, discussions, and presentations in part because of scientific conservatism and in part because of the probabilistic nature of modern science. But good public policy decisions require that scientists and nonscientists come to a better and more consensual understanding of probabilistic causality and get over hang-ups regarding the "C" word.

Expertise

Public policy debates involving dangers brought to light by scientific research are not new, nor are the tactics used by industries that feel threatened by such findings. One common response (e.g., by the lead industry, the tobacco industry, the media violence industries) is to find or create "experts" to dispute the findings of harm. In the public domain (e.g., newspapers, television) there are essentially no rules on what constitutes an expert. Frequently, the expert opinion of a parent of a teen who consumes high levels of media violence (or the expert opinion of the teenager him/herself) are juxtaposed with the opinions of a true media violence research expert; the consumer is presumably

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supposed to decide who is right, with very little information to judge who is an expert. One might expect courtroom definitions to be much clearer, but in fact all one needs is an advanced degree in an appropriate field and a claim that one has read and accurately understands the literature.[1] Interestingly, the strongest critics of media violence research findings have either a very weak or no record of significant, original media violence research (Huesmann & Taylor, 2003).

So, what criteria might be used to determine who is qualified to speak about the entire media violence effects domain? We do not presume to have *the* single best answer. ~~But~~ a few features seem absolutely necessary (but perhaps not sufficient), and a number of additional features would certainly strengthen an individual's claim of expertise. Minimal features include:

a.   a doctorate in an appropriate empirical science;
b.   multiple publications in top-ranked, peer-reviewed journals, based on original empirical data gathered to examine media violence effects;
c.   understanding of the strengths and weaknesses of all of the major research designs (i.e., experimental, cross-sectional correlation, longitudinal); and
d.   demonstrated willingness and ability to accept and integrate findings from all major research designs.

Additional desirable features include:

a.   demonstrated understanding of and willingness and ability to use results of meta-analytic studies;
b.   demonstrated expertise in using multiple research designs, by publications of empirical studies using different designs in top-ranked, peer-reviewed journals;
c.   demonstrated theoretical contributions to media violence issues; and
d.   demonstrated understanding of key media violence related philosophy of science issues (e.g., internal and external validity, probabilistic causality, role of theory and theory-testing in good science, methodological triangulation in hypothesis testing).

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[1]   Technically, this is a gross oversimplification of the rules regarding scientific expertise in the courtroom. (See *Daubert v. Merrell Dow Pharmaceuticals, Inc*., 1993.) However, in our personal experience this captures the essence of what has happened in cases involving media violence expertise.

Individuals who possess all eight of the listed criteria do exist. Furthermore, teams of scholars can essentially pool their expertise in joint products, such as in the various summary reports mentioned earlier (e.g., Anderson et al., 2003). We turn next to the key findings from the media violence effects literatures.

Media Violence: Scientific Facts Beyond Common Knowledge

Media violence has been one of the most heavily studied areas of psychological science, with hundreds of independent studies, as well as hundreds of theoretical analyses and reviews. This research literature is sufficiently broad and deep to be able to answer most of the basic questions about whether there are effects and of what types (for reviews, see Anderson et al., 2003; Cantor, 2002; Gentile, 2003; Potter, 1999, 2003). For example, there are several types of studies that can be conducted: laboratory experiments, field experiments, cross-sectional (sometimes called correlational) studies, and longitudinal studies. Each type of study has different strengths.

Four types of media violence studies

Randomized experiments (laboratory or field) allow for the clearest tests of causality, as other potential factors are controlled either by holding them constant or by the random assignment of participants to different treatment groups. However, media violence experiments usually do not use measures of extreme forms of aggression as it would be unethical to allow participants to hit, stab, or shoot each other after watching a violent or nonviolent show. They also usually measure short-term effects. Some field experiments, however, have measured some of the more extreme forms of aggression, and have done so across a longer time span.

In a typical experimental study, researchers randomly assign participants to either a high or a low media violence exposure condition. Random assignment ensures that the two groups are approximately equal on potentially relevant but unmeasured factors. This randomization procedure provides experiments with their greater ability to yield valid causal conclusions, because there is no reason to believe that the violent and nonviolent media exposure groups are different on any relevant personal characteristics. After media violence exposure (e.g., playing a violent or nonviolent video game), the researchers might

observe how the participants interact with each other, measuring physical or verbal aggression. Alternatively, researchers might measure their aggressive feelings, aggressive thoughts, attitudes, or even physiological arousal. For example, Bjorkqvist (1985) randomly assigned 5- to 6-year-old Finnish children to view either a violent or nonviolent film. Two raters (blind to experimental condition) later observed the children playing together in a room. Compared to those who had viewed the nonviolent film, children who had just watched the violent film were rated much higher on physical assault and on other types of aggression.

Cross-sectional correlational studies allow for tests of a long-term relation between media violence exposure and more extreme "real-world" measures of aggression, but they are weaker with regard to testing causality. They are useful in testing the generalizability of experimental findings, and in testing causal theoretical models, as will be discussed in a later section. In a typical cross-sectional correlational study, researchers give surveys or conduct interviews with youths or young adults, and often also with their peers, their parents, or teachers. These surveys gather information about participants' media violence exposure, their aggressive behaviors (which have ranged from verbal aggression through delinquency and even to serious violence), and often personality and demographic characteristics. Again, the consistent finding across studies of different forms of media violence is that children and adolescents with greater exposure to violent media exhibit higher amounts of aggressive behaviors than those with less exposure. These associations typically remain significant even when a host of other variables are statistically controlled. For example, Anderson and Dill (2000) assessed exposure to violent video games, and correlated it with college students' self-reported acts of aggressive delinquent behavior in the past year (e.g., hitting or threatening other students, attacking someone with the idea of seriously hurting or killing him or her, participating in gang fights, throwing objects at other people). The overall correlation between exposure to violent video games and violent behavior was substantial and significant ($r = .46$, $p < .05$). The association remained significant even in analyses that controlled for antisocial personality, gender, and total time spent playing any type of video game.

Longitudinal studies allow for tests of long-term effects, by following the same people over time. They can provide good evidence of causal direction even though they are correlational, because later events cannot affect earlier ones. They can allow statistical controls for plausible alternative explanatory factors. Furthermore, they can assess more

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extreme forms of aggression. However, they are very expensive and difficult to conduct. The consistent finding across longitudinal studies of TV and film is that early violent media exposure is related to ~~increased~~ later ʌaggressive thoughts and aggressive behaviors, rather than the other way around, although there is also evidence that it is a vicious circle, with each increasing the other over time (e.g., Slater, Henry, Swaim, & Anderson, 2003). To date, there is only one longitudinal study of violent video games, but it is consistent in showing that 3rd through 5th grade children change over the course of a school year to become more physically aggressive if they play a lot of violent video games at the beginning of the year (Anderson, Gentile, & Buckley, 2007).

If only one of these classes of studies yielded evidence of media violence effects, most scientists (including the present authors) would be hesitant to claim that the effect was *real*, but instead would worry about the possibility of some hidden artifacts. The strongest scientific evidence possible would be if *all* types of studies showed the same effect, regardless of differences in methods, measurements, or subject populations. Such strong evidence exists in the case of media violence studies. For recent reviews see Anderson and Bushman, 2001; Anderson et al., 2003; Anderson et al., 2004; Bushman and Huesmann, 2001; Gentile and Anderson, 2003; Gentile and Stone, 2005; Kirsh, 2006; Strasburger and Wilson, 2003.

Meta-analyses

As we have said, the strongest scientific evidence would be if *all* types of studies showed the same effect. This is what the overall body of media violence research shows. Nonetheless, some studies show no significant effect, and a very few demonstrate the opposite effect. How can scientists make sense of apparently contradictory findings? One objective approach is meta-analysis, in which all studies are combined statistically to determine whether the effect holds once all the data are combined. There have been numerous excellent meta-analyses of the media violence literature (which are summarized in Comstock & Scharrer, 2003). Figure 14.1 displays the results of a meta-analysis of 284 independent studies (including 51,597 participants) of the four types of studies of media violence effects on aggression (defined as behavior intended to harm another person). Regardless of how it is studied, there is a positive relation between media violence exposure and aggression (Anderson & Bushman, 2002a). To summarize, experimental studies (laboratory and field) conclusively demonstrate that
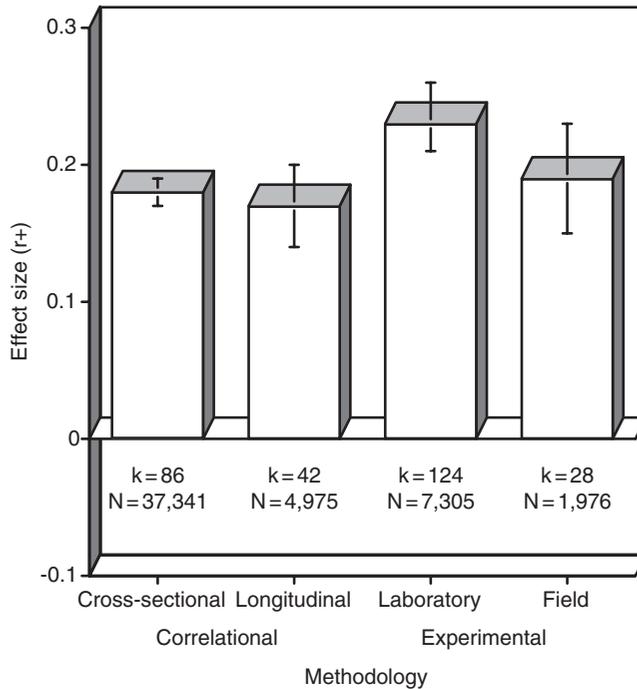
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Figure 14.1   Results of meta-analyses of studies of media violence exposure and aggressive behavior. Positive effect sizes indicate that media violence exposure is positively related to increases in aggression/violence. Vertical capped bars indicate the 95% confidence intervals for the average effect size. (Based on data originally reported in Bushman & Anderson, 2001)
k = number of independent samples, N = total number of participants used in the effect size estimate, r+ = the average effect size

the link is causal. Laboratory experiments yield a slightly larger effect size than other methodologies, probably because of the greater control over irrelevant factors one has in the laboratory. Field experiments demonstrate causal effects in naturalistic settings. Cross-sectional studies demonstrate a positive link between media violence exposure and aggression in the "real world," including serious forms of aggression that cannot ethically be studied in the laboratory (e.g., physical assault). Many of the cross-sectional studies also effectively test and rule out key alterative explanations. Longitudinal studies demonstrate long-term effects of early media violence exposure on later aggressive behavior, rule out additional alternative explanations, and provide additional support for causal conclusions. As shown in figure 14.1,

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each type of study supports the scientific fact: Media violence exposure causes increases in aggression.

The scientific facts about media violence

So, what are the main scientific facts about media violence effects that meet the courtroom criterion of "a reasonable degree of scientific certainty?" The following list summarizes the conclusions of a number of major reviews.

1. Brief exposure to media violence:
    a. increases aggression in the immediate situation
    b. increases aggressive thoughts or cognitions in the immediate situation
    c. increases aggressive feelings in the immediate situation
    d. can cause fear, anxiety, and nightmares, especially in children, which sometimes persist for long periods of time
    e. can teach new ways to harm others.
2. Repeated exposure to media violence:
    a. increases aggression and violence across long time spans (22 years or more)
    b. desensitizes people to scenes of violent acts and consequences of such acts
    c. increases acceptance of violence as a means of solving conflicts
    d. increases aggression-supportive attitudes and beliefs, such as hostile attribution biases
    e. may be larger for younger children and adolescents.
3. Several basic psychological processes underlie media violence effects; these processes are general, that is, not specific to media violence and aggression:
    a. imitation of observed action, especially by young children
    b. observational learning of:
        i. specific behaviors and behavioral scripts
        ii. attitudes and beliefs about how the world works
        iii. outcome expectations about the consequences of specific behaviors
    c. priming or cueing of existing behavioral scripts, cognitions, and affect
    d. desensitization
    e. increases in physiological arousal resulting in excitation transfer and other effects.

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4. There does not appear to be any identifiable group (e.g., age, sex, personality type) that is wholly immune to media violence effects.
5. Media violence effects are best viewed as one of the many risk factors that contribute to aggression and violence in modern society.
6. Media violence effects are sufficiently large, both in terms of absolute size and relative to other aggression/violence risk factors, to warrant public policy debate about possible ameliorative action.
7. Reducing exposure to media violence reduces later aggression.

Science facts and politics

Thus, science has done its job – it has provided us with factual answers. However, once these facts are established, they can be manipulated by political and societal pressures. One recent example is demonstrated by the Anderson et al. (2003) review. In 2000 the U.S. Surgeon General asked the National Institute of Mental Health to establish an expert panel of media violence researchers who would evaluate and summarize all of the relevant scientific research on media violence effects. This report was to be included as part of the Surgeon Genera's report on youth violence (U.S. Department of Health and Human Services, 2001), as a separate chapter. A panel of distinguished and experienced media violence scientists was formed, led by Dr. Rowell Huesmann, one of the pioneers in this field. Once the panel's scientific review was completed, it was altered without their approval in a way that they considered to be a distortion of the science. Whether the revisions were the results of political pressure, industry pressure, ignorance or biases of the NIMH and/or Surgeon General's staff working on the report, miscommunication between the panel and the NIMH and Surgeon General's offices, or some other source is unknown (at least, to the expert panel). What is known is that the revisions made media violence effects appear less strong than the research demonstrated. The panel worked with NIMH and Surgeon General officials to find a compromise that the panel could accept as being scientifically accurate. However, when the final Surgeon General's report on youth violence was released, the chapter that the expert panel had written was altogether and inexplicably absent. A revised and updated version was eventually published in an academic journal (Anderson et al., 2003). This anecdote is germane because it illustrates that the intersection of science, public policy, and the law is not always obvious or transparent. Kennedy (2002) noted that, "These entanglements [between science and politics], although not always welcome, are an inevitable consequence of the fact that science matters" (p. 1765).

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Common Challenges to the Facts

Beyond political challenges to scientifically derived facts, many scientific challenges have been raised and answered throughout the history of media violence research. Several of the most common ones are described next. Though many people are familiar with these challenges, the fact that they have been adequately answered is not common knowledge. For a more detailed discussion of these issues, see Anderson et al. (2007), Gentile (2003), Potter (2003), and Singer and Singer (2001).

Field studies, especially cross-sectional correlation and longitudinal designs, are frequently criticized as being low in internal validity. That is, they don't "prove" that variation in the independent variable caused observed differences in the dependent variable. This criticism is often highlighted with the glib phrase, "Correlation is not causation." This is an oversimplified mantra taught to introductory psychology (and other science) students. The more correct scientific understanding is that correlational studies are quite useful for testing causal theoretical models and alternative explanations. For example, one alternative explanation of the correlation between media violence exposure and aggressive behavior is that it is the amount of time spent on entertainment media in general that leads to poorer social skills and higher levels of aggression. This alternative explanation has been ruled out by numerous correlational studies in which the effect of media violence exposure on aggression remains significant even when total time spent consuming media has been statistically controlled.

Similarly, laboratory studies are frequently criticized as lacking in external validity. The claim is that they do not generalize to other (usually real-world) contexts and populations. Part of the criticism is aimed at the measures of aggressive behavior used in controlled laboratory settings, such as the intensity and duration of punishments delivered to an opponent. Both the generalization criticism and the more specific criticism of aggression measures have been empirically demonstrated to be false (e.g., Anderson & Bushman, 1997; Carlson, Marcus-Newhall, & Miller, 1989).

A third common challenge to the scientific facts is the claim that the results are mixed. It is certainly the case that not every study of media violence finds statistically significant effects. As in any research domain (e.g., smoking/cancer), the results from different studies vary somewhat. Some of this variation is due merely to the usual sampling variability, some is due to use of different methods and possibly to

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different populations. Studies with smaller samples will, of course, tend to show greater variability in estimated effect size. ~~And~~ recent analyses of the violent video game literature have shown that studies with poorer research methods tend to yield smaller effect sizes (e.g., Anderson et al., 2004). Meta-analyses are particularly well suited to address the question of whether there is a significant overall effect of media violence on aggression, and all major meta-analyses have come to the same conclusion. Indeed, a cumulative meta-analysis by Bushman and Anderson (2001) found that by 1975 (the first year in which a sufficiently large number of studies for a meta-analysis had accumulated) the evidence of such an effect was quite clear.

A fourth, oft-repeated challenge is that the violent crime rate in the U.S. has been dropping in recent years while the use of violent media (especially violent video games) has been increasing. It is ironic that this challenge is frequently uttered by the same critics who promote the "correlation is not causation" dismissal of all correlational studies. The problem with this argument is that it assumes that media violence is the only or the most important factor driving violent crime. Media violence researchers have never made such extreme claims, and indeed they see media violence as one of a dozen or more risk factors for aggression and violence. Several other major variables have also been at work during the recent downturns in violent crime. For example, the proportion of the U.S. population that falls within the high violence age group has been declining, fewer young people are carrying handguns, there have been huge improvements in trauma care, unemployment rates have dropped, and we now have record high incarceration rates. Furthermore, the most recent data suggest that violent crime rates are again increasing despite all of these favorable changes in other risk factors.

A final common challenge is based on a common misperception of what the media violence experts have said. This challenge frequently takes the following form: "I've played violent video games for years and haven't killed anyone yet." We have heard such arguments from a wide variety of individuals, ranging from elementary school children to public policy makers to social scientists. As noted in the Science Facts and Theories section, exposure to media violence is a risk factor for increased levels of aggression. Extreme acts of violence typically involve the convergence of multiple risk factors, and even then are fairly rare. No single risk factor by itself predicts extreme violence very well. Media violence exposure differs from most other risk factors, though, in that it can be controlled with essentially no financial cost by parents who understand the need for control, if they

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are given the proper tools to assist their attempts to restrict their children's access.

Summary and Conclusions

The media violence research literature is large, diverse, and consistent. True scientific experts on media violence effects have reached a consensus that, in our view, meets the criterion of a scientific fact as a conclusion held with a reasonable degree of scientific certainty. The key fact is that exposure to media violence causes an increase in the likelihood of aggressive and/or violent behavior in both short- and long-term contexts. There are, of course, disagreements about a number of more specific issues (e.g., who is most and least susceptible). Also, additional research is needed to answer a host of these more fine-grained scientific issues. But once one understands and resolves the issues of probabilistic causality (versus the old necessary and sufficient causality criteria), and of differences in language and question-intent between the scientist role versus the legal expert role or the advisor to public policy and general public roles, then the potential of this vast body of research to have a positive impact on modern society becomes clearer and more easily accomplished.

One final domain that deserves brief mention concerns the difference between the normative or average case and the individual case of media violence effects. We (and most media violence researchers we know) are quite comfortable in discussing the probabilistic effects of media violence exposure on the likelihood of aggression and violence in large populations, that is, the normative case. However, we frequently receive calls from reporters and occasionally from defense lawyers and parents of violent crime victims and perpetrators asking about whether a specific violent crime was caused by that perpetrator's exposure to violent media. In recent years, this has usually concerned violent video games. In our view, it is very difficult to know in the individual case how much impact (if any) the media violence exposure had on the ultimate decision to behave violently. Of course, the same issue arises in many trials, both criminal and civil, involving harmful products (such as tobacco). Some lawsuits have been brought alleging that media industries should be held culpable in individual cases of violence (e.g., school shootings). It is not clear to us whether it is possible at this point in time to arrive at a definitive scientific answer to the question of how much (if at all) did exposure to a specific media violence product causally contribute to a specific violent crime.

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Certainly, the broad scientific literature on media violence does provide a sound scientific context for thinking about individual cases. But this is not the same as proving that in any specific case, media violence *caused* the violent action. Nonetheless, because violent behavior is multicausal, understanding the average increase in risk posed by media violence exposure can allow a decision-maker to reach a conclusion about the multiple causes that bear on a specific case that is consistent with the scientific research. In other words, a juror or judge might reasonably decide that media violence in general or that a specific media violence product was at least somewhat responsible for a specific act of violence, and could reasonably assign a portion of responsibility (and damage cost) to the product manufacturer and to those who exposed the perpetrator to the product, as is commonly done in product liability cases.

What is even clearer to us is that: (1) the individuals who commit violent crimes must be held responsible for their acts; (2) modern society (especially parents) must become better informed about media violence effects; and (3) the problem of media violence exposure is severe enough to warrant serious action to reduce children's and adolescents' exposure.

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