Review Article

Social science's curious war with pop culture and how it was lost: The media violence debate and the risks it holds for social science

Christopher J. Ferguson [a,*], Eugene Beresin [b]

[a] Stetson University, United States
[b] Massachusetts General Hospital, Harvard Medical School, United States

ABSTRACT

For nearly half a century, psychologists, pediatricians and psychiatrists have studied the potential impact of media violence on aggression and societal violence, particularly among youth. Despite hundreds of studies, scholars have failed to find consensus on potential effects. Nonetheless, professional organizations such as the American Academy of Pediatrics and American Psychological Association have released policy statements conclusively linking violent media to societal concerns. In reaction, some scholars have accused these professional groups of distorting evidence and failing to inform the public of the inconsistent nature of studies in this field. The current paper reviews recent research on media violence. It concludes that caution is recommended in public statements regarding media effects and that professional groups risk serious reputation damage with policy statements calling for behavioral change without clear reflection of the current evidence-base of the research. Recommendations are provided for practitioners and for science policy.

© 2017 Elsevier Inc. All rights reserved.

Contents

1. Introduction

The debate on media violence within the scholarly community has waged, in modern times, for at least fifty years. Despite that widespread agreement on media violence effects among scholars never seemed to

* Corresponding author at: Department of Psychology, Stetson University, 421 N. Woodland Blvd., DeLand, FL 32729, United States.
    E-mail address: CJFerguson1111@aol.com (C.J. Ferguson).

entirely coalesce, scholarly guilds and advocacy organizations, such as the American Academy of Pediatrics (AAP) (Council on Media and Communication, 2009), American Psychological Association (APA, 2015), or the Society for the Psychological Study of Social Issues (SPSSI, 2014) released policy statements conclusively linking media violence to aggression and violence in society. In each of these cases, professional guilds and advocacy organizations released statements ignoring considerable research conflicting with the policy statements. In many cases, these policy statements may have been written by or influenced by individuals with potential conflicts of interest. Further, the statements rarely acknowledge research examining the benefits of media use, including violent media. Each of these organizations have also endorsed potentially censorious or regulatory efforts directed at media, despite judicial and constitutional prohibitions against the same. This combination of citation bias in public policy statements (i.e. failure to cite or recognize research contradicting the policy statements) and calls for regulatory efforts that are unconstitutional arguably risk damaging the reputation of these professional organizations and the media psychology endeavor far more than it does the media industry. Moreover, it contradicts the ethical, professional and social obligation to provide the public, in this case parents, with sound, evidence-based guidelines on the risks and potential benefits of activities that influence child development. We argue in this review that the conclusions on the dangers of media violence are unsubstantiated by rigorous scientific research.

2. A brief overview of media violence research

Meta-analyses of both research on television/movies (Paik and Comstock, 1994) and video games (Anderson et al., 2010; Ferguson, 2015a) suggest there may be several hundred studies in each of these realms, though of varying and sometimes controversial quality (Savage, 2004). Despite the size of this research field, considerable concerns remain regarding endemic methodological quality problems for the field, particularly when such quality limitations have been shown to be associated with spurious effects (Ferguson, 2015a; Savage and Yancey, 2008).

2.1. Meta-analyses of results

Regarding individual studies, there are certainly studies that find evidence for relationships between media violence and aggression, but there are also a great many (and potentially increasing) number of studies that do not find evidence for such links, or suggest even that exposure to violent media may be inversely related with some forms of aggression (Colwell and Kato, 2003; Ferguson and Olson, 2014; Feshbach and Tangney, 2008; Breuer et al., 2015). With such contradictions between individual studies, scholars have sometimes turned to meta-analyses. Meta-analyses of media violence literature suggest that effects, averaged across studies, fall somewhere in the range of, roughly, $r = 0.00$ through $r = 0.20$, effects that are either null or weak (Paik and Comstock, 1994; Anderson et al., 2010; Ferguson, 2015a; Savage and Yancey, 2008; Kanamori and Doi, 2016; Sherry, 2007). These observations are made with several further caveats, also identified through meta-analyses namely:

First, as scholars move from studying artificial tests of aggression in the lab to real-world aggression and violence, effect sizes diminish, ultimately approximating zero (Paik and Comstock, 1994; Ferguson, 2015a; Savage and Yancey, 2008). Second, the use of unstandardized measures of aggression results in higher effect sizes (Ferguson, 2015a) as does overuse of bivariate rather than controlled effect sizes (Kanamori and Doi, 2016). Third, citation bias (the tendency for authors to cite only studies supporting their personal views) is associated with higher effect sizes (Ferguson, 2015a). Fourth, publication bias is a clear problem for the field (Ferguson, 2015a). Thus, it is difficult to conclude from meta-

analysis, that media violence has a reliable or profound influence on youth behavior.

2.2. Societal level and population-based data

One other source of data to consider is societal level data. With societal level data, researchers track society's use of violent media, alongside societal problems theoretically related such as homicide levels, violent crime, youth violence or bullying and often make direct claims regarding their influence (Strasburger, 2007). Data do not support the association between consumption of media violence and violence in society (Ferguson, 2015b; Markey et al., 2015a). Indeed, evidence has now clarified that, if anything, the release of violent movies (Dahl and DellaVigna, 2009) and videogames (Markey et al., 2015b) are correlated with decreases in crime. These results are consistent with routine activities theory which suggests that occupying the time of people at high risk for offending gives them less time to offend. Graphs representing the correlation between movie violence consumption and homicides and video game violence and youth violence rates are presented as Figs. 1 and 2 respectively.

Fig. 1 plots the frequency of violence in top grossing movies across the 20th century against homicide rates (see Ferguson (2015b) for methodology). As can be seen, these two phenomena did appear to correlate in the mid-20th century. However, both before this period as well as after 1993, movie violence consumption and homicide rates were inversely correlated. Similarly, as seen in Fig. 2, for the years in which data are available consumption of violent video games and youth violence rates are inversely related. Societal-level correlational data are just one source of information, of course but coupled with the increasing replication crisis among laboratory, longitudinal and correlational studies, point to overall weak data for assumptions of violent media effects.

3. Theories of media violence effects

3.1. Hypodermic needle models

Theories of media effects vary to the extent that they posit media as a primary driver of behavior or a tool used by agentic individuals toward specific motivational ends. Hypodermic needle models fall into the former category. The name derives from the basic view that behaviors are injected into viewers by the media, who passively model viewed behaviors in a predictable and unidirectional way. Indeed, proponents of such a theory may claim that the effects of violent media are no different from experiencing violence in real life (Bushman and Huesmann, 2014).

Hypodermic needle models are obviously congruent with the fears society may have over new media, as they tend to emphasize that objectionable media will create similarly objectionable behaviors in young viewers. Such models may allow for some moderator effects, such that some viewers may be influenced more than others, but generally take a "no one is immune" type of approach. At the same time these models have been critiqued for hidden assumptions within the model, such as that aggression is mainly a learned, cognitive process rather than an innate trait or stress response, that fictional media violence has the same impact on viewers as real-life violence, and that any level of aggression is "bad" (Ferguson and Dyck, 2012).

3.2. Motivational models

Motivational models posit that the media user is at the center of the media experience. Such models, including Uses and Gratifications (Sherry et al., 2006) and Self-Determination Theory (Przybylski et al., 2010), suggest that individual users select media in order to meet specific motivational or emotional end goals, and that these may differ from user to user. Thus, rather than a direct link between media exposure and resultant behavior, the user's motivation, selection of media, and processing of that media is more critical than the content of the
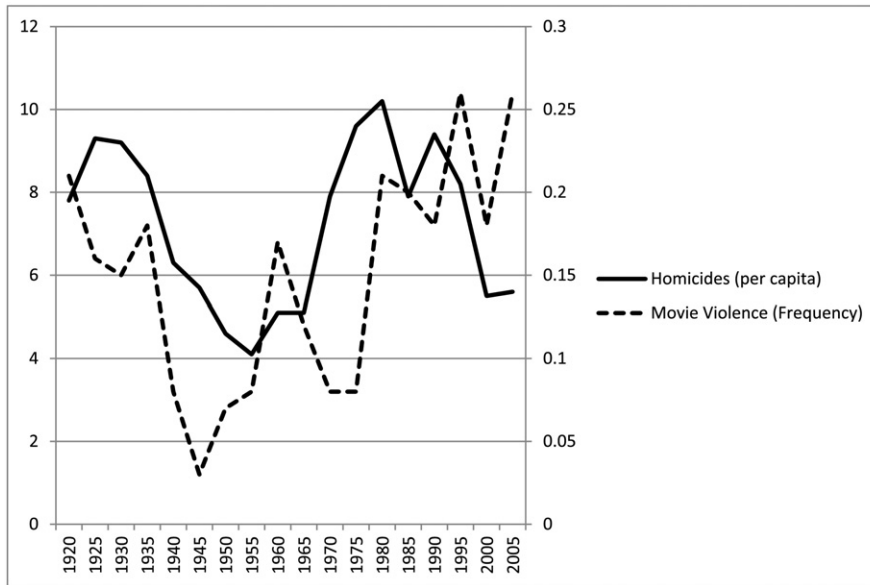
Fig. 1. Movie violence consumption and homicide rates in the United States. The left axis indicates the per-capita homicide rate, the right axis, a ratio of minutes during a movie in which violent acts occurred, divided by total number of minutes.

media. From such theories we would expect idiosyncratic effects, that is to say different users will respond differently to the same media in ways that defy blanket condemnations of content. The match between media and user is more critical than content, with congruent matches producing positive outcomes, incongruent matches producing negative outcomes. With respect to violent media, some users may legitimately use violent media to de-stress and calm down, so long as that media is congruent with their own interests. Fig. 4 contrasts hypodermic with motivational model approaches. Fig. 5 notes the idiosyncratic nature of media effects as predicted by the "match" between media exposure and user motivations. Though still fairly simplistic, the model suggested by Fig. 5 notes that user/media interactions are more crucial than is content.

An interesting question arises when players of video games engage in deliberate antisocial acts in video games, such as attacking helpless civilians. There is some evidence that narrative context can influence mild forms of aggression, although this appears to be independent of violent content (Sauer et al., 2015). Other evidence has suggested that antisocial acts in game play can actually promote moral evaluation rather than desensitization (Grizzard et al., 2014). In either case, in-game antisocial behaviors may be more a reflection of the player than the game, whether the situational choice to act antisocially when a game does not require it, or to purchase the game in the first place. Such acts may still serve stress reduction purposes for some players and making global attributions is difficult.

3.3. The Catalyst Model

The Catalyst Model is more a diathesis-stress model of aggressive and violent behavior than a media effects model per se (Surette, 2013). The Catalyst posits the development of pathological aggression as occurring as an interaction between inherited genetic risk with harsh environment. Moments of violence are brought out particularly during times of stress. Although the Catalyst Model certainly allows
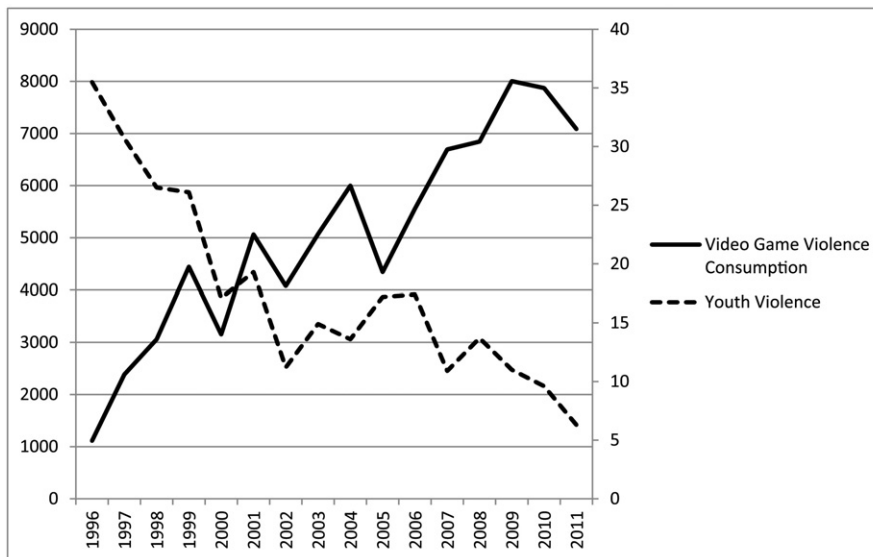

Fig. 2. Video game consumption and youth violence rates in the United States. The left axis is a composite of video game units sold adjusted for the violent content in top selling games, right axis is per capita youth violence victimization rate.

for some socialization, particularly through family and peers, automatic, learned cognitive scripts are not a primary mechanism for this model. Further media influences are specifically considered too distal to impact aggressive behaviors. Thus, the Catalyst Model, unlike hypodermic needle models, specifically distinguishes between the effects of violence exposure in real life, and those viewed through fictional media.

3.4. Moral Panic Theory

Moral Panic Theory is less a theory about media effects and more about how society responds to new media (Bowman, 2016). In particular, older adults who do not use new media may be particularly hostile and fearful of this new media, an observation firmly established empirically (Przybylski, 2014). From that point forward, various pillars of society, mainly journalists, scholars and politicians, cater to the predetermined conclusions of older adults who subscribe to more news media, vote more often, and control granting agencies to a greater degree than do younger adults. In effect, journalists, scholars and politicians (who themselves tend to be older adults) all profit in various ways (whether financially, or through increased prestige) by indulging the moral panic. This need not imply bad faith, only that moral panics set up selective attention to and incentives for information supporting that panic, ignoring or disincentivizing information conflicting with the panic. Such panics only die out when the older generations themselves do, with the panic repeating with the next "new" media.

Moral Panic Theory helps to explain the behavior of professional advocacy organization such as the AAP, APA and SPSSI, when they have released policy statements claiming links between media and societal aggression while engaging in citation bias and exaggerated claims. Put simply, such organizations are not acting as arbiters of objective "truth" but rather as professional guilds, promoting their professions by finding problems for their members to "fix" and bringing prestige to their own organizations.

4. Professional guild policy statements

First, it must be acknowledged that not all reviews of media violence research have concluded that media violence can be linked to societal violence. Recent reviews by the governments of Australia (Australian Government and Attorney General's Department, 2010), Sweden (Swedish Media Council, 2011) and the UK (Cumberbatch, 2004) as well as the US House of Representatives (Gun Violence Prevention Task Force, 2013) and US Supreme Court (Brown v EMA., 2011), have all acknowledged that it's not possible to link media violence to societal violence with current evidence. The 2001 report on youth violence by the Department of Health and Human Services largely relegated media violence to a trivial role (U.S. Department of Health and Human Services, 2001). Even the anti-media activist group Common Sense Media has acknowledged that research evidence can't support conclusive links between media violence and aggression in society (Common Sense Media, 2013).

Policy statements should promote healthy behavior based on known principles and guidelines rather than using fear and guilt based anti-media messages. However, they should also take care to note inconsistencies in the literature and methodological weaknesses. Policy statements should be constructed by neutral observers, free of conflicts of interest, and in an atmosphere of full transparency. In no case thus far has a professional guild (defined here as a professional representation organization into which members of the profession pay dues so that the organization will promote and lobby for their profession. Such organizations also are active in setting professional and ethical standards for members) relied on neutral observers to carefully weigh the science regarding use of media. Instead, professional organizations have, each time, specifically selected scholars with public anti-media views. It is worth asking why professional guild organizations persist in such policy

statements despite that they are misrepresentations of the current science.

As a matter of contrast, one example of policy aimed at prevention and harm reduction based on sound scientific research is the study of copycat phenomena of suicidal behavior in adolescents. Research supports an increase in completed suicides and attempts when there are publicized suicides and attempts particularly when adolescents have recently (within a two-week window) read about a suicide, particularly if it was a peer. Research has shown that there is a greater copycat effect when there is extensive media coverage and detailed descriptions and if the event is glamorized or sensationalized. Copycat phenomena have decreased if reports present a negative view of the event, e.g. describe a cult situation, disfigurement, or the condemnation from and suffering of survivors (Sudak and Sudak, 2005). The outcome of multiple research findings led the American Foundation for the Prevention of Suicide and the CDC to propose guidelines for media coverage grounded in evidence. On the other hand, others have made the jump from guidelines on copycat suicides to copycat mass shootings when the latter has not been fully understood through rigorous investigation.

The difficulties experienced by professional organizations in balancing political incentives with objectivity may be illustrated by the APA's recent scandal on a different matter entirely. In 2015, it was revealed that the APA had changed its own ethics code to allow psychologists to participate in the torture of detainees at Guantanamo Bay and other sites (Pope, 2016). In the ensuing "Hoffman Report" commissioned by the APA itself, it was acknowledged that the APA had sought both prestige and influence with the US military, as well as financial gain for its members. Arguably, this scandal provides an illustration of how political concerns may influence the decisions and public statements of professional advocacy organizations.

This is not merely a hypothetical, but can once again be observed with the APA's recent task force on video games (American Psychological Association, 2015). From its creation, the task force sparked conflict, from the opaque process of member nomination to concerns about members' biases or conflicts of interest. To draw attention to and address these issues, over 230 scholars wrote an open letter to the APA, asking them to retire and previous policy statements on media violence. The scholars professed the hope that the APA would refrain from releasing policy statements claiming definitive effects when the research base was inconsistent. The APA did not reply to or acknowledge this letter. The final task force report was itself controversial (Wofford, 2015) both for the continued perception of a biased process and the methodological shortcomings of the meta-analysis the task force conducted.

5. Implications of policy statements for child/adolescent practitioners

In the preceding argument we have offered a critique of media based policy statements by organizations such as the AAP and APA. These policy statements have important implications for practitioners. Such policy statements guide professional care and advice given to parents. Below we express some of these issues with some practical thoughts for how practitioners may address them.

5.1. User reactions are idiosyncratic

At present media policy statements encourage practitioners to make broad, fear-based statements or gross generalizations to parents. This presents several risks. First, advice given by practitioners may actually be harmful if not applied to the needs and circumstances of a specific child. Although some children may, indeed, be best served by avoidance of certain media, others may legitimately use media, even violent media, to relax, reduce stress, as a form of sublimation to quell aggression, or to socialize with other youth (Kutner et al., 2008). Clinicians in all cases need to provide guidance based on knowing the child and

his/her emotional and behavioral strengths and vulnerabilities. Parents and clinicians are best to avoid blanket rules for behavior and discuss what activities may be worrisome. Interrupting media use for children for whom such media is actually beneficial could cause unintended harms (Olson, 2016). Similarly, inducing fear of media in parents whose children have no difficulties with media could result in arguments and difficulties that could lead to missed opportunities for mutual understanding (Kutner et al., 2008). A "one size fits all" approach has the potential to do more damage than good (Olson, 2010).

5.2. How rather than what media are used is more important

Increasingly it is clearer that media content is not a reliable predictor of viewer behavior. This is likely true in other realms such as sexual content in media (Steinberg and Monahan, 2011) and thin ideal media/body dissatisfaction (Holmstrom, 2004). If practitioners are concerned about media effects, it may be of greater value to understand how particular families are using media, perhaps more than what they are watching specifically. Are media being used as a social activity? How much time is spent using digital media vs. other academic, athletic and social activities? Are parents and children discussing what they are seeing in the media? Is media use being balanced well with other activities such as homework and exercise? These questions may be more valuable to consider rather than whether what children are watching or playing is "naughty." Clinicians might encourage parents to have discussions with their children and if they bring in data on the use of media, clinicians and parents might best come up with a set of guidelines tailored to the needs of a particular child. As in all medicine and psychology, treatment plans need to be highly specific to the patient.

5.3. Focus on media can distract from more crucial issues

Well-child visits (i.e. routine checkups) are notorious for being crammed with recommended checks for various issues. One analysis found that AAP policy statements suggested 192 discrete health directives pediatricians are supposed to address with parents, far more than could be included in any well-visit (Belamarich et al., 2006). Aside from injury prevention, media use was the most-frequent topic for AAP health advice directives: more than substance abuse, emotional health, sex/pregnancy, and nutrition, reflecting a particular focus (some might say obsession) of the AAP with media use and effects. The authors noted that none of these directives provided any evidence for their utility or effectiveness in preventing adverse outcomes.

This observation raises the potential that the AAP's unwarranted focus on media issues has real potential to distract practitioners from more pressing concerns such as emotional health, sexual health, substance use or even nutrition. This misaligned focus can be further transmitted to parents who might invest considerable energy attempting to manage a restrictive media diet, energy that might have been better invested in other areas of their child's development.

5.4. Media moral panics can influence mental health diagnostics

Media moral panics related to content can spill over into other areas influencing mental health diagnostics when such media use is spuriously considered pathological. The current controversy over the DSM-5 proposed category "Internet Gaming Disorder" is an excellent example. The proposed category has been included in the DSM-5 (as a condition warranting more clinical research and experience) despite evidence suggesting that behavioral addictions related to gaming are rare (Haagsma et al., 2012) and no similar proposals have been made for other repetitive behavior problem areas such as sex, work, exercise, eating, etc.

Further, there are concerns that the proposed criteria for gaming addiction, having been "borrowed" from substance use disorders, lack validity through inadvertently pathologizing normal behavior (Kardefelt-

Winther, 2015). This occurs because behaviors that are problematic for the use of alcohol or heroin, such as thinking about the activity when not using it, or using the activity to reduce stress are problematic signs when dangerous substances are being used, but normative in other circumstances. Thinking about a hobby when not engaged in it, noting a new hobby displaces old hobbies, or using a hobby to reduce stress are no more problematic when the hobby is video games then when the hobby is fishing, crocheting, or model trains. This misapplication of internet gaming disorder in the DSM-5 lacks precision, with considerable potential for false positives and pathologizing normal behavior.

6. Scholarly consensus?

Curiously, whether media scholars agree on media violence effects is a controversy of its own. It has been common for scholars who argue for the negative impact of media violence to claim a consensus exists. Sometimes such claims are made remarkably aggressively, with ad hominem comments that those scholars who are not part of the ostensible consensus are "industry apologists" (Anderson, 2013) or akin to holocaust deniers (Strasburger et al., 2014). Claims of consensus are often made with little backing data. However, some efforts to test this through survey data have been made.

The earliest such survey was conducted by John Murray in 1984 (Murray, 1984). Murray conducted an informal poll of media scholars and found that 90% of psychologists and 85% of communication scholars agreed with a rather sternly worded warning about media violence. The wording of this statement by the National Institutes of Mental Health itself mentioned a consensus among scholars, linked media violence definitely to societal aggression and suggest the effect was as strong as any other known influence on aggression. Murray acknowledged his survey was "informal" and the wording of the statement implying a consensus may have set up demand characteristics. Further, polling only individuals involved in the field of television violence may have involved selection bias, as it could be argued that individuals with preexisting beliefs about media violence being harmful may be more prone to doing research in that field. Nonetheless, with these caveats in mind, Murray (1984) presents a compelling snapshot of the mood of the field in the mid-1980s.

Beginning after 2011, a rash of surveys once again examined scholarly opinions. These surveys may have been sparked by a 2011 US Supreme Court case (Brown v EMA, 2011) which considered the issue of video game violence. In this case, the court declared efforts to regulate violent media (including government sanctioned ratings systems) to be unconstitutional. Further, the court, in its majority decision, declared that the evidence linking violent media to harm to minors was unconvincing. This outcome potentially was frustrating to advocates of hypodermic needle models of media violence, as evidence by several "Why don't they believe us?" themed papers and conference presentations in subsequent years.

Thirty years after Murray's survey, evidence for a consensus has become murkier, at best. One survey study (Bushman et al., 2015) found that only 58% of media researchers agreed or strongly agreed with a vague statement causally linking media violence to aggression (left undefined), and only 35.2% agreed that media violence influenced real-life violence. Indeed, a larger proportion of researchers disagreed (41%) with this last statement than agreed. In examining the question linking media violence to real-life violence (the question arguably most similar to Murray's, 1984 survey), agreement among scholars dropped from roughly 87.5% to 35.2%.

To make the picture more complex, in another analysis (Quandt et al., 2015) only 10.1% of media scholars agreed or strongly agreed that digital game violence effects on aggression were a problem for society. Also in 2015 a survey of clinicians (Ferguson, 2015c) found that only 39.5% agreed that video game violence contributes to youth violence. This survey also revealed a striking generational divide, with older clinicians far more inclined to hold negative opinions about games than
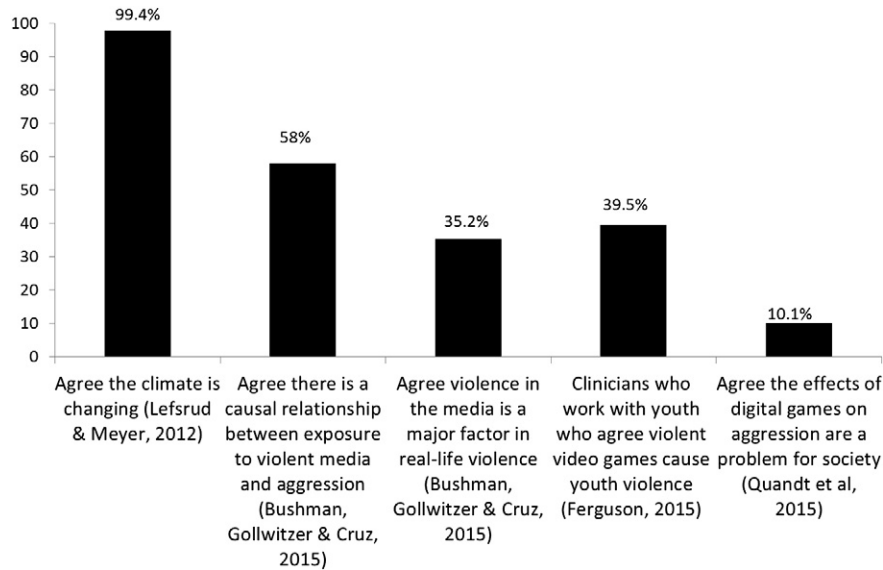
Fig. 3. Percent agreement among scholars in various fields regarding statements on global warming and media violence effects. Participants in Lefsrud and Meyer (2012) were climate scientists. Participants in Ferguson (2015c) were clinicians working with youth and/or families. All other participants were media scholars.

younger clinicians. Further, clinicians who held negative attitudes toward youth themselves were more inclined to endorse negative beliefs about video games. Fig. 3 presents the various surveys of scholars and clinicians, contrasting these with a survey of climate scientists' opinions on climate changes as a means of comparison.

Further, in 2013 a group of approximately 230 media scholars wrote an open letter to the American Psychological Association asking them to remove their policy statements regarding media violence (Consortium of Scholars, 2013). From multiple sources of data, evidence for a scholarly consensus on media effects or media violence has not emerged. When professional advocacy organizations such as the APA or AAP release policy statements related to media violence, two pitfalls recur: they present research findings as more consistent than they are, and they project an aura of consensus where none exists.

7. Conclusion

At present, research evidence linking media violence to societal aggression and violence is, at best, inconsistent. Further, media violence research appears to be part of a "replication crisis" embroiling much of social science, in which previous held "truisms" are proving to be difficult to replicate under more rigorous methods (Asendorpf et al., 2016). With this in mind several steps should be considered. We believe that these steps, if taken, would help curb misinformation spread, if with good intentions, by professional guilds that may have detrimental impact on scientific progress, policy and their own reputations.

First, professional guilds such as the APA, AAP and SPSSI should immediately retire all policy statements related to media effects. These should be replaced with practical guidelines for clinicians and parents, indicating which are substantiated by research and which are opinions of leaders in the field. Policy statements may be neutral or have pros and cons based on clinical experience. This recommendation has precedent in the American Academy of Child and Adolescent Psychiatry (AACAP) Practice Parameters for the treatment of psychiatric disorders. Not all clinical decisions may realistically be grounded in rigorous science, but to be useful, clinical recommendations must be informed by the available science, with areas of opinion and uncertainty openly acknowledged.
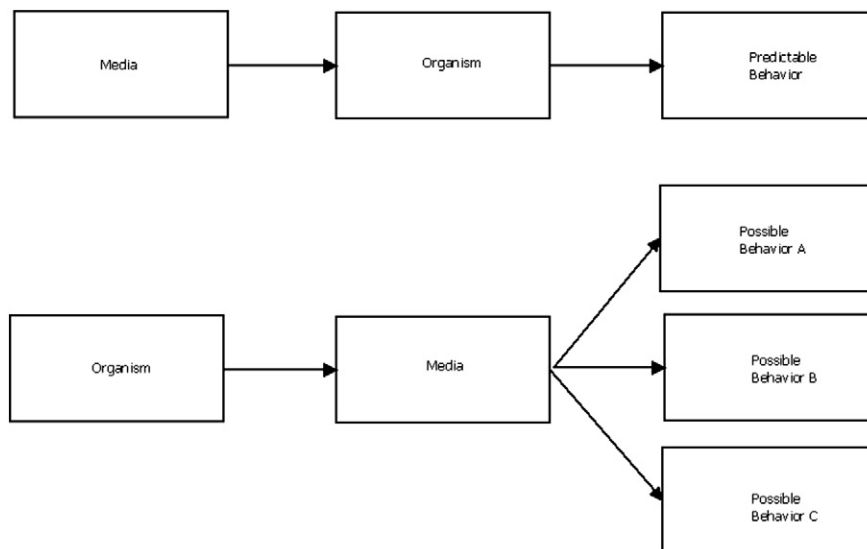

Fig. 4. Contrasting hypodermic needle theories of media effects with motivational models. Top model is the hypodermic needle approach, bottom model is the motivational approach.
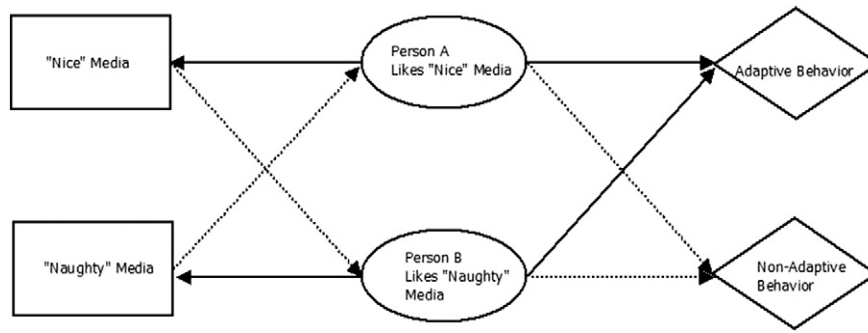
Fig. 5. The interaction between media and users in a motivational model. Dotted lines indicate "bad" matches leading to negative outcomes… straight lines indicate "good" matches leading to positive outcomes.

Second, our field needs to be clearer that citation bias, whether by individual scholars or professional guilds themselves should not be tolerated. Such bias appears to be directly linked to distorted research results (Ferguson, 2015a), and is dishonest to the general public and policy makers.

Third, we need to recognize the problem of publication bias in published research. Journal editors can take steps along these lines by encouraging the publication of null results from methodologically sound studies.

Fourth, our field needs to adopt clearer standards of transparency. Experiments should be pre-registered in advance to prevent data snooping, HARKing (hypothesis after results are known) and other questionable researcher practices. Studies that are preregistered could be given extra consideration during the peer review process, whatever their outcome. All data and communications (e.g. emails between guild staffers and task force members) within professional guilds related to policy statements should be made available upon request. This would further transparency in the development, purpose and procedures undertaken in the creation of policy statements.

Fifth, we need to begin to focus on newer, more sophisticated theories. Hypodermic needle models of media violence effects have produced underwhelming results. It is time to move on.

Sixth, our field needs to have a clearer understanding of what constitutes trivial effects. At present, we are often advertising very weak results as if they were meaningful on a societal scale (often with fallacious comparisons to important medical effects.) We need a clearer understanding of when a "statistically significant" finding is, nonetheless, unimportant. For instance, datasets with large samples may have enough power to detect very small effects (r of 0.1 or less) as "statistically significant." However, in many cases, these effects are likely due to methodological noise… spurious correlations caused by response sets, survey question wording, inattention on the part of respondents, etc. Having a healthy skepticism of smaller effect sizes as unlikely to represent "true" effects in the real world will help with overinterpretation of some spurious research findings. The recent statement by the American Statistical Association on statistical inference and interpretation provides an excellent guideline related to these matters (Wasserstein and Lazar, 2016).

Finally, we need to provide guidelines for clinicians and parents that present known findings, and potential benefits and concerns. Rigid policy statements surrounding behavioral recommendations are not generally useful, particularly with regard to the impact of media. Clinicians and parents need to appreciate the complexities of media and their impact (for healthy or dysfunctional outcomes) on youth. If we as professionals do not know the answers, we need to be clear that the jury is out. Then we need to help our professionals and patients converse together in a meaningful fashion. With a new emphasis on methodological rigor and honest communication of results, media psychology, and media violence research specifically, can set a new

standard for objective science. Until it does, however, it will continue to resemble pseudo-science more than it does true science. The current path will only further damage the reputation of media research in the eyes of the general public, courts and policy makers. Moreover, simply focusing on media violence may obscure new research on the potential benefits of modern media, particularly digital media on child development.

The authors have no conflicts of interest to declare.

References

American Psychological Association, 2015. APA review confirms link between playing violent video games and aggression. Retrieved from:. http://www.apa.org/news/press/releases/2015/08/technical-violent-games.pdf (Press release). http://www.apa.org/news/press/releases/2015/08/violent-video-games.aspx.

Anderson, C., 2013. Games, guns and mass shootings in the US. The Bulletin of the International Society for Research on Aggression. 35(1), pp. 15–19.

Anderson, C., Shibuya, A., Saleem, M., et al., 2010. Violent video game effects on aggression, empathy, and prosocial behavior in eastern and western countries: a meta-analytic review. Psychol. Bull. 136 (2), 151–173.

Asendorpf, J., Conner, M., Wicherts, J., et al., 2016. Recommendations for increasing replicability in psychology. Methodological issues and strategies in clinical research. fourth ed. American Psychological Association, Washington, DC, US, pp. 607–622.

Australian Government, Attorney General's Department, 2010. Literature Review on the Impact of Playing Violent Video Games on Aggression. Commonwealth of Australia.

Belamarich, P.F., Gandica, R., Stein, R.E., Racine, A.D., 2006. Drowning in a sea of advice: pediatricians and American academy of pediatrics policy statements. Pediatrics 118 (4).

Bowman, N.D., 2016. The rise (and refinement) of moral panic. In: Kowert, R., Quandt, T. (Eds.), The Video Game Debate: Unraveling the Physical, Social, and Psychological Effects of Digital Games. Routledge, New York, pp. 22–38.

Breuer, J., Vogelgesang, J., Quandt, T., Festl, R., 2015. Violent video games and physical aggression: evidence for a selection effect among adolescents. Psychol. Pop. Media Culture 4 (4), 305–328.

Brown v EMA, 2011. Retrieved 7/1/15 from:. http://www.supremecourt.gov/opinions/10pdf/08-1448.pdf.

Bushman, B., Huesmann, L., 2014. Twenty-five years of research on violence in digital games and aggression revisited: a reply to Elson and Ferguson (2013). Eur. Psychol. 19 (1), 47–55.

Bushman, B., Gollwitzer, M., Cruz, C., 2015. There is broad consensus: media researchers agree that violent media increase aggression in children, and pediatricians and parents concur. Psychol. Pop. Media Culture. 4 (3), 200–214.

Colwell, J., Kato, M., 2003. Investigation of the relationship between social isolation, self-esteem, aggression and computer game play in Japanese adolescents. Asian J. Soc. Psychol. 6 (2), 149–158.

Common Sense Media, 2013. Media and Violence: An Analysis of Current Research. Common Sense Media, San Francisco.

Consortium of Scholars, 2013. Scholar's open statement to the APA task force on violent media. Retrieved from:. http://www.scribd.com/doc/223284732/Scholar-s-Open-Letter-to-the-APA-Task-Force-On-Violent-Media-Opposing-APA-Policy-Statements-on-Violent-Media.

Council on Media and Communication, 2009. Policy statement—media violence. Pediatrics 124 (5), 1495–1503.

Cumberbatch, G., 2004. Video Violence: Villain or Victim? Video Standards Council Retrieved from:. http://www.aesvi.it/cms/attach/video_violence__villain_or_victim.pdf

Dahl, G., DellaVigna, S., 2009. Does movie violence increase crime? Q. J. Econ. 677-734.

Ferguson, C., 2015a. Do angry birds make for angry children? A meta-analysis of video game influences on children's and adolescents' aggression, mental health, prosocial behavior, and academic performance. Perspect. Psychol. Sci. 10 (5), 646–666.

Ferguson, C., 2015b. Does media violence predict societal violence? It depends on what you look at and when. J. Commun. 65 (1), E1–E22.

Ferguson, C., 2015c. Clinicians' attitudes toward video games vary as a function of age, gender and negative beliefs about youth: a sociology of media research approach. Comput. Hum. Behav. 52, 379–386.

Ferguson, C., Dyck, D., 2012. Paradigm change in aggression research: the time has come to retire the general aggression model. Aggress. Violent Behav. 17 (3), 220–228.

Ferguson, C., Olson, C., 2014. Video game violence use among 'vulnerable' populations: the impact of violent games on delinquency and bullying among children with clinically elevated depression or attention deficit symptoms. J. Youth Adolescence 43 (1), 127–136.

Feshbach, S., Tangney, J., 2008. Television viewing and aggression: some alternative perspectives. Perspect. Psychol. Sci. 3 (5), 387–389.

Grizzard, M., Tamborini, R., Lewis, R., Wang, L., Prabhu, S., 2014. Being bad in a video game can make us morally sensitive. Cyberpsychol. Behav. Soc. Netw. 17 (8), 499–504.

Gun Violence Prevention Task Force, 2013. It's Time to Act: A Comprehensive Plan That Reduces Gun Violence and Respects the 2nd Amendment Rights of Law-Abiding Americans. U.S. House of Representatives, Washington, DC.

Haagsma, M., Pieterse, M., Peters, O., 2012. The prevalence of problematic video gamers in the Netherlands. Cyberpsychol. Behav. Soc. Netw. 15 (3), 162–168.

Holmstrom, A., 2004. The effects of the media on body image: a meta-analysis. J. Broadcast. Electron. Media 48 (2), 196–217.

Kanamori, F., Doi, S., 2016. Angry birds, angry children and angry meta-analysts. Perspect. Psychol. Sci. 11 (3), 408–414.

Kardefelt-Winther, D., 2015. A critical account of DSM-5 criteria for internet gaming disorder. Addict. Res. Theory 23 (2), 93–98.

Kutner, L., Olson, C., Warner, D., Hertzog, S., 2008. Parents' and sons' perspectives on video game play: a qualitative study. J. Adolesc. Res. 23 (1), 76–96.

Lefsrud, L.M., Meyer, R.E., 2012. Science or science fiction? Professionals' discursive construction of climate change. Organization Studies 33:1477–1506. http://dx.doi.org/10.1177/0170840612463317.

Markey, P., French, J., Markey, C., 2015a. Violent movies and severe acts of violence: sensationalism versus science. Hum. Commun. Res. 41 (2), 155–173.

Markey, P., Markey, C., French, J., 2015b. Violent video games and real-world violence: rhetoric versus data. Psychol. Pop. Media Culture 4 (4), 277–295.

Murray, J., 1984. Results of an informal poll of knowledgeable persons concerning the impact of television violence. Newsletter of the American Psychological Association Division of Child, Youth, and Family Services. 7(1), p. 2.

Olson, C., 2010. Children's motivations for video game play in the context of normal development. Rev. Gen. Psychol. 14 (2), 180–187.

Olson, C., 2016. Are electronic games health hazards or health promoters? The Video Game Debate: Unravelling the Physical, Social, and Psychological Effects of Digital Games. Routledge/Taylor & Francis Group, New York, NY, US, pp. 39–53.

Paik, H., Comstock, G., 1994. The effects of television violence on antisocial behavior: a meta-analysis. Commun. Res. 21 (4), 516–546.

Pope, K., 2016. The code not taken: the path from guild ethics to torture and our continuing choices. Can. Psychol. 57 (1), 51–59.

Przybylski, A., 2014. Who believes electronic games cause real world aggression? Cyberpsychol. Behav. Soc. Netw. 17 (4), 228–234.

Przybylski, A., Rigby, C., Ryan, R., 2010. A motivational model of video game engagement. Rev. Gen. Psychol. 14 (2), 154–166.

Quandt, T., Van Looy, J., Vogelgesang, J., Elson, M., Ivory, J.D., Consalvo, M., Mäyrä, F., 2015. Digital games research: A survey study on an emerging field and its prevalent debates. Journal Of Communication 65 (6):975–996. http://dx.doi.org/10.1111/jcom.12182.

Sauer, J., Drummond, A., Nova, N., 2015. Violent video games: the effects of narrative context and reward structure on in-game and postgame aggression. J. Exp. Psychol. Appl. 21 (3), 205–214.

Savage, J., 2004. Does viewing violent media really cause criminal violence? A methodological review. Aggress. Violent Behav. 10 (1), 99–128.

Savage, J., Yancey, C., 2008. The effects of media violence exposure on criminal aggression: a meta-analysis. Crim. Justice Behav. 35 (6), 772–791.

Sherry, J., 2007. Violent Video Games and Aggression: Why Can't We Find Effects? Mass Media Effects Research: Advances Through Meta-analysis. Lawrence Erlbaum Associates Publishers, Mahwah, NJ, US, pp. 245–262.

Sherry, J., Lucas, K., Greenberg, B., Lachlan, K., 2006. Video Game Uses and Gratifications as Predicators of Use and Game Preference. Playing Video Games: Motives, Responses, and Consequences. Lawrence Erlbaum Associates Publishers, Mahwah, NJ, US, pp. 213–224.

Society for the Psychological Study of Social Issues, 2014. SPSSI research summary on media violence. Retrieved from:. http://www.spssi.org/index.cfm?fuseaction=page.viewPage&pageID=1899&nodeID=1.

Steinberg, L., Monahan, K., 2011. Adolescents' exposure to sexy media does not hasten the initiation of sexual intercourse. Dev. Psychol. 47 (2), 562–576.

Strasburger, V., 2007. Go ahead punk, make my day: it's time for pediatricians to take action against media violence. Pediatrics 119, e1398–e1399.

Strasburger, V., Donnerstein, E., Bushman, B., 2014. Why is it so hard to believe that media influence children and adolescents? Pediatrics 133 (4), 571–573.

Sudak, H.K., Sudak, D.M., 2005. The media and suicide. Acad. Psychiatry 29, 495–499.

Surette, R., 2013. Cause or catalyst: the interaction of real world and media crime models. Am. J. Crim. Justice 38 (3), 392–409.

Swedish Media Council, 2011. Våldsamma datorspel och aggression – en översikt av forskningen 2000–2011. Retrieved from:. http://www.statensmedierad.se/Publikationer/Produkter/Valdsamma-datorspel-och-aggression/.

U.S. Department of Health and Human Services, 2001. Youth violence: A report of the surgeon general. Retrieved from:. http://www.surgeongeneral.gov/library/youthviolence/report.html.

Wasserstein, R., Lazar, N., 2016. The ASA's statement on p-values: context, process, and purpose. Am. Stat. 70, 129–133.

Wofford, T., 2015. APA says video games make you violent, but critics cry bias. Retrieved from:. http://www.newsweek.com/apa-video-games-violence-364394 (August).