

Exposure to Violent Video Games and Desensitization to Violence in Children and Adolescents

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Abstract. Entertainment computing is central to the leisure activities of many Americans, with a remarkable array of choices now available to the average person. Video and computer games, in particular violent games, are especially popular, even with relatively young children. With this popularity, concern has been raised about possible unintended consequences of participation in interactive violence. Desensitization to violence has been cited as one possible undesirable outcome of video game violence, but there is little evidence for this relationship. This paper presents a conceptual model and supporting data to begin the examination of possible relationships between exposure to violent video games and desensitization. Examining correlates of desensitization including empathy and attitudes towards violence, surveys of children and adolescents have identified a relationship between greater exposure to violent video games, lower empathy, and stronger proviolence attitudes. Additional research is needed to substantiate and to understand the causal implications of these results.

Keywords: Video Games, Violence, Desensitization, Children, Adolescents.

1 Introduction

Entertainment computing is central to the leisure activities of many Americans, with a remarkable array of choices now available to the average person. Violent video and computer games (referred to collectively as video games) are especially popular, even with relatively young children. [1] In a recent survey of 69 first through third graders, 53% of the children's favorite games had violent content, as rated by the children themselves. [2] In another recent survey of 213 middle school students, 99% of boys and 84% of girls reported that their preferred video games included violent content. [3] Given this popularity, concern has been raised about possible unintended consequences of repeated participation in interactive violence. [4, 5] Desensitization to violence has been cited as one possible undesirable outcome. [4] This paper presents a conceptual model and supporting data to begin the examination of possible relationships between exposure to violent video games and desensitization to violence.

2 Desensitization to Violence Defined

Desensitization to violence can be defined as an unconscious process that results in the reduction or eradication of cognitive and emotional, and as a result behavioral, responses to a violent stimulus. [6, 7, 8] Desensitization occurs when the individual is exposed to a previously disturbing stimulus under conditions that mitigate the disturbance.[9] The behavioral outcome of desensitization may be failure to intervene to stop violent actions or the voluntary commission of a violent act.

In normally developed individuals, moral reasoning processes will automatically be triggered prior to committing an aggressive or violent act. This allows for the assessment of the justification for, and possible outcomes of the potential action. However, if an individual becomes desensitized to violence, then the moral reasoning processes that could inhibit aggression may be bypassed. [7] As a real life example, it has been reported that the United States army has used violent video games to desensitize soldiers during combat training.[10] It is interesting that the American army disseminates its own video game, America's Army, to potential recruits. This game, available free of charge to anyone who claims to be 13 or older, allows the player to experience all aspects of military training and combat, including advanced activities such as participating in "sniper school." The Army hopes that this exposure to military life will encourage potential recruits to enlist. America's Army is also being used for training within government agencies, including the Secret Service. [11] It is unclear whether desensitization is an intended goal.

3 The Process of Desensitization to Violence

Desensitization to violence is an outcome of changes in several domains of psychological functioning. In the domain of active learning, violent video games expose the player to a powerful cycle of demonstration, reinforcement, and practice. In theory, this is the ideal way to transmit both messages and behaviors that will be easily learned and readily implemented. As a result of repetitive demonstration, reinforcement and practice, specific behavioral scripts may be developed. A script is a set of behavioral guidelines that tells a person what to expect in a particular situation, what the sequence of events will be, and what the response should be [12] The purpose of scripts is to make all the information and decisions that a person deals with on a continuous basis more manageable. People have scripts for a variety of different common activities. For example, most adults have driving scripts: get in, shut the door, put on the seat belt, turn on the ignition. These actions all take place without the individual making conscious choices. Once a script has been developed, decisions are made based on the existing script. A person tends to focus on information that is consistent with the script, and overlook or distort information that is not consistent. That is one reason that it takes a while to get used to driving a new car: a person needs to become aware of their driving script so it can be revised. This may not be easy or straightforward. For example, every car has a different way of activating the windshield wipers, and the driving script must be revised to accommodate these differences.

It is important to recognize that behavioral scripts do not function in isolation. [13] With repetition, networks of related scripts are formed. Memories and experiences with similar meanings, and those that are often activated together develop the strongest associations. The entire network of scripts can then be activated by a

variety of different stimuli. If activation occurs frequently over time, then certain scripts or script networks may become easily and chronically accessible, easily triggered, and resistant to change. Repeated exposure to violent video games may lead to the development of scripts in which aggression and violence are normative behavior, indicating desensitization to violence. The desensitized individual whose behavioral scripts are primarily aggressive may not be capable of inhibiting an aggressive response once these scripts are automatically activated. For example, an innocent nudge in a crowded school hallway may trigger scripts for aggression, and aggressive behavior may result. It is worth noting that related research demonstrates that aggressive scripts are especially resistant to change. [14]

Exposure to violent video games will not desensitize every child or adolescent. A relative risk model is useful in understanding this caveat. [6] With few risk factors for desensitization, and some protective factors such as optimal parenting and safe neighborhoods, exposure to violent video games may have no obvious negative effects on a particular child. With additional risk factors such as poor parenting and poverty, the negative effects may be subtle, such as having lower empathy for victims, or more positive attitudes about the use of violence, reflecting the onset of desensitization to violence. As risk factors accumulate, desensitization may become pervasive, allowing the individual to exhibit increasingly severe forms of active aggression. Exposure to violent video games is just one possible risk factor for desensitization to violence. [15]

4 Desensitization and Moral Evaluation

Desensitization is a complex concept that has not been easily operationalized. Measuring correlates of desensitization to violence facilitates quantification. Empathy and attitudes towards violence are two of the critical measurable components of moral evaluation that reflect desensitization to violence.

4.1 Empathy

Empathy can be defined as the capacity to understand and to some extent experience the feelings of another. [3, 15] The experience of empathy results from the activation and interaction of perceptual, cognitive, and emotional processes.[3] Although based on inborn potential, the development of mature empathy requires opportunities to view empathic models, to interact with others, and to experience feedback about one's behavioral choices. Hoffman [16] emphasizes the role of inductive discipline in the development of empathy. Inductive discipline requires children to imagine how they would feel in a victim's situation, and encourages the development of moral scripts based on empathy. Theoretically, in a conflict situation, empathic scripts will automatically be triggered and guide behavioral choice. There is considerable experimental evidence that empathy inhibits aggressive behavior, with lower empathy being a factor in increased aggression. [17,18,19] In one study, exposure to community violence combined with low empathy predicted aggressive behavior in adolescents. [20]

Success playing violent games requires the repeated choice of violent actions that are presented as routine fun, concealing realistic consequences. Victims are typically dehumanized, a strategy that has been successful in minimizing empathy in real-life

situations. Young players of violent video games are, therefore, in a situation that could interfere with the development of mature empathy, contributing to desensitization to violence.

4.2 Attitudes Towards Violence

Attitudes result from complex and selective evaluation processes, based on an individual's experience with, associated cognitions about, and affective reactions to a situation or object.[21] Attitudes may be formed out of awareness, as in advertising, or with purpose and conscious effort, as in the case of jury deliberations. [22] Established attitudes, like scripts, may interfere with accurate judgments in new situations, and can exert a direct impact on behavior. The development of attitudes towards violence is influenced by many factors including exposure to family and community violence, as well as exposure to violence in the media. For example, surveys of over 4,000 first through sixth grade children living in urban neighborhoods identified a relationship between exposure to community violence and attitudes and beliefs supporting aggression, as well as increases in aggressive behavior.[23] In another study, 473 inner-city middle school students were surveyed to determine their exposure to community violence and their level of distress and aggression.[24] Higher exposure to community violence was related to more aggression in girls. These researchers suggested that children with chronic violence exposure demonstrate desensitization to violence because they have developed the attitude that violence is normal. As previously noted, violent video games also promote the development of the attitude that violence is normal.

5 Violent Video Games and Desensitization

Several surveys have investigated possible relationships between exposure to violent video games, empathy, and attitudes towards violence. In one study of 307 Japanese fourth through sixth graders, there was a negative relationship between simple frequency of video game use and questionnaire-measured empathy. [25] In a survey of 229 15 to 19 year olds, those whose favorite game was violent had lower empathy scores on the "fantasy empathy" subscale of the Interpersonal Reactivity Index. [26] Fifty-two sixth graders were surveyed to examine relationships between a preference for violent video games, attitudes towards violence, and empathy.[27] Children listed up to three favorite games and categorized the games using previously established categories and definitions [see Table 1]. [28] It was anticipated that a stronger preference for violent games would be associated with lower empathy and stronger proviolence attitudes. Relationships were in the expected direction, though only marginally statistically significant. Perhaps more important, children with both a high preference for violent games and high time commitment to playing demonstrated the lowest empathy. Using a similar survey approach with 150 fourth and fifth graders, greater long-term exposure to violent video games was associated with lower empathy and stronger proviolence attitudes.[7] In another study, no difference was found in immediate empathic or aggressive responding after 66 five to twelve year old children played a violent or nonviolent video game. However, again using the established

Table 1. Revised video game categories with descriptions

Category	Description
General Entertainment	Story or game with no fighting or destruction
Educational	Learning new information or figuring out new ways to use information
Fantasy Violence	Cartoon character must fight or destroy things and avoid being killed or destroyed while trying to reach a goal, rescue someone, or escape from something
Human Violence	Human character must fight or destroy things and avoid being killed or destroyed while trying to reach a goal, rescue someone, or escape from something
Nonviolent Sports	Sports without fighting or destruction
Sports Violence	Sports without fighting or destruction

From "Video game controversies," by J. B. Funk and D. D. Buchman, *Pediatric Annals*, 24 (1995) p. 93. Copyright 1995 by SLACK, Inc. Adapted with permission.

category system, a long-term preference for violent video games was associated with lower empathy.[29] Similar results were found in research using a comparable experimental paradigm with 69 first and second graders. [2] Results of this small body of research are consistent with the hypothesis that greater long-term exposure to violent video games may encourage lower empathy and stronger proviolence attitudes in some children and adolescents.

6 Behavioral Evidence for Media-Based Desensitization to Violence

At present, behavioral evidence for media-based desensitization to violence is limited to a handful of studies that includes only one study of violent video game exposure. In a classic media violence study, those children who first viewed a film with aggression took significantly longer to seek adult assistance when faced with an altercation between younger children than children who did not see the film.[30] Using a similar paradigm, other researchers demonstrated that playing a violent video game slowed adults' response time to help a presumed violence victim, relative to those individuals who played a nonviolent game.[31] A long-term preference for playing violent video games was also associated with being less helpful to the presumed victim.

7 Summary and Implications

This paper begins the development of a conceptual model, and presents data that suggest that exposure to violent video games could contribute to desensitization to violence. Examining correlates of desensitization, relationships have been demonstrated between greater long-term exposure to violent video games, lower

empathy, and stronger proviolence attitudes. There is also limited evidence of immediate desensitization after playing a violent video game. Desensitization concerns are strengthened by preliminary imaging research, whose full consideration is beyond the scope of the current presentation. Using fMRI technology, event-related changes in brain functioning have been found during video game play, specifically deactivation of the prefrontal cortex.[32] The prefrontal cortex is the gatekeeper for impulse control, planning, evaluation of the potential consequences of one's actions, as well as mature empathy. [4] Much more research is needed to substantiate and understand the implications of fMRI findings, and this seems especially important given that direct game-brain interfaces are now available (see <http://www.smartbraingames.com>).

It is critical that future research address the long-term relationships between exposure to violent video games, and desensitization as reflected in lower empathy and stronger proviolence attitudes to determine the causal direction of relationships identified thus far . Exposure to violent video games is only one potential route to desensitization to violence. If proven, however, this route is both optional and avoidable.

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