

The Influence of Video Games on Youth:  
Implications for Learning in the New Millennium  
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#### Implications for Learning in the New Millennium

Like any medium, videogames are a channel of communication whose effects vary widely with the content of the specific game in question. Experimental, longitudinal and meta-analytic data indicate that playing violent video games increases aggression, hostility, and aggressive thoughts (Anderson, Buckley, & Gentile, 2007; Anderson & Bushman, 2001; Anderson, Carnagey, Flanagan, Benjamin, Eubanks & Valentine, 2004; Anderson & Dill, 2000). Games with positive content show positive effects. For example, playing a dancing video game can help children lose weight (*Konami's Dance Dance Revolution*, 2007; O'Hannon, 2007; Epstein, Beecher, Graf & Roemmich, 2007).

#### *Video Games, Motivation, and Addiction*

Television is still the most popular form of media with youth (Roberts & Foehr, 2004). Although educational videos have been used for decades in the classroom, there are reasons to believe that interactive media are more powerful teachers on several levels. B. F. Skinner discovered many of the principles of a powerful learning paradigm called Operant Conditioning. The very nature of interactive media means they provide an excellent model for learning (Dill & Dill, 1998). Specifically, video games use mostly positive reinforcement on a schedule that is known to reinforce habit strength (Braun & Giroux, 1989; Dill & Dill, 1998). The Energization Theory of motivation and emotion (e.g., Brehm, Wright, Solomon, Silka, & Greenberg, 1983) predicts effort and energy mobilization to be greatest for a difficult, but possible task where success is rewarded. Videogames are an excellent example of what this theory of motivation predicts to be the most highly motivating tasks (Dill & Dill, 1998). Gentile and Gentile (in press) call video

games “exemplary teachers,” noting the following seven exemplary dimensions of video games: 1) clear objectives with adaptable difficulty levels, 2) active learning with practice and feedback, 3) over-learning to gain mastery, 4) extrinsic and intrinsic motivation, 5) increasing difficulty across levels where past learning can be applied 6) close-to-optimal combination of massed versus distributed practice and 7) learning that can be applied to different problems and contexts.

As early as the 1980s, researchers began considering whether videogame play is addictive (Dill & Dill, 1998). Egli and Myers (1984) identified “compulsive” behaviors associated with video game play, finding that about 13% of the adolescents they surveyed sacrificed other activities and compulsively invested money and time in gaming. Braun and Giroux (1989, p. 101) called video games “the perfect paradigm for induction of ‘addictive’ behavior.” A psychotherapist (Klein, 1984) noticed that some of his teenaged clients exhibited what he would term addictive behavior regarding video game play (e.g., stealing money or spending lunch money to play videogames). Suler (2004) provides a balanced view of cyber addictions, noting that some level of devotion to a hobby is healthy, but that in pathological addictions, the bad outweighs the good.

#### *Negative Social Effects of Video Games: Violence, Sex, and Race*

Because research consistently shows that most popular video games are violent (Buchman & Funk, 1996; Burgess, Stermer & Burgess (in press); Provenzo, 1991; Dill, Gentile, Richter & Dill, 2005; Dill & Thill, in press, Funk, 1993; Lachlan, Smith & Tamborini, 2005) and because of the potential harm to children, youth and society of this negative influence, much video game research has focused on the effects of violent video games. Modeled after the extensive literature on television violence effects, the violent

video game effects literature shows, through a variety of research methodologies, a consistent link between violent video game play and aggression (see Anderson, Berkowitz, Donnerstein, Huesmann, Johnson, Linz, Malamuth & Wartella, 2003 for a review). For example, Carnagey and Anderson (2005) found that when a car racing game rewarded players for violent acts, those players were more likely to attack an opponent than when the same game punished players for aggression. Konijn, Bijvank, & Bushman (2007) found that adolescent boys who identified with aggressive characters in immersive, realistic games were most aggressive, going so far as to blast opponents with noise levels they believed would cause permanent hearing damage.

Researchers have recently begun to focus attention on stereotypical portrayals of women and minorities in video games and the adverse effects of these characterizations (Brenick, Henning, Killen, O'Connor, and Collins, 2007; Burgess, Stermer & Burgess, in press; Dill, Brown, & Collins, 2007; Dill et al., 2005; Dill & Thill, in press; Scharrer, 2004; Walsh, Gentile, Van Overbeke, & Chasco, 2002). Dill and colleagues (e.g., Dill, 2007; Dill, Brown, & Collins, 2007) found a positive association between violent video game play and anti-women attitudes including attitudes supporting violence against women. Dill et al., (2007) found that youth exposed to sexist images of video game characters were more likely to accept rape myths (such as the ideas that women enjoy sexual force, that men should dominate women sexually and that women who say “no” are simply engaging in “token refusals”) than youth exposed to images of professional men and women. A number of studies (Dietz, 1998; Dill et al., 2005; Dill & Thill, in press; Burgess et al., in press; Scharrer, 2004) found that women are under-represented, stereotyped and objectified in video games. Some of this research also indicates that

minorities are stereotyped in video games. For example, Dill et al., 2005, found that Middle Easterners were over-represented as targets of violence in video games. Burgess, Stermer, Burgess, Brown, Dill and Collins (2007) found that male African-American video game characters are stereotyped as athletes and “gangstas” or “thugs” who are more likely to use guns—particularly extreme guns—than characters of other races. Furthermore, most Asian women are represented as non-aggressive beauties and most Asian men (fully 75%) are shown using martial arts (Burgess et al., 2007). Finally, an experiment (Burgess et al., 2007, Study 3) showed that exposure to a video game with African-American characters increased recognition of violent stimuli as compared to exposure to a video game without African-American characters.

#### *Brain Research and Video Games*

Researchers in the British journal *Nature* (1998) report that the brain releases dopamine, a pleasure chemical, during video game play. New brain research (Bartholow, Bushman & Sestir, 2006) is the first to show that violent video game players show reduction in healthy, empathic brain responses to real-life violence such as gun attacks and that those with these less empathic brain responses were more likely to behave aggressively in the laboratory. Walsh (2004, 2006) explains that youth exposure to video game violence results in long-lasting effects due to the nature of the teenaged brain. For example, the adolescent brain is actively learning impulse control and how to deal with sexual and violent urges and is particularly vulnerable to the violent and sexual imagery prevalent in video games.

### Conclusions

Many top-selling videogames have harmful content and therefore cause negative social effects. However, videogames are popular with youth and have many characteristics that make them excellent teaching tools. Educators can take advantage of the positive learning characteristics of games with the use of well-designed software, but should also be aware of potential negative issues such as anti-social content and cyber addiction.

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