Professor Mark D. Griffiths, is Professor of Gambling Studies, International Gaming Research Unit, Psychology Division, Nottingham Trent University. Dr Mike Sutton is Reader in Criminology, School of Social Sciences, Nottingham Trent University.
For communication please email: mark.griffiths@ntu.ac.uk

Mark D. Griffiths and Mike Sutton

Proposing the Crime Substitution Hypothesis: Exploring the possible causal relationship between excessive adolescent video game playing, social networking and crime reduction

On Sunday February 9, 1964, The Beatles made their debut on US television. Their appearance on the *Ed Sullivan Show* drew an estimated audience of 73 million people. One of the most quoted consequences associated with this particular show was that between 8pm and 9pm when the show was aired, a number of news reports claimed (without any supporting evidence and so almost certainly fallaciously) that there was no reported incidence of juvenile crime across America during the time of the broadcast. Moreover, the editor of Newsweek, B.F. Henry, went as far as to claim that "there wasn't so much as a hubcap stolen" during the hour that The Beatles were on the show (Bell, 2011). This apocryphal tale, at the very least, shows the apparent compelling logic in the argument that when an activity is so engrossing it has the capacity to stop people engaging in other types of activity such as crime. Inspired by a speculative blog post on the topic (Sutton, 2010) and supported by some very recent research by Cashmore (2012), which failed to disconfirm what we refer to in this paper as the Crime Substitution Hypothesis, this article briefly examines the extent to which popular youth activity (namely video gaming and social networking) may be having an effect on youth offending and victimization.

Adolescent media use in a multi-media world

In contemporary society, television does not have the same pulling power that it had back in the 1960s. Work and leisure have become increasingly technologised and remote for both adults and children (Griffiths, 2010). Activities that were once done in a dedicated external environment (e.g., an amusement arcade, cinema, chatting to friends) can now be done in the home or the workplace. This has led to 'cocooning' where a majority of activities can be done without ever having to leave the home and/or the work desk (Griffiths & Wood, 2000; Griffiths, 2002). Paradoxically, this cultural shift in increased technology has also led to an increase in leisure on the move (e.g., mobile gaming) that again may have implications for the activities such as crime.

Young people's use of technology (the so called 'screenagers' and 'digital natives') has increased greatly over the last two decades and a significant proportion of daily time is spent in front of various screen interfaces most notably videogames, mobile phones (e.g., SMS) and the Internet (e.g., social networking sites like *Bebo, Facebook*) (Griffiths, 2010; Griffiths & Kuss, 2011; Kuss & Griffiths, 2011a; 2011b). These 'digital natives' have never known a world without the internet, mobile phones and interactive television, and are therefore tech-savvy, have no techno-phobia, and very trusting of these new technologies.

Technologically-based activities such as video gaming and social networking have been accused by social science researchers of many things both positive and negative. One of the most empirically researched areas is in the area of adolescent video gaming. Negative consequences of gaming have included addiction (Kuss & Griffiths, 2012), increased aggression (Anderson, Shibuya, Ihori et al., 2010), and a variety of medical consequences, such as repetitive strain injuries, obesity, and photosensitive epilepsy (Griffiths, 2005a). There is certainly evidence that, when taken to excess, videogame playing can in some cases be addictive, especially online videogame playing

where the game never pauses or ends, and has the potential to be a 24/7 activity (e.g., Ng & Weimer-Hastings, 2005; Grüsser, Thalemann & Griffiths, 2007). However, there are many reported benefits that adolescents can get from playing videogames. These can be educational (e.g., Griffiths, 2010; de Freitas & Griffiths, 2008), social (e.g., Cole & Griffiths, 2007; Hussain & Griffiths, 2008; 2009) and/or therapeutic (e.g., Griffiths, 2005a; 2005b). Another positive benefit of playing video games along with activities like social networking may be the capacity to reduce youth crime.

Video games and cognitive distraction

One innovative application of videogames that may have implications for crime reduction is their use as 'distractors' in the role of pain management. The reasoning is that 'distractor tasks' consume some degree of the attentional capacity that would otherwise be devoted to pain perception. Griffiths (2005b) noted that the main reasons that videogames make good distractors are because they:

1. Are likely to engage much of a person's individual active attention because of the cognitive and motor activity required.
2. Allow the possibility to achieve sustained achievement because of the level of difficulty (i.e. challenge) of most games during extended play.
3. Appear to appeal most to adolescents.

One study (Philips, 1991) reported the case of an eight-year-old boy with neurodermatitis being given a handheld videogame to prevent him from picking at his face. Where previous treatments had failed, the use of the game kept his hands occupied and within two weeks the affected area had healed. A number of studies have demonstrated that videogames can provide cognitive distraction for children undergoing chemotherapy (e.g. Kolko & Rickard-Figueroa, 1985; Redd et al., 1987; Vasterling, Jenkins, Tope, & Burish, 1993; Kato, Cole, Bradlyn & Pollock, 2008) or for those with sickle cell disease (Pegelow, 1992). All these studies have reported that distracted child patients report less nausea after treatment (when compared with control groups), and that playing videogames reduced the amount of painkillers the children needed during treatment.

The very reasons why video games may be of benefit therapeutically may also be applied to video games in a crime reduction context (i.e., the playing of video games is so cognitively distracting that that there is little time to do or think about anything else).

Adolescent video game playing, social networking and crime reduction

One of the most frequent accusations made against video games is that they may make players more violent and cause an increase in violent crime (Anderson et al., 2010). This debate has been reported extensively elsewhere (see Anderson et al., [2010] for a recent review of the literature) and beyond the scope of this particular article. However, there is also a developing school of thought arguing that peoples' participation (especially excessive use) in video gaming and social networking may be contributory factors that may partly explain the fall in crime rates in recent years.

Clearly, there are a variety of reasons for the continued decrease in crime rates including advanced policing techniques and technology. However, the economist Katz (2010) suggests that the playing of video games may also play a role in crime reduction. Katz' reasoning is simple – keeping people busy keeps them out of trouble. There appears to be some statistical support for such a hypothesis as the decrease in US crime rates appears to show an inverse correlational relationship with increased sales of video game consoles and video games (Game Politics, 2008). Clearly, this correlational evidence should be treated with caution as it says nothing about causation. However, it does provide a hypothesis that could be the subject of future empirical testing. Crime has been falling in the US and UK but, as yet, there is no particularly compelling or well evidenced cause. Could adolescent video game playing and/or social networking be unexplored contributory factors?

Routine activities theory

According to Felson and Boba (2010), 'routine activities theory' is a "theory of how crime changes in response to larger shifts in society. The key to such change is the technology of everyday life, which organizes where we are, what we do, and what happens to us. That

technology governs how crime carves its niche into everyday life". Furthermore, and according to Willison (2000): "This theory has its intellectual roots in the human ecology work of Amos Hawley which recognises the importance of the timing of different activities by hour-of-day and day-of-week for understanding human society. This last point is central to routine activity theory, which addresses changes from moment to moment and hour to hour in relation to what people are doing, where they are, and the consequences of these as a result."

With the advent and increasing popularity – indeed, necessity – of the Internet, and the huge rise in mobile communications technology since the mid-1990s, we might have expected crime to rise dramatically as cyberspace grew as an environment to be exploited by the criminal fraternity. Routine activities theory (RAT) certainly sees that it should be that way. As Felson and Boba (2010) note: "The age of speedy Internet communications provides new options for youths to break laws, often operating out of their homes. They can produce their own pornography. They can view pornography by others. They can sell themselves as prostitutes. They can make sexual liaisons with those of their own ages or well beyond their own They can send and/or receive threats via the Internet and buy or sell contraband goods. They can, at a young age, learn how to hack the computers of others or distribute computer harm in various ways. They can participate in cyber chat rooms to discuss all of this" (p.111)

Strangely, Felson and Boba appear not to have considered that RAT would suggest that all the time spent online must equate to less time on the street leading to less potential offending time and a smaller population of available victims of violence and robbery.

Could the rise in video game playing and social networking be a major cause of what criminologists claim is an unfathomable drop in crime, and if not, then why not? RAT predicts that if substantial numbers of young people are not on the streets either as victims or offenders then overall high volume 'crime opportunities' would diminish, resulting in an overall drop in high volume crime rates. We have no idea yet whether what we might call the 'crime substitution hypothesis' is plausible. So we thought we would set out some ideas that support it as something possibly worthy of further exploration.

As highlighted earlier in this article, research suggests some young people are spending many hours playing video games or social networking (Kuss & Griffiths, 2011a; 2012). Research also suggests that video games can be engrossing, addictive and in some cases compulsive (Griffiths, 2008). Additionally, research has failed to establish that violent media are either a necessary or sufficient condition for causing crime. Therefore, taking a Routine Activity Approach, it would seem that an increase in video gaming might feasibly lead to a rise in the illicit market for stolen computers and games consoles. However, there might be fewer thieves to supply it if:

- Fewer potential offenders are getting addicted to opiates and other drugs, and/or misusing alcohol out of boredom because they have escaped boredom in the real world by entering the more exciting world of cyberspace to play and interact with others.
- Potential offenders and victims are gaming excessively and/or compulsively checking Facebook and/or other social networking sites.
- The game players and other "netizens" are playing at home so (a) fewer potential offenders on the streets and fewer potential victims, and (b) houses are occupied for longer and so less susceptible to burglary.
- Immersion and gaming prowess and reputation may be sufficient substitutes for the same things in the offline (real) world
- The Internet allows more people to work from home so teleworking may reduce the pool of "available" victims on the street and also ensure fewer homes are empty during the day.

Ferell's (2004) work on boredom does not examine this issue. Instead, he focuses upon how boring modern life is caused by workplace and urban planning that forbids spontaneity. Spontaneity leads to friction with the criminal justice system. Here, the 'system' offers us places of entertainment such as shopping malls, cinema and nightclubs – all to be used only in prescribed ways, which leads therefore to expressive offending or else boredom that is one

cause of drug misuse leading to addiction. But gaming and social networking is a manufactured entertainment virtual space. Ferrell's argument might explain why virtual vandalism is committed. But Ferrell does not consider how a manufactured environment – online or offline – might reduce crime. The Routine Activities Theory is a theory of how crime shifts and changes in relation to changes in society. The key to such changes is the technology of everyday life.

Conclusions

In this article, we have speculatively argued that one of the reasons for falling crime rates may be an increase in adolescent gaming and social networking engaged in by young people (the 'crime substitution' hypothesis). The evidence provided was anecdotal and/or correlational in nature but we would argue that this would provide a fruitful avenue for further research. Such research into 'crime substitution' and gaming/social networking might involve: (i) measuring time spent gaming and social networking by groups that empirical research predicts are at greater risk of becoming offenders, (ii) conducting ethnographic studies with young people to gauge whether, and if so to what extent, gaming and social networking are used as a substitute for risky activities in the offline (real) world, and do this in relation to both potential offending and victimization, (iii) examining issues of offline and online peer status and how this may impact on consequent behaviour (including criminal activity), and (iv) further examining the correlation between console and game sales – and any data on playing time and type of games – with the general crime trend over the past 20 years.

References

Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., & Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries. *Psychological Bulletin*, 136, 151-173.

Bell, M. (2011). When the Beatles took over 'The Ed Sullivan Show' – and The Post didn't like it. *Washington Post*, February 9. Accessed February 2013. http://voices.washingtonpost.com/blog-post/2011/02/beatles_ed_sullivan.html

Cashmore, J. (2012). Crime reducing entertainment: The contribution of media entertainment and communication technologies to the UK's victimisation drop. *Internet Journal of Criminology*. Accessed February 2013. http://www.internetjournalofcriminology.com/Cashmore_Crime_Reducing_Entertainment_IJC_July_2012.pdf

Cole, H. & Griffiths, M.D. (2007). Social interactions in Massively Multiplayer Online Role-Playing gamers. *CyberPsychology and Behavior*, 10, 575-583.

De Freitas, S. & Griffiths, M.D. (2008). The convergence of gaming practices with other media forms: what potential for learning? A review of the literature. *Learning, Media and Technology*, 33, 11-20.

Ferrell, J. (2004). Boredom, crime, and criminology, *Theoretical Criminology*, 8, 287-302.

Game Politics (2008). *Amid rising game console sales, crime declines*. Accessed February 2013. http://www.gamepolitics.com/2009/01/13/amid-rising-game-console-sales-crime-declines

Griffiths, M.D. (2002). Occupational health issues concerning Internet use in the workplace. *Work and Stress*, 16, 283-287.

Griffiths, M.D. (2005a). Video games and health. *British Medical Journal*, 331, 122-123.

Griffiths, M.D. (2005b). The therapeutic value of videogames. In Goldstein J. & Raessens J. (eds.) *Handbook of Computer Game Studies* (pp. 161-171). Boston: MIT Press.

Griffiths, M.D. (2008). Internet and video-game addiction. In C. Essau (Ed.), *Adolescent Addiction: Epidemiology, Assessment and Treatment* (pp.231-267). San Diego: Elselvier.

Griffiths, M.D. (2010). Trends in technological advance: Implications for sedentary behaviour and obesity in screenagers. *Education and Health*, 28, 35-38. Accessed February 2013. http://sheu.org.uk/x/eh282mg.pdf

Griffiths, M.D. & Kuss, D. (2011). Adolescent social networking: Should parents and teachers be worried? *Education and Health*, 29, 23-25. Accessed February 2013. http://sheu.org.uk/sites/sheu.org.uk/files/imagepicker/1/eh292mg.pdf

Griffiths, M.D. & Wood, R.T.A. (2000). Risk factors in adolescence: The case of gambling, video-game playing and the internet. *Journal of Gambling Studies*, 16, 199-225.

Grüsser, S.M., Thalemann, R. &, Griffiths M.D. (2007). Excessive computer game playing: Evidence for addiction and aggression? *Cyberpsychology and Behavior*, 10, 290-292.

Hussain, Z, & Griffiths, M.D. (2008). Gender swapping and socialising in cyberspace: An exploratory study. *CyberPsychology and Behavior*, 11, 47-53.

Kato, P. M., Cole, S. W., Bradlyn, A. S., & Pollock, B. (2008). A video game improves behavioral outcomes in adolescents and young adults with cancer: A randomized trial. *Pediatrics*, 122, 305-317.

Katz, L. (2010). Don't shoot the messenger. *The Economist*, May 10. Accessed February 2013. http://www.economist.com/node/16109292?story_id=16109292

Kolko, D. & Rickard-Figueroa, R. (1985). Effects of video games on the adverse corollaries of chemotherapy in pediatric oncology patients. *Journal of Consulting and Clinical Psychology,* 53, 223-8.

Kuss, D.J. & Griffiths, M.D. (2011a). Online social networking and addiction: A literature review of empirical research. *International Journal of Environmental and Public Health*, 8, 3528-3552.

Kuss, D.J. & Griffiths, M.D. (2011b). Excessive online social networking: Can adolescents become addicted to Facebook? *Education and Health*, 29. 63-66. Accessed February 2013. http://sheu.org.uk/sites/sheu.org.uk/files/imagepicker/1/eh294mg.pdf

Kuss, D.J. & Griffiths, M.D. (2012). Online gaming addiction in adolescence: A literature review of empirical research. *Journal of Behavioral Addictions*, 1, 3-22.

Ng, B.D. & Weimer-Hastings, P. (2005). Addiction to the Internet and online gaming. *CyberPsychoogy and Behavior*, 8, 110-113.

Pegelow, C. (1992). Survey of pain management therapy provided for children with sickle cell disease. *Clinical Pediatrics*, 31, 211-4.

Phillips, W (1991). Video game therapy. *New England Journal of Medicine*, 325, 1256-7.

Redd, W.H., Jacobsen, P.B., DieTrill, M., Dermatis, H., McEvoy, M., & Holland, J.C. (1987). Cognitive-attentional distraction in the control of conditioned nausea in pediatric cancer patients receiving chemotherapy. *Journal of Consulting and Clinical Psychology*, 55, 391–395.

Sutton, M. (2010). Routine Activities Theory, the Internet and the 15-Year crime drop. Criminology: The Blog of Mike Sutton. Best Thinking. Accessed February 2013. http://www.bestthinking.com/thinkers/science/social_sciences/sociology/mike-sutton?tab=blog&blogpostid=9634,9634

Vasterling, J., Jenkins, R.A., Tope, D.M., & Burish, T.G. (1993). Cognitive distraction and relaxation training for the control of side effects due to cancer chemotherapy. *Journal of Behavioral Medicine*, 16, 65–80.

Willison, R. (2000). Understanding and addressing criminal opportunity: The application of situational crime prevention to IS security", *Journal of Financial Crime*, 7, 201 - 210.