Exposure to Video Games and Decision Making

Giuseppe Curcio
University of L'Aquila, Italy

Sara Peracchia
University of L'Aquila, Italy

INTRODUCTION

In the last decade, the playing of video games (VGs) has become very popular among people. Video games represent a pervasive leisure activity beginning in middle childhood and continuing through adulthood (Gentile et al., 2004; Kubitzki, 2005). Population based surveys indicate that average gaming time ranges between 7 and 13 hs per week in both children and adolescents (Gentile and Anderson, 2003), and this value may underestimate the prevalence of use in some population segments. This high level of VGs consumption highlights the relevance for a clearer understanding of the potential influences of video game experience on human behaviour and cognition (Bioulac et al., 2008; Green and Bavelier, 2006).

Indeed, after several dramatic and murderous shoot-outs happened mainly in schools and colleges, game research focused mostly on the impact of aggressive shooter games on aggression-related cognitions, affects, and behaviors (Anderson and Bushman, 2001). The studies present in the literature showed different risks of excessive exposure to VGs: increase in aggression (Anderson et al., 2010), emergence of attention problem (Swing et al., 2010) and hyperactivity (Gupta et al., 1994), poor academic performance (Rideout et al., 2007), possible addiction (King et al., 2011), mood troubles as depression and anxiety (Mentzoni et al., 2011), reduction of empathy (Bartholomew et al., 2005), impairment of social behavior (Gentile et al., 2011), reduction of sleep time, quality and efficiency (Weaver et al., 2010; King et al., 2013).

However, exposure to VGs can not be regarded only as a negative experience. A great body of literature has revealed that action video game players, compared to non video game players, can develop broader cognitive benefits from extensive playing. These benefits include visual acuity (Green and Bavelier, 2007; Wu and Spance, 2013; Granic et al., 2014), attention flexibility (Green and Bavelier, 2003; Cain et al., 2012), stimulus-response mapping (Clark et al.,1987; Castel et al., 2005), encoding speed (Wilms et al., 2013), and executive functioning (Strobach et al., 2012). Extensive experience playing action VGs can even affect memory for the stimuli presented in a very short period (e.g., iconic memory and visual working memory), resulting in better accuracy (Boot et al., 2008; Blacker and Curby, 2013), higher precision (Sungur and Boduroglu, 2012) and more efficient strategy in retrieving information (Clark et al., 2011).

At the present, only a few studies have investigated the potential effects of video game exposure on decision making. The aim of the present chapter is to describe this relation, reviewing published studies and discussing possible implications for future research.

DOI: 10.4018/978-1-5225-2255-3.ch287

BACKGROUND

1. Exposure to Video Game and Decision Making

The study of the VGs effects on decision-making is a new research field in psychology, with a limited number of published studies; nevertheless, it can offer important clues for understanding risks and potentialities.

Past research has demonstrated that VGs experience can influence cognition and emotion (West and Bailey, 2013). More specifically, the prolonged exposition to VG is associated with decreased use of proactive cognitive control (Kronenberger et al., 2005; Mathews et al., 2005; Bailey et al., 2010), changes in feeling and expressing both positive and negative affects (Bartholow et al., 2006; Kirsh and Mounts, 2007; Bailey et al., 2011). Since it is well known that the efficacy of decision making is modulated by emotion, executive/cognitive control, and by presence of chemical and behavioural addiction (Weber and Johnson, 2009; Figner and Weber, 2011), one could expect that VGs experience could have a detrimental effect on the efficacy of this complex process.

It has been demonstrated that exposure to racing VGs can influence real-world decision making related to driving behavior (Fischer et al., 2009; Beullens et al., 2011). There is evidence, however, that certain types of VGs may have differential effects on cognitive control, a set of abilities that allow the individual to maintain goal-directed information processing (Basak et al., 2008; Bailey et al., 2010). For example, in a study focused on individual differences (Bailey et al., 2010) it has been reported that experience with First Person Shooter (FPS) video games was correlated with a reduction in proactive control (active, sustained maintenance of goal-relevant information) and was not correlated with reactive control (just-in-time mobilization of control after the conflict is detected; Braver, 2012). Furthermore, Swing (2012) demonstrated that 10 hs of FPS experience resulted in a reduction in the use of proactive control in a training study. These findings may indicate that FPS gamers may be more likely to make their decisions immediately rather than after thoughtful deliberation, a tendency that could indicate a preference for immediate rewards rather than long-term assessment of the risks and benefits (Bailey et al., 2013).

In contrast to FPS games, strategy VGs may promote an increase in careful planning and executive control of behavior. Basak and coworkers (2008) demonstrated that more than 23 hs of training with strategy VGs improved task-switching and working memory abilities, that are cognitive processes relevant for the efficacy of decision making.

A study proposed by Bailey and colleagues (2013) examined the relationship between two of the most popular genres of video games (FPS and strategy) and decision making. The main purpose was to provide a more comprehensive understanding of how VGs experience is related to risky decision making. By measuring both behavioral and self-reported impulsivity, it emerged that pathological gaming and playing FPS games were positively associated with a greater impulsivity. This association sounds very interesting, supporting the evidence that this form of gaming is also associated with a reduction in the use of proactive cognitive control (Bailey, 2009; Bailey et al., 2010; Swing, 2012). Taken together these results may indicate that playing FPS games and pathological gaming are associated with an increase in impulsive behavior that results from a decrease in the use of proactive cognitive control of behavior (Bailey et al., 2013). Also, the association between gaming and risky decisions was sensitive to game genre: the number of hours spent to playing VGs and to be a FPS gamer negatively correlated with the tendency to select low risk options. These findings provide a clear evidence that gaming time, pathology, and game genre