



## Research report

## Video games in adolescence and emotional functioning: Emotion regulation, emotion intensity, emotion expression, and alexithymia

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## ABSTRACT

Video-game users represent 40% of the French population and adolescents are the primary users. Yet excessive playing of video games has become a problem in modern society and is manifesting itself in treatment centers for adolescents. Before attempting to gain insight into this problematic use, we must understand video gaming itself and its implications for the gamer. The aim of this research is to propose an understanding of video-game playing based on some dimensions of emotional functioning such as emotion regulation, emotion intensity, emotion expression, and alexithymia. A total of 159 adolescents took part in the study. Regular gamers regulated their emotions more than irregular gamers did. They also felt their emotions more intensely. But regular gamers expressed their emotions less than irregular gamers did. Finally, the regular gamers' alexithymia level was higher than the irregular gamers' level. Especially, they had more difficulty being emotionally reactive. The avatar's evolution in the virtual environment may help mediate adolescents' problematic emotional experiences to give them meaning and enable their appropriation. As such, video games may act as a medium for projecting and experiencing one's emotional life by staging the emotional self, thereby explaining the engagement of adolescents in video gaming.

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## 1. Introduction

Video games represent the number one cultural industry in the world in terms of sales and the craze they have aroused, especially in France where nearly 40% of the population reports being users/gamers (Interactive Software Federation of Europe (ISFE), 2010). Today, video games have become a widespread leisure activity for all generations, although male adolescents remain the primary users of new technologies, especially video games (Bioulac & Michel, 2012; Fortin, Mora, & Trémel, 2005; Gentile, 2009; Young, 2009). Indeed, about 90% of adolescents see themselves as video gamers (French Videogame Agency, 2010) and they play more intensively and more regularly than older gamers (ISFE, 2010). However, excessive playing of video games has become a problem and is manifesting itself in treatment centers for adolescents. Currently, there is no consensus concerning the definition of video-game addiction (Błazyszynski, 2008; Ko, Yen, Chen, Yeh, & Yen,

2009; Turner, 2008; Wood, 2008), although adolescents are known to be a “risky population” when it comes to addiction (Griffiths, 2010; Griffiths, Davies, & Chappell, 2004; Yen, Yen, Chen, Chen, & Ko, 2007). They are vulnerable to problems of addiction, especially to video-game playing since it is an object in which they are highly prone to engage. To gain insight into this excessive use, it is necessary, upstream, to understand the practice of regular video gaming.

## 2. Theoretical review

Video gaming is based on the interaction between the player and his/her avatar, and the virtual world, two essential components common to all video games. Indeed, the avatar is the virtual character embodied by the player; it allows him/her to interact with and upon a virtual world. The avatar can be seen not only as a visual depiction of the gamer (more or less imposed) but also as an abstract instance (such as in strategy games). The virtual world constituted by a video game is a space for experimentation (Janssen & Tortolano, 2010) in which the player can engage, a virtual environment in which the player can evolve. The virtual environment

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does not replace the real one, but gives it meaning and mediates the player's relationship to the world (Weissberg, 2006). The avatar is a virtual self (Bessière, Seay, & Kisler, 2007; Gaetan, Bonnet, & Pedinielli, 2012; Seung-A, 2011; Wan & Chiou, 2006), and the avatar's "virtual body" embodies the gamer and integrates him/her into the virtual environment (Craipeau & Seys, 2005), perceived by gamers as more logical and more consistent than reality (Fortin et al., 2005; Turkle, 1995).

Adolescents are known to be subject to "over-arousal" of their body and emotions (Michel, 2001), a state which is hard for them to understand and control, but which they must appropriate and incorporate into their identity constructions (Michel, 2001). The body is a space for experimentation that occupies a central place in the emergence and expression of emotions (Lupton, 1998; Lyon & Bardalet, 1994). Emotional experiences form one of the bases of the self (Lupton, 1998) and enable subjects to enter into relationships with the surrounding world (Lyon & Bardalet, 1994). Emotional experiences are characterized and structured by a dynamic entity, the "emotional self" (Lupton, 1998), which itself is structured by the meanings given to bodily experiences. It allows the subject to identify and express emotions. Emotional experience results from the emotional processing (Greenberg, 2004) that interconnects three components: emotional valence, which corresponds to the positive or negative quality the subject attributes to the emotion (Gross & John, 2003); emotion activation or emotion intensity, which corresponds to the force with which the emotion is felt by the subject (Larsen & Diener, 1987); and emotion expression, which puts the emotion at the center of the interactional dynamics (Kring, Smith, & Neale, 1994). Several works showed that media may ostensibly be used as an external means of mood regulation (Greenwood & Christopher, 2009). Difficulty feeling control of one's emotion or behavior was the primary predictor of using media in negative moods (Greenwood, 2008; Greenwood & Christopher, 2009). Furthermore, problematic emotional regulation, including difficulty to identify and express emotions, is linked to conduct problems in children and adolescents (Mullin & Hinshaw, 2007; Southam-Gerow & Kendall, 2002) and may be considered as a vulnerability factor for delinquent behavior and substance abuse in adolescence (Dorard, Berthoz, Phan, Corcos, & Bungener, 2008; Zimmermann, 2006).

The aim of this research is to propose a description of video-game playing, based on some dimensions of emotional functioning such as emotion regulation, emotion intensity, emotion expression, and alexithymia. In this prospective study, we do not distinguish the different types of video game and we consider that an avatar is present in every video game (from visual depiction to abstract instance). We believe that the virtual world of video game offers the player a context in which it is possible for him to react emotionally. The avatar's evolution in the virtual environment acts as a mediator of emotional experiences that would be problematic (in their identification, regulation and expression) in the everyday environment. The perceived greater consistency and comprehensibility of this virtual environment permits another kind of emotional processing. Identification of emotions induced by the virtual environment may be less problematic in a video-game context. Adolescents who are unable to identify and describe their emotions may therefore be inclined to play more video games, which aids in regulating emotions and reducing their intensity. Unlike the everyday environment, then, the video-game environment provides another space for emotional expression. To our knowledge, no study assessed the relation between video-game playing and emotional functioning among adolescents. However, understanding of the emotional functioning of regular players would better apprehend the transition from regular to problematic use and thus would adapt the therapeutic. For this it is essential to

clarify the emotional factors involved in regular gaming before take an interest in problematic gaming.

This research explores the following hypotheses:

- H1.** Regular gamers tend to regulate their emotions more than other adolescents, and regular gamers have specific emotion-regulation strategies.
- H2.** Regular gamers tend to feel their emotions with less intensity than other adolescents.
- H3.** Regular gamers express their emotions less than other adolescents.
- H4.** Regular gamers have difficulty identifying and describing emotions, which translates into a higher level of alexithymia than other adolescents.

### 3. Materials and method

#### 3.1. Procedure and participants

This study is the result of my thesis work conducted from 2009 to 2012. Six schools in the city of Toulon, France, were contacted for the study. Three of the schools agreed to participate, two middle schools (6th to 9th grade) and one high school (10th to 12th grade). In each school, one class was randomly selected from each grade. After receiving information about the study, the parents were given a consent form to sign. The adolescents were also asked to give their written consent. Refusal by the parents or adolescents rarely occurred (6 out of 165). A total of 159 adolescents (age:  $M = 14$ ,  $SD = 2$ , range 10–18 years) took part in the study (52% boys). The participating adolescents filled out a questionnaire in the classroom, supervised by a researcher.

#### 3.2. Materials

To identify video-game practices, the adolescents were asked to state whether they played video games on a regular basis ("Do you play video games regularly?" Yes/No). This measure allowed us to differentiate regular and irregular gamers. The adolescents were also asked to estimate the amount of time spent weekly playing video games (gaming time) during the last two months.

In order to explore some of the dimensions of adolescent video gamers' emotional functioning, we used the following tools, all validated with a population of children and adolescents.

The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) was used to assess the following emotion-regulation strategies used by adolescents: cognitive reappraisal of the situation (CR), which enables one to change the emotional character of a situation (valence and intensity), and suppression of emotion (SE), which enables one to inhibit emotion expression. This tool consists of 10 items describing different ways of feeling and expressing emotions (CR: 6 items; SE: 4 items). Subjects must assess their extent of agreement using a seven-point Likert scale (1–7; totally disagree to totally agree). In the present study, the ERQ was reliable ( $\alpha = 0.70$ ).

The Affective Intensity Measure (AIM; Larsen & Diener, 1987; Bryant, Yarnold, & Grimm, 1996) was used to assess the subjects' disposition to feel emotions with a certain intensity or "characteristic strength". This "global emotion intensity" score (GEI) is based on a three-dimensional approach to emotion intensity (Bryant et al., 1996): positive affectivity (PA), which is the subject's tendency to feel positive emotions intensely; negative intensity (NI), which is the tendency to feel negative emotions intensely; and negative reactivity (NR), which is the tendency to react to negative

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