
**PREFERENCE FOR VIDEOGAMES AND ITS
CORRELATIONS WITH MORAL DISENGAGEMENT,
PERSONALITY TRAITS AND ACADEMIC
ACHIEVEMENT IN ITALIAN PRE-ADOLESCENTS**

Matteo Angelo Fabris Claudio Longobardi *

University of Turin, Italy

Francesca Giovanna Maria Gastaldi

University of Turin, Italy

Abstract

The aim of this study is to explore the existing relationship between gameplay type and moral disengagement, personality traits, and academic achievement. For this purpose, a sample of Italian pre-adolescents (N=363; males 48.5%, mean age=10.02, SD=1.15) was recruited. Participants completed a self-report questionnaire including data regarding sociodemographic data, play practices, and the following psychological tests: Big Five Questionnaire-Children; Moral Disengagement Evaluation Scale. Results suggest that preference for videogames was statistically associated with moral disengagement but it was not associated with personality traits nor with academic achievement. Outdoor play was associated with academic achievement and with a series of personality traits that are usually negatively connected to problematic gambling. The preference for videogames in pre-adolescence seems to have more influence on the moral disengagement than on the personality traits or academic achievement. Instead, outdoor play resulted as a protection factor for academic achievement and the onset of personality traits that could predispose the child to problematic gameplay in the future.

Keywords: videogames; moral disengagement; personality traits; academic achievement; pre-adolescents

Correspondence concerning this paper should be addressed to:

* PhD., Department of Psychology, University of Turin, Turin. Address: Via Verdi 10, 10124 TO, Italy. E-mail: claudio.longobardi@unito.it

Introduction

Problematic gambling behaviors are an emergency social issue concerning young and adult people around the world, with adolescents seeming to be more at risk (Blinn-Pike, 2017; Blinn-Pike, Worthy, & Jonkman, 2010). Problematic Gambling Behaviors could arise during the first years of adolescence and dramatically evolve during adulthood (Burge, Pietrzak, & Petry, 2006; Rahman et al., 2012), for this reason it is important to detect the risk factors that could predispose the onset of such a behavior in its pathological form. Along this line, this study is aimed at researching whether, in preadolescents, videogames- in comparison with other gameplay - could influence some individual psychological characteristics (*i.e.*, moral disengagement and personality traits) that are widely recognized as factors which are potentially able to increment the risk of developing compulsive gambling disorders in the next development periods.

Gambling, moral disengagement and personality traits

Moral disengagement has been recognized as one of the individual factors fostering the risk of compulsive gambling behaviors (Barnes et al., 1999; 2005; 2013). In adolescence and during young adulthood gambling has been frequently associated with a series of deviant behaviors such as delinquent acts, alcohol use and drug abuse, where moral disengagement is a common trait (Barnes et al., 1999; 2005; 2013; Lesieur et al., 1991). The connection between pathological gambling and moral disengagement is proven also by the co-occurrence of problematic gambling and behavior disorders in childhood and adolescence and antisocial personality disorders in adulthood (Barnes et al., 2013). Welte and associates (2009) observed that children exhibiting problematic gambling disorders at age 14 or even before that age, were more at risk of exhibiting behavior disorders in comparison with adolescents exhibiting the onset of problematic gameplay in late adolescence. Other findings instead suggest a link between antisocial behavior personality disorders and pathological gambling in adults, probably caused by possible genetic vulnerabilities shared by both pathological descriptions (Slutske et al., 2001). Some researchers state that gambling is paired with other deviant behaviors since these are all behaviors that provide easy immediate gratification without concern for the long-range consequences (Gottfredson & Hirischi, 1990). Gambling provides an immediate pleasure, but also tends to provide

eventual losses. Along this line, the literature has furthermore found the presence of individual psychological characteristics such as impulsivity and sensation-seeking in adults as well as in adolescent gamblers (Estevez, Herrero-Fernández, Sarabia, & Jauregui, 2015). In addition to impulsivity and sensation-seeking, the most recent literature has taken into consideration also broader personality traits. Personality traits refer to individual differences in thoughts, feelings, and actions, and are associated with many forms of under-controlled psychopathology, including problematic gambling. The studies, based on the Big Five model, conducted on subjects exhibiting problematic gambling disorders have shown that the personality profile of a typical gambler is characterized by a high level of neuroticism, low agreeableness and low conscientiousness (Bagby et al., 2007; Brunborg et al., 2016; MacLaren et al., 2011; Miller et al., 2013; Tackett et al., 2015). The above personality traits seem to characterize externalizing disorders and are crucial in explaining the link existing between problematic gambling and deviant behaviors, the latter being associated with moral disengagement.

Videogames and gambling

Problematic gambling in adolescents has not been extensively examined as it has been done with adults (Estevez et al., 2015), furthermore the research about possible risk factors in pre-adolescence is lacking. However, among the risk factors, the preference accorded by the minor to certain kind of games should be taken into consideration. After all, the literature has found a tight link between frequency and variety in videogame use and the risk of pathological gambling among adolescents. (Donati, Chiesi, Ammannato, & Primi, 2015; Ladouceur & Dubè, 1995; Mode et al., 2018). Ladouceur and Dubè (1995) have noted that adolescents and young adults who attend non-gambling videogame arcades, are more at risk of exhibiting problematic gambling disorders. Gambling and gaming are increasingly interlocking and present in the everyday life of children. Gambling is progressively being digitized and diversified into a multitude of online games while, at the same time, videogames increasingly contain themes and elements from more traditional gambling activities (Mode et al., 2018). King and associates (King, Delfabbro, & Griffiths, 2010; 2011) have been studying the videogames' structural characteristics that, in case of excessive and recurrent use, could affect the player, such as reward and punishment features, earning points,

finding rare game items, and fast loading times. The above could be considered as elements that are apt to stimulate forms of behavioral addiction, as is the case with gambling.

Videogames, moral disengagement and personality traits

Videogame use has been associated with some individual psychological characteristics, that are in turn associated to a possible onset of pathological gameplay, such as moral disengagement and personality traits. The moral disengagement mechanisms in videogame use have been widely researched. Some videogames, namely the ones with a content of violence, have the tendency to enact situations encouraging the justification of violent acts, a distorted portrayal of consequences, and the de-humanization of the victims or of the opponents (Hartmann, Krakowiak, & Tsay-Vogel, 2014). Several studies are confirming the existence of a link between videogame use, especially violent games, and the increase of moral disengagement in adolescents (Gabbiadini, Andrighetto, & Volpato, 2012; Greitemeyer & McLatchie, 2011). The above entails the risk that acts of violence and deviant behaviors could be transferred from the virtual world to the real one. Bastian, Jetten and Radke (2011), have underlined that to play “Mortal Combat” against an opponent is lowering the perception of humanity of themselves and the others, and this is true also in the presence of a co-player.

Some researchers instead have been putting the accent on personality traits in relation to videogame use. The literature seems to confirm that to play videogames per se is not a negative element for the development of a minor, and a moderate use could even be considered functional (Braun, Stopfer, Müller, Beutel, & Egloff, 2016). The existing studies have barely surveyed the personality traits of regular gamers, sometimes finding discrepancies in the results or linked to videogame genres (Braun et al., 2016). They have been mostly focused on personality traits in relation to excessive videogame use, or to subjects exhibiting addiction to internet technologies and videogames. Regular gamers, in comparison with non-gamers, have, in some surveys, appeared to be characterized by low extraversion (Douse & McManus, 1993), high openness (Graham & Gosling, 2013; Teng, 2008), low agreeableness (Graham & Gosling, 2013), and conscientiousness (Teng, 2008). However, not all studies concur (Braun et al., 2016; Teng, 2008). Such a variability in results should possibly be ascribed to the frequency and the motivation behind

videogame use as well as to the choice of videogame type. For example, Braun and associates (2016) found that non-gamers, in comparison with gamers, show high conscientiousness and high neuroticism, while subjects preferring action games show, instead, high extraversion and low neuroticism. Even though some surveys see a link between videogame use and personality traits that could eventually predispose to gambling addiction, at this moment there is no evidence of the above in pre-adolescence. In pre-adolescence gameplay is present, and it constitutes an important phase of child development.

More generally, the studies have simply compared videogame players with non-gamers without taking into consideration all the variables above described. Furthermore, we do not have notice of studies comparing children with respect to these dimensions on the base of the preference expressed toward the various types of gameplay. It is indeed possible to think that videogames during pre-adolescence are only one of the typologies of gameplay toward which children can express their preference. In this study board games and outdoor play have been analyzed as well. In the literature board games seem to have been broadly investigated more for their contribution to cognitive child development (*i.e.*, Siegler & Ramani, 2008) as well as their role in the primary prevention of at risk and unhealthy behaviors (*i.e.*, Bartfay & Bartfay, 1994). Furthermore, the above are considered also an aid in child psychotherapy (Matorin & McNamara, 1996) and have been studied more often than other sectors of psychological and psychopathological child development. Outdoor play seems to have a positive impact for the physical and psychological health of children and adolescents, contributing to the improvement of impulse control and attention, by promoting healthy social development, as well as improving learning-related outcomes (Largo-With et al., 2018). According to the theorists of attention restoration, Nature improves wellbeing and learning related outcomes, reducing stress and, therefore, stimulating attention and the use of coping strategies that are functional for managing stress and conflict (Largo-Withe et al., 2018; Kaplan, 1995). This is important for the minors and for their development process, in order to improve an adaptation to the various contexts as well as a harmonious emotional-relational development. Some authors have instead underlined that videogames could be chosen by minors to isolate themselves from social relations. These minors could use videogames as an instrument to avoid interpersonal conflicts and social contact, as well as tools to regularize emotions and avoid painful mental states, avoiding distress,

especially when videogames, and more generally internet and advanced technologies, are used frequently and in a dysfunctional manner (Canale et al., 2019; Chang & Li, 2019; Gentile et al., 2011). Furthermore, the propensity to videogames could negatively impact academic achievement, lowering motivation and attention toward school diligence, in comparison with other games, namely outdoor play. The latter seems to encourage school diligence, by supplying instruments that are able to improve learning performances and also interactions with peers and teachers, developing good quality relations. Although not always unanimously, in minors using videogames, the literature underlines a risk of low academic achievement (Anand, 2007; Burgess et al., 2012; Conception et al., 2016). According to some theorists, videogames could influence academic achievement only in those subjects adopting deviant behaviors, therefore, exhibiting moral disengagement. However, the existing empirical literature on adolescents does not seem to show a validation of the above theory (Conception et al., 2016).

Objectives

The aim of this study is to explore the existing relationship between gameplay type and moral disengagement, personality traits, and academic achievement. In this line, we will: a) analyze the correlation between preference toward types of play expressed by children and moral disengagement; b) analyze the correlation between preference toward types of play expressed by children and personality traits characterizing pathological playing behaviors in adulthood; c) observe the correlation between choice of types of game and academic achievement. Based upon our hypothesis, it is especially expected that videogame use should be positively correlated with moral disengagement, whilst outdoor play will show a negative correlation (H1). Furthermore, it is expected that expressed videogame preference should be positively correlated with personality traits typically identified in populations of subjects showing problematic gameplay disorders. Instead, other games should show a negative correlation with such personality traits, but a positive correlation with personality traits commonly considered negatively associated with problematic gameplay disorders in adults and adolescents (H2). Finally, it is expected that outdoor play should be positively connected to academic achievement, while the preference for videogames should show a negative correlation.

Method

Participants

Data were collected from middle schools in urban and rural areas in Northern of Italy during the 2017–2018 school year. Ethical approval to conduct research was obtained from the University of Turin IRB (approval number: 264804). The recruited participants were asked to fill in an anonymous questionnaire using paper and pencil. All participants were voluntaries and do not received benefits for their participation. Informed consent was collected from both parents and students in accordance with the Declaration of Helsinki. Study participants are 363 individuals, 176 of which are males (48.5%), mean age (SD)=10.02 (1.15) - attending grades 4, 5 and 6 in two large schools, located one in Northern (151; 42%) and one in Southern Italy. The sample is mostly composed of Italian citizens (315; 87%); while the rest is constituted by foreigners. The medium GPA (*see* Table 1) is 4.14, corresponding to the “outstanding” academic achievement.

Table 1. Descriptive statistics for study variables

		Mean	SD	N
1	<i>Age</i>	10.02	1.15	361
2	<i>GPA (Grade Point Averages)</i>	4.14	0.97	286
3	<i>Board Game score</i>	7.03	1.48	292
4	<i>Videogame score</i>	6.53	1.99	287
5	<i>Outdoor Play score</i>	7.33	1.54	354
	<i>Moral Disengagement</i>			
6	Moral Justification	1.87	0.46	360
7	Euphemistic Language	1.33	0.35	361
8	Advantageous Comparison	1.69	0.47	361
9	Displacement of Responsibility	1.62	0.43	360
10	Diffusion of Responsibility	1.78	0.41	361
11	Distorting Consequences	1.61	0.42	359
12	Attribution of Blame	1.64	0.41	360
13	Dehumanization	1.57	0.44	360
	<i>Big Five Questionnaire for Children</i>			
14	Energy/Extraversion	39.56	13.48	363
15	Agreeableness	46.19	13.28	363
16	Conscientiousness	44.79	13.60	363
17	Emotional Instability	47.85	10.68	363
18	Intellect/Openness	41.72	12.52	363

Instruments

Information about children’s play. The gathered data refer to the category of game: videogames (*e.g.*, Wii, Fifa, Pokemon Go); in-motion games

(*e.g.*, ball games, hide and seek); table games (*e.g.*, Monopoly, cards). For each type of game, the appreciation, expressed in accordance with a Likert scale ranging from 1 to 10, has been observed.

Grade Point Average. For each participant the Grade Point Average, expressed according to a scale from 1 to 5 (1: Insufficient; 2: Sufficient; 3: Good; 4: Outstanding; 5: Excellent) has been expressed. The GPA summarizes the academic achievement observed and obtained in the basic disciplines of study (*i.e.*, Italian language, mathematics, and other disciplines).

Big Five Questionnaire-Children (Barbaranelli, Caprara, & Rabasca, 1998). It is a self-report instrument used to evaluate children and adolescents' personalities, ages 8 to 14 years, according to the Five Factor Model. It is composed by 65 items distributed along the five dimensions of personality. It is administered by using a three-point Likert scale (*i.e.*, Rarely, Sometimes, Many times). In the Children's BFQ, five personality dimensions are taken into account: Energy (*e.g.*, "I want to see other people"), Friendship (*e.g.*, "I lovably deal with my peers"), Conscientiousness (*e.g.*, "If I commit, I hold to the commitment"), Emotive Instability (*e.g.*, "Sometimes, I argue with people") and Mental Openness (*e.g.*, "I would like to travel and be in touch with other people's lifestyle"). The Cronbach's alfa coefficient were: Energy=.67, Friendship=.78, Conscientiousness=.75, Emotive Instability=.79, and Mental Openness=.75.

Moral Disengagement Evaluation Scale (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). Cronbach's alpha (α) was .78 in this study. It is an instrument that rates the level of moral disengagement in individuals and their types of behavior in the presence of morally unacceptable conducts. The scale is composed of 32 items and the answers are measured by using a three-point Likert scale: 1=Never true; 2=Sometimes true; 3=Always true. The dimensions of moral disengagement are: Moral Justification (*e.g.*, "It is correct to fight when the honor of your own group is at stake"; α =.77), Euphemistic Language (*e.g.*, "To hit troublesome peers is merely to give them 'a lesson'"; α =.75), Advantageous Comparison (*e.g.*, "It is not bad to insult a peer, since it is worst to hit him"; α =.73), Displacement of Responsibility (*e.g.*, "Kids cannot be blamed for misbehaving if their friends pressure them to do it"; α =.69), Diffusion of Responsibility (*e.g.*, "If children are not correctly educated at home, when behaving badly they should not be blamed"; α =.76), Distorting Consequences (*e.g.*, "Children do not get mad when mocked because this also

is a way to show interest in them”; $\alpha=.88$), Dehumanization of the Victim (*e.g.*, “Some people deserve to be treated harshly, since they do not have feelings to be hurt”; $\alpha=.86$), Attribution of Blame (*e.g.*, “Children mistreated by peers often deserve it”; $\alpha=.74$).

Analysis strategy

As a first step, descriptive statistics (*i.e.*, mean, standard deviation, and range) were computed on the study variables, both in the overall sample and by gender group. In order to investigate univariate relationships between study measures, Pearson’s correlation coefficients were computed on the measures. We performed the analysis using IBM SPSS Statistics 25 (Statistical Package for Social Sciences).

Results

The descriptive statistics of the sample are available in Table 1. When considering the appreciation expressed towards the types of games observed (*i.e.*, board games, videogames, outdoor play), it emerges (*see* Table 1) that the preferred type of game is Outdoor Play, with a higher medium score ($M=7.33$; $SD=1.48$), followed by board games ($M=7.03$; $SD=1.48$) and by videogames ($M=6.53$, $SD=1.99$).

The medium values pertaining to Moral Disengagement and to the measurements of personality obtained using the Big Five Children’s Questionnaire are in line with the national norms.

We supposed that the choice of games and videogames was positively correlated with the components of moral disengagement (H1). To verify said theory, we conducted the analyses of bivariate correlations (Pearson’s) observable among the considered variables. Hence, the correlations existing between the preferences expressed by the individuals pertaining to the various types of games and the components of moral disengagement have been observed. It is important to underline (*see* Table 2; Appendix A) the statistically significant positive correlations between the score attributed to videogames and the various components of moral disengagement, namely: Moral Justification ($r=.25$), Euphemistic Language ($r=.28$), Advantageous Comparison ($r=.14$), Diffusion of Responsibility ($r=.20$), Distorting Consequences ($r=.15$), Attribution of Blame ($r=.16$), Dehumanization ($r=.23$). No significant correlations have been detected between the score expressed pertaining board

games and outdoor play with the components of moral disengagement. Therefore, the hypothesis is confirmed for the videogames' category, for 7 out of the 8 items composing moral disengagement.

Furthermore, we supposed that the choice of games and videogames was correlated to other personality traits, characterizing pathological playing behaviors in adulthood (H2). Significant positive correlations between the score expressed for board games and Openness arose ($r=.13$), as well as between the scores expressed for outdoor play and the personality traits of Energy/Extraversion ($r=.20$), Agreeableness ($r=.13$), Conscientiousness ($r=.11$), Intellect/Openness ($r=.21$). No significant correlations between the scores expressed for videogames and the various personality traits have been detected, hence such theory cannot be confirmed.

Finally, we supposed that the choice of games and videogames was positively correlated with academic achievement (H3). In this respect, a significant positive correlation ($r=.14$) between the preference expressed for outdoor play and academic achievement, measured with the GPA indicator, has been detected. Thereby, as far as outdoor play is concerned, the theory can be confirmed.

Conclusion

The present study has researched the relation existing between the expressed preferences for various types of games and specific individual characteristics, such as moral disengagement, personality traits, and academic achievement. The study was aimed at investigating the possible emergence, during late infancy and pre-adolescence, of eventual tendencies similar to those observed during adulthood. According to this theory, specific individual traits could be correlated to the outcomes of play behaviors into psychopathological ones (Brunborg, Hanss, Mentzoni, Molde, & Pallesen, 2016).

The results of this study offer new possible interpretations of game preferences during late infancy and pre-adolescence, in light of the phenomena of moral disengagement, and in function of individual components, such as personality traits and academic achievement.

It is especially important to observe that (H1) various components of moral disengagement (*i.e.*, Moral Justification, Euphemistic Language, Advantageous Comparison, Diffusion of Responsibility, Distorting

Consequences, Attribution of Blame, Dehumanization) seem to be positively correlated with the tendency to appreciate videogames. Hence, the preference for videogames would appear to be linked to components that, in their entirety, would imply a tendency toward emotive and moral detachment in comparison with the damages and offenses of which the subjects are responsible. Furthermore, there is the justification of the damage caused, by attributing the responsibility to a collective entity or to the victim itself, or even by downplaying the extent of the damage caused. These results are in line with what emerges in the literature with reference to the adolescent age group. The existing correlation between the use of videogames and moral disengagement is especially evident in case of violent videogame exposition during adolescence (Teng, Nie, Guo, & Liu, 2017; Teng, Nie, Pan, Liu, & Guo, 2017).

The correlation between the choice of games and videogames and personality traits has been analyzed in the literature especially during adulthood and adolescence (Bean, and Groth-Marnat, 2016; Braun et al., 2016). In comparison with what has been supposed, the preference expressed for board games is positively correlated with Openness, whilst the appreciation for outdoor play is positively correlated with the following traits: Energy / Extraversion, Agreeableness, Conscientiousness, and Intellect / Openness. Contrary to what highlighted by the literature, which found that videogame use is positively correlated with neuroticism, but negatively correlated with extraversion and conscientiousness (Braun & al., 2016), in this study no significant correlations between the preference for videogame use and specific personality traits have emerged. The propensity to be gamers is then for sure correlated with particular personality traits, but mostly for as far as game use in an interaction situation is concerned (as in the case of board games) or in a free and outdoor situation (as with outdoor play). In those cases, correlations with personality traits pertaining open-mindedness, extraversion, sociability and pleasantness have been observed. This tendency is unprecedented in comparison with the tendencies so far researched in the literature. In the most recent studies, a huge part has been dedicated to the processing of gamification (Buckley & Doyle, 2017) and to the use of videogames in relation to personality traits, instead of investigating the above in rapport to board games or outdoor play.

Finally, with respect to the correlation that the present study underlines between the preference expressed for outdoor play and academic achievement,

it is interesting to observe that this type of game has been researched in the literature mostly pertaining to the general wellbeing of the student (Largo-Wight et al., 2018), as well as the possibility of constituting an efficient treatment for some particular disorders (*e.g.*, ADHD), while its possible effect on the academic achievement of students has been scarcely studied.

Limitations and suggestions

The present study offers some interesting elements for future research, by correlating variables that have not yet been studied in their mutual relation. Furthermore, the study is investigating a moment of development, such as pre-adolescence, that is scarcely considered in terms of risk factors that might cause the insurgence of compulsive gambling in a subsequent age. Without doubt, this research shows some limitations. Clearly, the cross-sectional nature of the present study does not allow inferences about the causality relationships that might exist among the considered variables. A longitudinal study could be useful to understand the cause-effect relation and, furthermore, could help to detect whether the choice of the game, along with personality traits, moral disengagement, and academic achievement, are predictive of a pathological gambling onset. Another limitation is inherent to the types of games observed. Our aim has been to compare the preference toward a type of game, in relation to another one. Nonetheless, and particularly for videogames, we have not taken into consideration the various forms and characteristics of games inside the same game category. For example, in a future study, videogames should be considered based on their content (*i.e.*, pro-social or violent), hence studying the relation between variables by keeping in mind those distinctions. Moreover, in the present study we focused on the preference toward a game and not on the frequency of use. We believe this is a new element among the current literature, but future research should also take into account the frequency of game use, especially for videogames, to understand the connections existing between the investigated variables.

References

- Anand, V. (2007). A study of time management: The correlation between video game usage and academic performance markers. *CyberPsychology & Behavior*, 10(4), 552-559. doi:10.1089/cpb.2007.9991

- Barnes, G. M., Welte, J. W., Hoffman, J. H., & Dintcheff, B. A. (2005). Shared predictors of youthful gambling, substance use, and delinquency. *Psychology of Addictive Behaviors, 19*(2), 165.
- Barnes, G. M., Welte, J. W., Hoffman, J. H., & Dintcheff, B. A. (1999). Gambling and alcohol use among youth: Influences of demographic, socialization, and individual factors. *Addictive Behaviors, 24*(6), 749-767. doi:10.1016/S03064603(99)00048
- Bartfay, W. J., & Bartfay, E. (1994). Promoting health in schools through a board game. *Western journal of nursing research, 16*(4), 438-446. doi:10.1177/019394599401600408
- Bastian, B., Jetten, J., & Radke, H. R. (2012). Cyber-dehumanization: Violent video game play diminishes our humanity. *Journal of Experimental Social Psychology, 48*(2), 486-491. doi:10.1016/j.jesp.2011.10.009
- Blinn-Pike, L. (2017). Adolescent gambling: An update on research since 2010. *Journal of Adolescent Health, 60*, 481-482.
- Brunborg, G. S., Hanss, D., Mentzoni, R. A., Molde, H., & Pallesen, S. (2016). Problem gambling and the five - factor model of personality: a large population - based study. *Addiction, 111*(8), 1428-1435.
- Burge, A. N., Pietrzak, R. H., & Petry, N. M. (2006). Pre/early adolescent onset of gambling and psychosocial problems in treatment-seeking pathological gamblers. *Journal of Gambling Studies, 22*(3), 263-274.
- Burgess, S. R., Stermer, S. P., & Burgess, M. C. (2012). Video game playing and academic performance in college students in college students. *College Student Journal, 46*(2), 376-388.
- Canale, N., Marino, C., Griffiths, M. D., Scacchi, L., Monaci, M. G., & Vieno, A. (2019). The association between problematic online gaming and perceived stress: The moderating effect of psychological resilience. *Journal of Behavioral Addictions, 1*-7. doi:10.1556/2006.8.2019.01
- Chang, S. M., & Lin, S. S. (2019). Online gaming motive profiles in late adolescence and the related longitudinal development of stress, depression, and problematic internet use. *Computers & Education., 135*, 123-137. doi: 10.1016/j.compedu.2019.02.003
- Concepcion, L. R., & Rodriguez-Zubiaurre, A. (2016). The Relationship between Videogame Use, Deviant Behavior, and Academic Achievement among a Nationally Representative Sample of High School Senior in the United States. *American Journal of Educational Research, 4*(16), 1157-

1163. doi:10.12691/education-4-16-6.
- Donati, M. A., Chiesi, F., Ammannato, G., & Primi, C. (2015). Versatility and addiction in gaming: The number of video-game genres played is associated with pathological gaming in male adolescents. *Cyberpsychology, Behavior, and Social Networking*, 18(2), 129-132. doi:10.1089/cyber.2014.0342
- Douse, N. A., & McManus, I. C. (1993). The personality of fantasy game players. *British Journal of Psychology*, 84(4), 505-509.
- Estevez, A., Herrero-Fernández, D., Sarabia, I., & Jauregui, P. (2015). The impulsivity and sensation-seeking mediators of the psychological consequences of pathological gambling in adolescence. *Journal of Gambling Studies*, 31(1), 91-103. doi:10.1007/s.1089901394190
- Gabbiadini, A., Andrighetto, L., & Volpato, C. (2012). Brief report: Does exposure to violent video games increase moral disengagement among adolescents? *Journal of adolescence*, 35(5), 1403-1406.
- Gentile, D. A., Choo, H., Liau, A., Sim, T., Li, D., Fung, D., & Khoo, A. (2011). Pathological video game use among youths: a two-year longitudinal study. *Pediatrics*, 127(2), e319-e329. doi:10.1542/peds.20101353
- Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford: Stanford University Press.
- Graham, L. T., & Gosling, S. D. (2013). Personality profiles associated with different motivations for playing World of Warcraft. *Cyberpsychology, Behavior, and Social Networking*, 16(3), 189-193.
- Greitemeyer, T., & McLatchie, N. (2011). Denying humanness to others: A newly discovered mechanism by which violent video games increase aggressive behavior. *Psychological science*, 22(5), 659-665. doi:10.1177/0956797611403320
- Hartmann, T., Krakowiak, K. M., & Tsay-Vogel, M. (2014). How violent video games communicate violence: A literature review and content analysis of moral disengagement factors. *Communication Monographs*, 81(3), 310-332. doi: 10.1080/03637751.2014.922206
- Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of environmental psychology*, 15(3), 169-182. doi:10.1016/02724944(95)900012
- King, D. L., Delfabbro, P. H., & Griffiths, M. D. (2011). The role of structural characteristics in problematic video game play: An empirical study.

- International Journal of Mental Health and Addiction*, 9(3), 320-333.
doi:10.1007/s114690109289y
- King, D., Delfabbro, P., & Griffiths, M. (2010). Video game structural characteristics: A new psychological taxonomy. *International journal of mental health and addiction*, 8(1), 90-106. doi:10.1007/s1146900992064
- Ladouceur, R., & Dubé, D. (1995). Prevalence of pathological gambling and associated problems in individuals who visit non-gambling video arcades. *Journal of gambling Studies*, 11(4), 361-365. doi:10.1007/BF02108614
- Largo-Wight, E., Guardino, C., Wludyka, P. S., Hall, K. W., Wight, J. T., & Merten, J. W. (2018). Nature contact at school: The impact of an outdoor classroom on children's well-being. *International journal of environmental health research*, 28(6), 653-666. doi:10.1080/09603123.2018.1502415
- Lesieur, H. R., Cross, J., Frank, M., Welch, M., White, C. M., Rubenstein, G., Moseley, M., & Mark, M. (1991). Gambling and pathological gambling among university students. *Addictive behaviors*, 16(6), 517-527. doi:10.1016/03064603(91)90059Q
- MacLaren, V. V., Fugelsang, J. A., Harrigan, K. A., & Dixon, M. J. (2011). The personality of pathological gamblers: A meta-analysis. *Clinical Psychology Review*, 31(6), 1057-1067. doi:10.1016/j.cpr.2011.02.002
- Matorin, A. I., & McNamara, J. R. (1996). Using board games in therapy with children. *International Journal of Play Therapy*, 5(2), 3.
- Miller, J. D., MacKillop, J., Fortune, E. E., Maples, J., Lance, C. E., Campbell, W. K., & Goodie, A. S. (2013). Personality correlates of pathological gambling derived from Big Three and Big Five personality models. *Psychiatry research*, 206(1), 50-55. doi:10.1016/j.psychres.2012.09.042
- Molde, H., Holmøy, B., Merkesdal, A. G., Torsheim, T., Mentzoni, R. A., Hanns, D., ... & Pallesen, S. (2018). Are Video Games a Gateway to Gambling? A Longitudinal Study Based on a Representative Norwegian Sample. *Journal of gambling studies*, 1-13. doi:10.1007/s108990189781
- Rahman, A. S., Pilver, C. E., Desai, R. A., Steinberg, M. A., Rugle, L., Krishnan-Sarin, S., & Potenza, M. N. (2012). The relationship between age of gambling onset and adolescent problematic gambling severity. *Journal of psychiatric research*, 46(5), 675-683.
- Siegler, R. S., & Ramani, G. B. (2008). Playing linear numerical board games promotes low - income children's numerical development. *Developmental science*, 11(5), 655-661. doi:10.1111/j.14677687200800714x

- Slutske, W. S., Eisen, S., Xian, H., True, W. R., Lyons, M. J., Goldberg, J., & Tsuang, M. (2001). A twin study of the association between pathological gambling and antisocial personality disorder. *Journal of abnormal psychology, 110*(2), 297. doi:10.1037/0021843X.110.2.297
- Tackett, J. L., Rodriguez, L. M., Rinker, D. V., & Neighbors, C. (2015). A personality-based latent class analysis of emerging adult gamblers. *Journal of gambling studies, 31*(4), 1337-1351. doi:10.1007/s1089901495003
- Teng, C. I. (2008). Personality differences between online game players and nonplayers in a student sample. *CyberPsychology & Behavior, 11*(2), 232-234. doi:10.1089/cpb.2007.0064
- Welte, J. W., Barnes, G. M., Tidwell, M. C. O., & Hoffman, J. H. (2009). Association between problem gambling and conduct disorder in a national survey of adolescents and young adults in the United States. *Journal of Adolescent Health, 45*(4), 396-401. doi:10.1016/j.jadohealth.2009.02.002.

Received June 22, 2019
Revision July 30, 2019
Accepted October 8, 2019

Appendix A

Table 2. Correlations Matrix for the study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 <i>AGE</i>																	
2 <i>GPA (Grade Point Averages)</i>	.26**																
3 <i>Board Game score</i>	-.13*	.09															
4 <i>Video game score</i>	-.08	-.11	.35**														
5 <i>Outdoor Play score</i>	-.12*	.14*	.54**	.50**													
<i>Moral Disengagement</i>																	
6 <i>Moral Justification</i>	.17**	-.05	.07	.25**	.08												
7 <i>Euphemistic Language</i>	.03	-.13*	.07	.28**	.00	.28**											
8 <i>Advantageous Comparison</i>	-.1	-.03	-.01	.14*	.01	.12*	.36**										
9 <i>Displacement of Responsibility</i>	.03	-.18*	.02	.12	.08	.22**	.40**	.29**									
10 <i>Diffusion of Responsibility</i>	-.02	-.00	.04	.20**	.06	.44**	.30**	.25**	.31**								
11 <i>Distorting Consequences</i>	.00	-.10	.02	.15*	-.00	.35**	.41**	.26**	.35**	.40**							
12 <i>Attribution of Blame</i>	-.20**	.04	-.03	.16**	.07	.19**	.29**	.22**	.27**	.25**	.34**						
13 <i>Dehumanization</i>	.13*	-.20**	.06	.25**	.10	.33**	.38**	.29**	.32**	.26**	.32**	.31**					
<i>Big Five Questionnaire for Children</i>																	
14 <i>Energy Extraversion</i>	-.53**	.31**	.03	.07	.20**	-.02	.01	.08	.00	.07	-.01	.06	-.11*				
15 <i>Agreeableness</i>	-.56**	.35**	.07	-.00	.13*	-.14**	-.10	.01	.01	-.00	-.13*	.04	-.15**	.73**			
16 <i>Conscientiousness</i>	-.50**	.36**	.09	-.00	.11*	-.16**	-.12*	-.01	-.05	-.02	-.14**	.00	-.22**	.62**	.77**		
17 <i>Emotional Instability</i>	-.37**	.10	.02	.05	.10	.06	.08	-.00	.04	.13*	.00	.15**	-.01	.50**	.33**	.28**	
18 <i>Intellect Openness</i>	-.50**	.42**	.13*	.01	.21**	-.15**	-.11*	-.001	-.08	.02	-.13*	.03	-.24**	.65**	.75**	.79**	.34**

Note: *p<.05; **p<.01