

To cite this article: Gabriel Dorantes Argandar (2023). MULTIMEDIA USE IS UNRELATED TO ANTISOCIAL BEHAVIOR IN MEXICAN CHILDREN, International Journal of Education and Social Science Research (IJESSR) 6 (4): 259-279 Article No. 819, Sub Id 1296

MULTIMEDIA USE IS UNRELATED TO ANTISOCIAL BEHAVIOR IN MEXICAN CHILDREN

Gabriel Dorantes Argandar

Psychology Faculty
Universidad Autónoma del Estado de Morelos

DOI: <https://doi.org/10.37500/IJESSR.2023.6418>

ABSTRACT

Introduction. Multimedia has been present in households for the last 60 years. Logic has guided individuals and groups alike to assume that exposure to multimedia, such as television shows, music genres, use of internet, and playing videogames, have influence on an individual's behavior, shaping it into an antisocial fashion. This study aims to determine the relationship between multimedia use and antisocial behavior. It is hypothesized that frequent use of internet, television, music and/or videogames will have an influence on antisocial behavior. Methods. Through a quantitative methodology, 841 individuals between the ages of 6 to 23 participated in this study. Parametric analyses were carried out to determine if antisocial behavior predicts multimedia use. Results. Although the study seems sound, it appears that there is no relationship that links antisocial behavior and multimedia content. Conclusions. It is possible that there is no statistical relationship between use of Multimedia and Antisocial Behavior. Further research is warranted, it is necessary to comprise larger and more diverse samples to build a stronger certainty.

KEYWORDS: Videogames; Antisocial Behavior; Multimedia Content; Factor Analysis; Quantitative Research

INTRODUCTION

Multimedia is defined as the provision of audio, graphics and video through technology (Goldman-Segall & Maxwell, 2003), or the combination of diverse media through technology (Word Reference, 2020). Multimedia has been a permanent element in contemporary lifestyle since the last half of the previous century. The display of violent behavior has slowly crept into internet, television, music, and videogames. It is possible that it shapes behavior, cognition, even personality itself. How does multimedia distort an individual's mind? There is evidence of its influence on reading skills, better visual-spatial skill, but lower Grade Point Averages (Jackson, von Eye, Witt, et al., 2011), of neural desensitization to violence and its link to aggressive behavior due to the use of videogames (Engelhardt et al., 2011), or even of the relationship between extended exposure to violent videogames and a greater tolerance of sexual harassment and greater rape myth acceptance (Dill et al., 2008). Simple enough behaviors can be considered of an antisocial kind. Individuals that neglect

to use their seat-belts while driving more often than not are involved in said behavior and report having contact with the criminal justice system on several occasions (Vaughn et al., 2012). This suggests that engaging in one type of antisocial behavior will be related to other types. Is there a relationship between multimedia use and antisocial behavior? Urban households include the presence of multimedia and have done so for several years now. It could be that the exposure to multimedia during early developmental stages shapes an individual's mind in a certain way. There is evidence supporting the notion that issues during child development such as hostile family relationships are determinant to an individual's adjustment and the development of delinquency and depression (Castellani et al., 2014). Developmental issues such as family conflict and absence of family support are considered risk factors of antisocial behavior (Cutrín et al., 2015). Childhood trauma of a severe nature is related to behaviors involving police officers, especially in men (Sher et al., 2015). There is evidence suggesting the development of psychopathic personality traits during adolescence and their relationship to antisocial behavior in adulthood (Forsman et al., 2010). This suggests that issues arousing during an individual's development are a key factor in his or her composition as a person. That is: one displays psychopathic behavior because he or she possesses psychopathic personality traits. These are often associated to a lack of empathy, low levels of morality and an increased level of antisocial behavior (Almeida et al., 2015). There is a stronger relationship between psychopathic personality and rule-breaking behavior than there is with aggressive behavior (Forsman et al., 2010), which suggests that antisocial behavior as a whole is a collection of behaviors, and should be studied individually. There is evidence that suggests that antisocial features are predicted by a lack of premeditation, sensation seeking and positive urgency, and act as mediators between impulsivity and substance abuse (Hahn et al., 2016). Attitudes and beliefs of a dysfunctional nature are at the core of behavior in the face of opportunity or conflict (Roncero et al., 2016). However, there is little evidence regarding the relationship of videogame playing with actual behavior, or the processes that produce it. The working hypothesis for this study is that multimedia has an influence on antisocial behavior in individuals under the age of 18. This study will attempt to observe if individual behaviors that are considered antisocial in nature are related to multimedia use, in an attempt to understand this complex relationship.

Some evidence suggests there is no relationship between some sort of multimedia use and aggressive or violent behavior (Brusso & Orvis, 2013; Dorantes-Argandar, 2017b; Ferguson, 2015; Jackson, von Eye, Witt, et al., 2011) such as videogames and antisocial behavior (Dorantes-Argandar, 2021). However, there is also contradictory evidence, such as the relationship between television and aggressive or violent behavior (Çitak, 2009; Latner et al., 2007; Martins, 2013; Swing et al., 2010), music and aggressive or violent behavior (Anderson et al., 2012; Greitemeyer, 2012; Santoso et al., 2013; Zhang & Gao, 2014), internet use and aggressive or violent behavior (De Bruyckere et al., 2015; Goh et al., 2011; King et al., 2018; Odacı & Çelik, 2013; Van Rooij et al., 2011); and there is evidence of positive uses for some types of multimedia (Chiappe et al., 2013; González et al., 2016; Lacasa et al., 2008; Molins-Ruano et al., 2014; O'Leary et al., 2011; Quiroga et al., 2014; Serrano-Laguna et al., 2012, 2014; Treuille & Das, 2014), as well as empirical research that shows the

negative impact of technology and multimedia on behavior and development (Brusso & Orvis, 2013; Defanti, 1984; Fling et al., 1992; Jackson, von Eye, Fitzgerald, et al., 2011; Raynor et al., 2016; Witt et al., 2011). This paper's authors could find no studies of this nature carried out in a Latin-American country, which speaks of the need of expanding research to countries where these issues have not been thoroughly explored.

The main objective of this study is to determine the influence that using multimedia (internet, television, music and videogames) has on antisocial behavior in Mexican children. It is hypothesized that using multimedia will have an influence on antisocial behavior. Establishing these relationships is important to help understand how antisocial behavior is made prevalent in modern-day society, if efforts to reduce it are to be made.

Participants

The sample was comprised of 841 participants between the ages of 6 and 23 (50.6% boys, 49.3% girls, age mean 13.93 years old, std. dev 2.51) who were selected by a non-probabilistic method. Age mean for years of schooling was 8.44 with a std. dev. of 2.46, which means that the sample level is mostly around some basic education. 90.5% of participants stated their main occupation as "student". Inclusion criteria consisted of (1) being frequently exposed to multimedia, and (2) living within the municipal limits of Cuernavaca, Morelos (Mexico).

Multimedia use was assessed through the individual's manifestation of regularly exposing him or herself to it, although this was not verified nor was frequency or duration of exposition estimated. Because of ethical issues, this study was carried out in a non-experimental fashion *ex post facto*, in order to avoid having to expose human subjects to violent multimedia in a laboratory setting. Subjects were selected according to their *a priori* propensity to use multimedia, regardless of its violent or non-violent nature.

Procedure

Participants were selected using a non-probabilistic method. They were approached through a variety of settings by a team of volunteers that was composed of Psychology students. These were trained and supervised by the researchers involved in this study. Individuals were sought out in schools, streets, stores, shops, and squares in downtown Cuernavaca, Mexico. Volunteers were instructed to stratify their collection, paying attention to include as much boys as girls in the sample, and to keep track of the age of participants so as to maintain the age quota of the sample as close to population distributions as possible. Informed consent was included. Instruments were available in a paper and pencil format, and then keyed in by hand into the SPSS (v. 21), AMOS graphics (v. 20) and R (v. 3.43). These were subsequently used to carry out statistical analyses such as Cronbach's Alpha (to determine internal consistency of the items), Exploratory and Confirmatory Factor Analysis (to determine the factorial distribution of the items that composed the scales), Pearson's Correlations (to

determine relationship of the factors that were drawn), Linear Regressions (to determine the direction of said relationships), and Robust Regressions and Structural Equations (to fit the model).

Instruments

This study included 5 scales, two of which were previously validated, to evaluate the variables included in this study: videogames, television, music, internet, and antisocial behavior. All scales used a 1 through 5 Likert system and were presented in Spanish, information presented here is in English for purpose of this paper. Use of videogames was evaluated through the Videogame Playing Frequency Inventory (VPFI) (Dorantes-Argandar, 2017) which had a Cronbach's Alpha of .72, while this study yielded a .87. This scale has 14 items that present different videogame titles where individuals are required to determine frequency of play. It has no subscales. Antisocial Behavior was evaluated by the Disocial Behavior Scale (ECODI for its initials in Spanish) (Moral de la Rubia & Pacheco Sánchez, 2011) which was validated for teenagers between the ages of 12 and 16. The original validation had a Cronbach's Alpha of .88, this study yielded a .92.

Three instruments were designed to evaluate use of Television, Internet, and Music, although the procedure was the same for all three through a sample of 100 individuals (53 boys, 47 girls, age mean 12.84 years old, std. dev 3.02) which was comprised for this purpose only. Each was asked to list the three most used elements in each of these media outlets. The most frequent answers were selected to construct an inventory for each. Exploratory and Confirmatory Factorial analyses were carried out to corroborate consistency and validity.

RESULTS

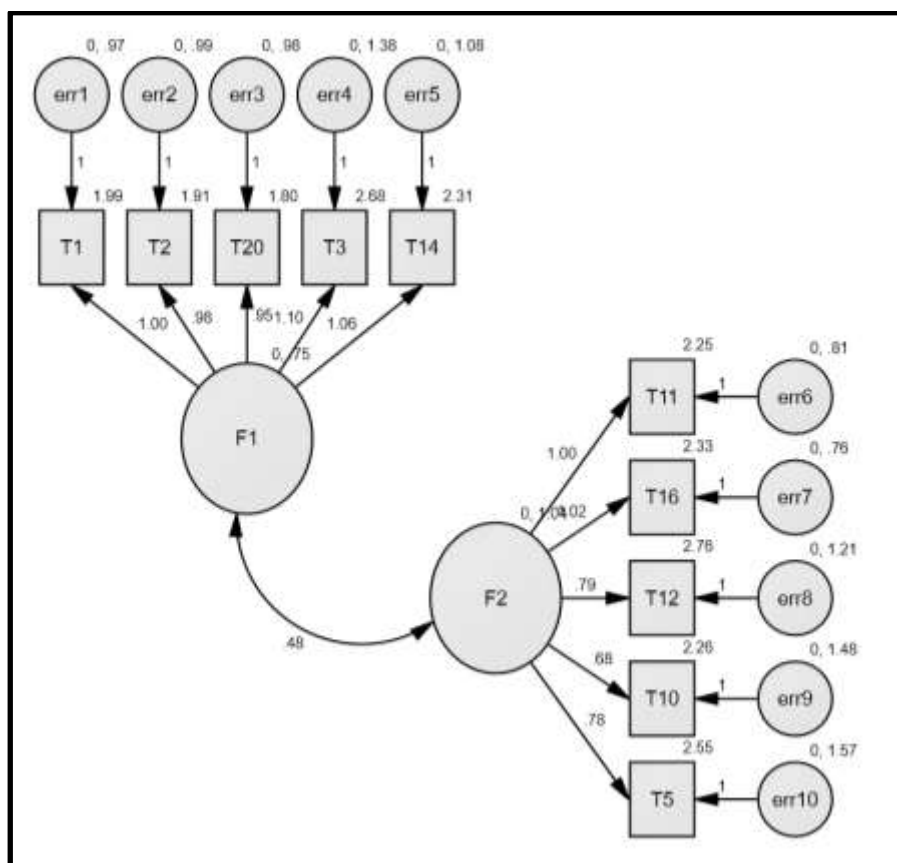
Television use was evaluated through a 10-item scale that evaluated the most watched TV shows. The exploratory factorial analysis was extracted through the Maximum Likelihood extraction method, using a Varimax rotation with Kaiser Adjustment, which arranged the scale in two factors that explained 54.86% of variance. This setting had a Kaiser-Meyer-Olkin measure of sample adequacy of .83, passed Bartlett's sphericity test ($X^2 = 2517.9$ $df = 45$ $p \leq .001$), and yielded an excellent GFI ($X^2 = 210.84$ $df = 26$ $p \leq .001$). Factorial loadings are presented in the following table. Table 1 presents item code, the items themselves, and factor loadings in a descending order.

Table 1. Factorial loadings for TV Shows

#	TV Show	Factor 1	Factor 2
T1	Young Titans	.676	
T2	Star vs. the Forces of Evil	.688	
T20	Stephen Universe	.644	
T3	Gravity Falls	.584	
T14	Adventure Time	.583	
T11	Sam and Cat		.795
T16	iCarly		.750
T12	Spongebob Squarepants		.495
T10	La Rosa de Guadalupe		.494
T5	Disney Channel and Disney XD		.417

Table 1 shows factorial loadings for the TV Shows that had communalities above .4, which resulted in a selection of 10 items that form an inventory that has 2 Factors. Factor 1 was named “Cartoons” and Factor 2 was named “Other Shows”. The TV Show Inventory 2020 had a Cronbach’s Alpha of .82. Confirmatory Factor Analysis was carried out to corroborate these findings, which is presented in Figure 1.

Figure 1. Confirmatory Factor Analysis for the TV Show Inventory 2018.



Confirmatory Factorial Analysis confirms that the model achieves minimum requirements for model fit ($X^2 = 427.23$, $df = 34$, $p \leq .001$), and yielded an adequate fit ($CFI = .84$, $TLI = .75$, $RMSEA = .2$) (Batista-Foguet et al., 2004; Lara-Cantú et al., 1993; Ruiz et al., 2010).

Internet use was evaluated through a 6 item scale that evaluated the most visited internet sites. The exploratory factorial analysis was extracted through the Maximum Likelihood extraction method arranged the scale in one factor that explained 48.81% of variance. This setting had a Kaiser-Meyer-Olkin measure of sample adequacy of .8, passed Bartlett's sphericity test ($X^2 = 1366.07$ $df = 15$ $p \leq .001$), and yielded a GFI of ($X^2 = 113.43$ $df = 9$ $p \leq .001$). Factorial loadings are presented in the following table. Table 2 presents item code, the items themselves, and factor loadings in a descending order.

Table 2. Factorial loadings for Internet Web Sites

#	Web Site	Factor 1
I2	Messenger	.77
I4	Whatsapp	.59
I5	Youtube	.46
I7	Google	.46
I8	Facebook	.84
I9	Instagram	.55

Table 2 shows factorial loadings for the web sites that had communalities above .4, which resulted in a selection of 6 items that form an inventory that has 1 Factor. The Internet Web Site Inventory 2020 had a Cronbach's Alpha of .78. Confirmatory Factor Analysis was carried out to corroborate these findings, which is presented in Figure 2.

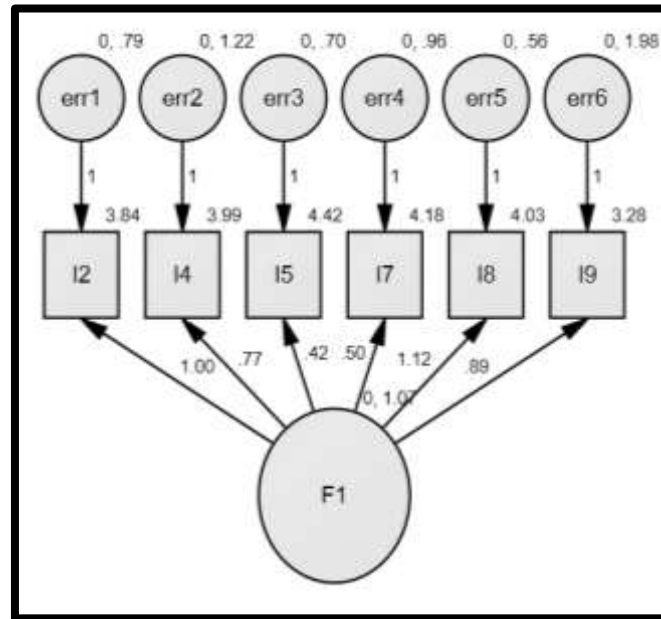


Figure 2. CFA for the Internet Web Site Inventory 2018.

Confirmatory Factorial Analysis confirms that the model achieves minimum requirements for model fit ($X^2 = 109.4$, $df = 9$, $p \leq .001$), and yielded an adequate fit ($CFI = .93$, $TLI = .83$, $RMSEA = .12$) (Batista-Foguet et al., 2004; Lara-Cantú et al., 1993; Ruiz et al., 2010).

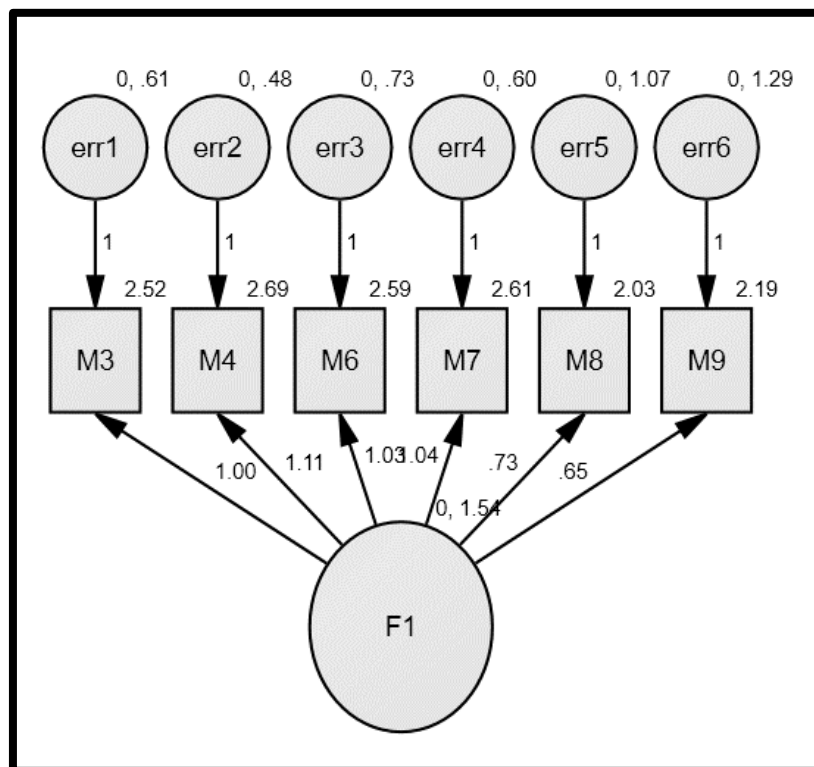
Music use was evaluated through a 6 item scale that evaluated the most listened to music interpreters. The exploratory factorial analysis was extracted through the Maximum Likelihood extraction method, which arranged the scale in one factor that explained 48.81% of variance. This setting had a Kaiser-Meyer-Olkin measure of sample adequacy of .9, passed Bartlett’s sphericity test ($X^2 = 3229.7$ $df = 15$ $p \leq .001$), and yielded a GFI of ($X^2 = 132.5$ $df = 9$ $p \leq .001$). Factorial loadings are presented in the following table. Table 3 presents item code, the items themselves, and factor loadings in a descending order.

Table 3. Factorial loadings for Music

#	Music Interpreter	Factor 1
M3	DJ Balvin	.77
M4	Ozuna	.59
M6	Bad Bunny	.46
M7	Maluma	.46
M8	CNCO	.84
M9	Shakira	.55

Table 3 shows factorial loadings for Music Interpreters that had communalities above .4, which resulted in a selection of 6 items that form an inventory that has 1 Factor. The Music Inventory 2020 had a Cronbach’s Alpha of .91. Confirmatory Factor Analysis was carried out to corroborate these findings, which is presented in Figure 3.

Figure 3. CFA for the The Music Interpreter Inventory 2018.



Confirmatory Factorial Analysis confirms that the model achieves minimum requirements for model fit ($X^2 = 126.42$, $df = 9$, $p \leq .001$), and yielded an adequate fit ($CFI = .96$, $TLI = .92$, $RMSEA = .12$) (Batista-Foguet et al., 2004; Lara-Cantú et al., 1993; Ruiz et al., 2010). All Cronbach’s Alphas calculated for each instrument are of an excellent level (Vera-Jiménez et al., 2014).

After instrument validity was determined, mean scores were calculated. The value of each item in each scale was added and divided into the number of items, which generated an index that could assess the level that each participant yielded for each variable. These indexes were used to carry out Pearson’s correlations, which are presented in Figure 4.

Fig 4. Pearson’s correlations for variables included in this study

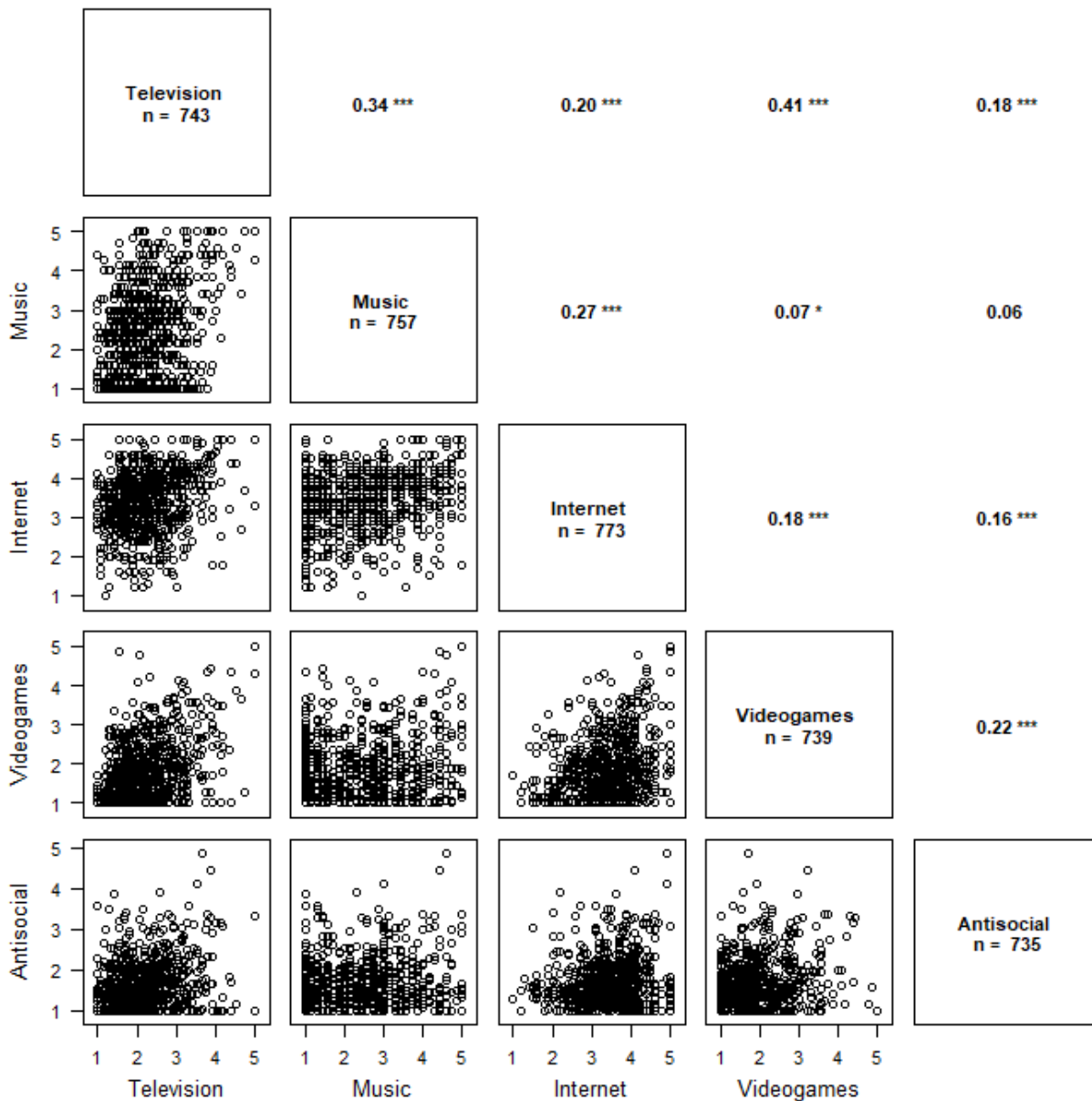


Figure 4 shows how Antisocial Behavior is very poorly correlated to each multimedia variable, being not related at all to Music use. A simple linear regression was calculated to observe the influence, if any, that multimedia variables had on Antisocial Behavior ($R^2 = .138$, $F = 30.35$, $p \leq .001$,). This is presented in Figures 5, 6 and 7.

Fig 5. Simple Linear Regression depicting the influence that Multimedia use has on Antisocial Behavior.

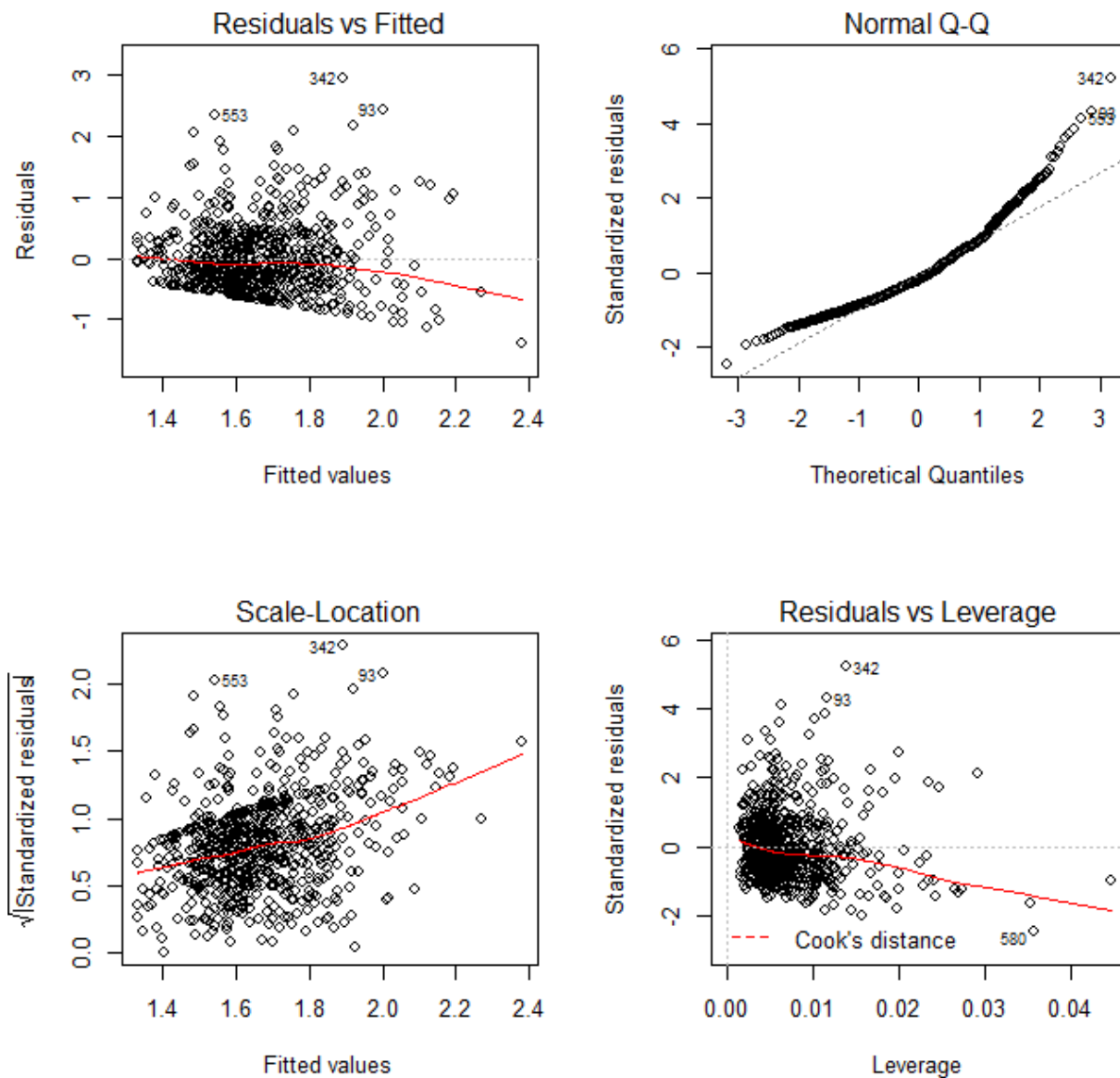
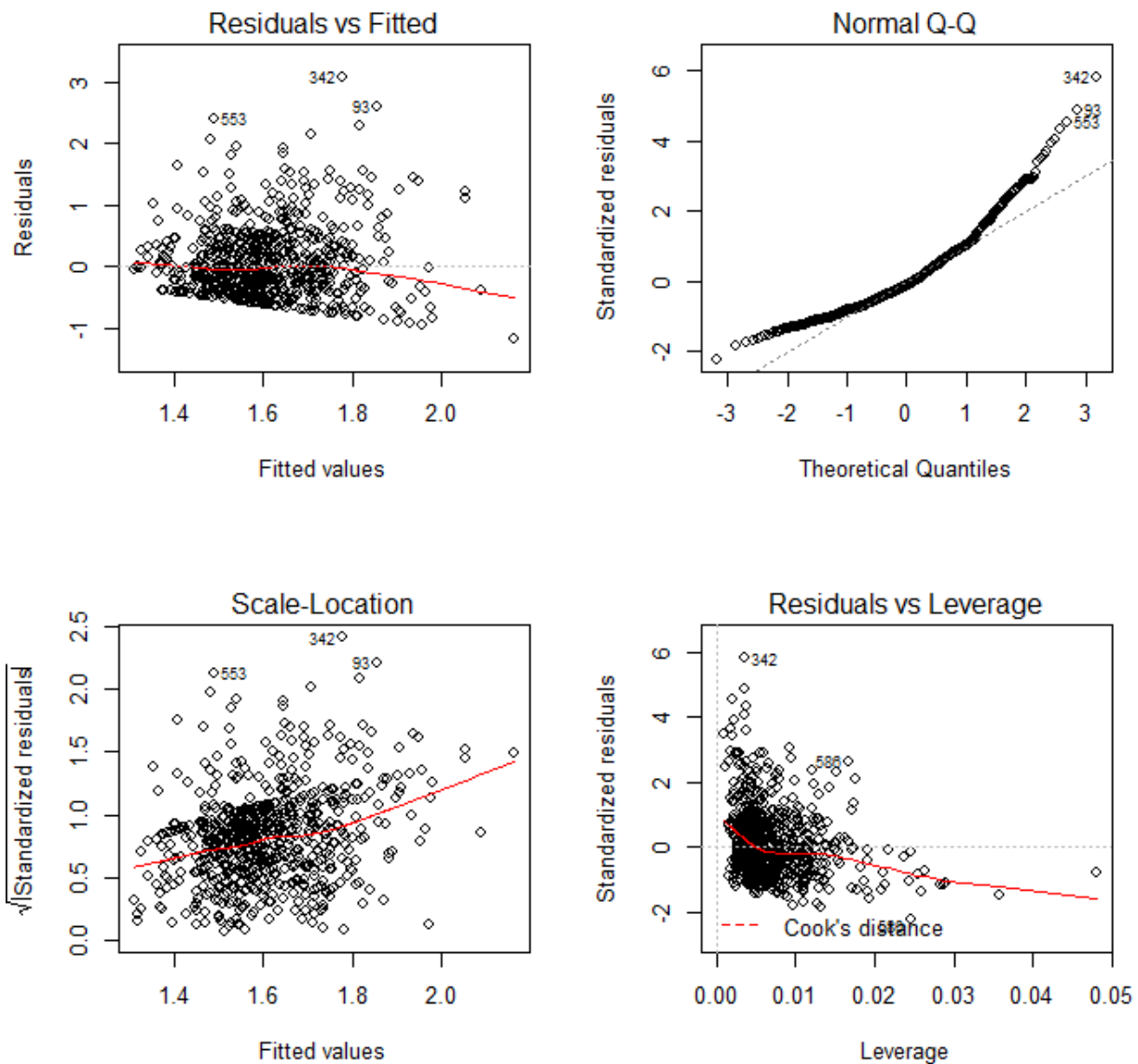


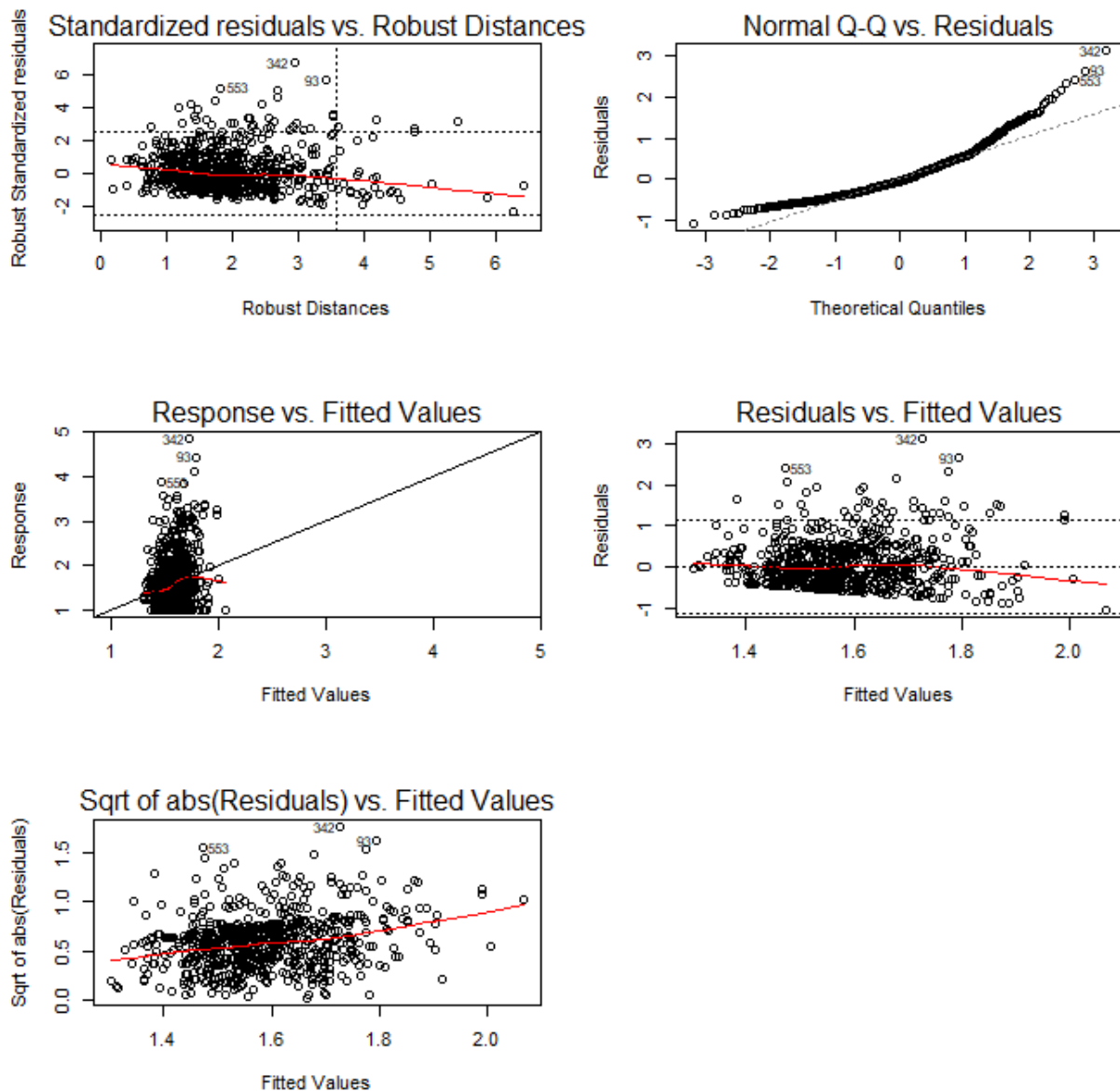
Figure 5 shows how poor the influence is. Robust regressions were then calculated to boost the errors in normality and seek a more potent relationship. This is presented in Figure 6.

Fig 6. Robust Linear Regression depicting the influence that Multimedia use has on Antisocial Behavior.



The Robust Regression again fails to determine a clear influence between these variables. Finally, a MM Robust Linear Regression was calculated in an effort to determine the influence. This is presented in figure 7.

Fig 7. MM Robust Linear Regression depicting the influence that Multimedia use has on Antisocial Behavior.



Yet again, little influence was observed.

DISCUSSION

This study had the purpose of establishing the relationship that multimedia use might have on antisocial behavior, expecting to find that the use of multimedia would promote antisocial behavior. Alas, the results here presented indicate that there is no relationship between the variables studied, which is also found in literature (Coyne et al., 2012; Dorantes-Argandar, 2017b, 2017d; Dorantes Argandar, 2017;

Ferguson, 2014; Greitemeyer, 2012; Ibáñez & Delgado-Mata, 2011; Miranda et al., 2015; Mishra et al., 2016; Nebel et al., 2016; Saleem et al., 2012; Tear & Nielsen, 2014). It was naïve to believe that the exposure to violent multimedia would directly and inevitably turn people into violent beings. The evidence gathered around this nature is contradictory at best, as there is no astounding proof that violent media shapes behavior in a determinant manner. Gunter & Daly (2012) found a spurious relationship between use of videogames and violent behavior. Another study carried out in the United Kingdom (Yeh, 2015) found that playing action videogames is related to an increase in creativity performance and an elicitation of positive affect. It is necessary to move on from the notion that videogames are something done to those that play them, when one must take into account the player's participation and experience within the game (Jerabeck & Ferguson, 2013). People may choose their videogames regarding their content in order to satisfy a certain need, or enjoy the same genre for individual reasons: a person who seeks to vent out frustration in a videogame will react with that mindset to it (Read et al., 2016). It could be possible that videogame play during developmental stages is not to be considered a traumatic experience, which do have the power to shape behaviors (Sher et al., 2015). This contradicts evidence provided by other studies, especially regarding use of videogames (Adachi & Willoughby, 2011; Anderson, 2002; Breuer, Kowert, Festl, & Quandt, 2015; Bushman & Anderson, 2002; Fling et al., 1992; Gutiérrez, 2014; Kierkegaard, 2011; Larkin, 2000; Read et al., 2016; Tisseron, 2009), television (Martins, 2013; Swing et al., 2010; Vicente-Rodríguez et al., 2008), internet (Goh et al., 2011; GRIFFITHS, 2008; Jackson, von Eye, Fitzgerald, et al., 2011; Ko et al., 2009; Laconi et al., 2017; Petry et al., 2014), and music (Anderson et al., 2012; Zhang & Gao, 2014), and violent behavior.

However, there is strong evidence that antisocial behavior is tied to many other factors, some of which are of an individual nature. There is a stronger relationship between psychopathic personality and rule-breaking behavior than there is with aggressive behavior (Forsman et al., 2010), which suggests that antisocial behavior as a whole is a collection of behaviors, and should be studied individually, or in relation to adolescent stages of development (Breuer, Vogelgesang, et al., 2015). These findings suggest that antisocial behavior is composed by several subtypes, which indicates that further study is needed in the nature of the variety of antisocial behavior and the influence personality and psychosocial factors have on it. For example, if an individual has social ties to a group that manifests delinquent behavior, said individual is prone to displaying antisocial behavior as well (Cutrín et al., 2015). It would be logical that having delinquent friends is a much more powerful predictor of antisocial behavior than using violent multimedia. Sadrieh & Schröder (2016) find that there is a large portion of individuals that enjoy engaging in both antisocial and prosocial behaviors, although they themselves manifest that giving is usually more prevalent than destroying. This again proves that the issue at hand is far more complex, and requires a far more complex approach than prejudiced affirmations and blind association.

CONCLUSIONS AND LIMITATIONS

This study concludes that use of multimedia does not influence the prevalence of antisocial behavior in an individual below the age of 18, and in the case of such a relationship existing, it is of a spurious nature. These results, however, are limited to Mexicans residing in the city of Cuernavaca, in the State of Morelos, Mexico. To determine if these findings are repeated elsewhere, further research is warranted in other cities in the same region and in others.

On behalf of all authors, the corresponding author states that there is no conflict of interest.

REFERENCES

- Adachi, P. J. C., & Willoughby, T. (2011). The effect of violent video games on aggression: Is it more than just the violence? *Aggression and Violent Behavior, 16*(1), 55–62. <https://doi.org/10.1016/j.avb.2010.12.002>
- Almeida, P. R., Seixas, M. J., Ferreira-Santos, F., Vieira, J. B., Paiva, T. O., Moreira, P. S., & Costa, P. (2015). Empathic, moral and antisocial outcomes associated with distinct components of psychopathy in healthy individuals: a Triarchic model approach. *Personality and Individual Differences, 85*, 205–211. <https://doi.org/10.1016/j.paid.2015.05.012>
- Anderson, C. A. (2002). Violent video games and aggressive thoughts, feelings, and behaviors. *Children in the Digital Age: Influences of Electronic Media on Development*, 101–119. <http://link.kib.ki.se?sid=OVID:psycdb&id=pmid:&id=doi:&issn=&isbn=0275976521&volume=&issue=&spage=101&pages=101-119&date=2002&title=Children+in+the+digital+age%3A+Influences+of+electronic+media+on+development.&atitle=Violent+video+games+and+aggressive+tho>
- Anderson, C. A., Gentile, D. A., & Dill, K. E. (2012). Prosocial, Antisocial, and Other Effects of Recreational Video Games. *Handbook of Children and the Media*, 249–272.
- Batista-Foguet, J. M., Coenders, G., & Alonso, J. (2004). [Confirmatory factor analysis. Its role on the validation of health related questionnaires]. *Medicina Clínica (Barcelona, 122 Suppl(0025-7753 (Print))*), 21–27. <https://doi.org/10.1157/13057542>
- Breuer, J., Kowert, R., Festl, R., & Quandt, T. (2015). Sexist Games=Sexist Gamers? A Longitudinal Study on the Relationship Between Video Game Use and Sexist Attitudes. *Cyberpsychology, Behavior, and Social Networking, 18*(4), 197–202. <https://doi.org/10.1089/cyber.2014.0492>
- Breuer, J., Vogelgesang, J., Quandt, T., & Festl, R. (2015). Violent video games and physical aggression: Evidence for a selection effect among adolescents. *Psychology of Popular Media Culture, 4*(4), 305–328. <https://doi.org/10.1037/ppm0000035>
- Brusso, R. C., & Orvis, K. A. (2013). The impeding role of initial unrealistic goal-setting on

videogame-based training performance: Identifying underpinning processes and a solution. *Computers in Human Behavior*, 29(4), 1686–1694. <https://doi.org/10.1016/j.chb.2013.01.006>

Bushman, B. J., & Anderson, C. A. (2002). Violent video games and hostile expectations: A test of the general aggression model. *Personality and Social Psychology Bulletin*, 28(12), 1679–1686. <https://doi.org/10.1177/014616702237649>

Castellani, V., Pastorelli, C., Eisenberg, N., Caffo, E., Forresi, B., & Gerbino, M. (2014). The development of perceived maternal hostile, aggressive conflict from adolescence to early adulthood: Antecedents and outcomes. *Journal of Adolescence*, 37(8), 1517–1527. <https://doi.org/10.1016/j.adolescence.2014.07.001>

Chiappe, D., Conger, M., Liao, J., Caldwell, J. L., & Vu, K.-P. L. (2013). Improving multi-tasking ability through action videogames. *Applied Ergonomics*, 44(2), 278–284. <https://doi.org/10.1016/j.apergo.2012.08.002>

Çitak, G. G. (2009). *Constructing an Attitude Scale : Attitudes toward Violence on Televisions*. 268–273.

Coyne, S. M., Busby, D., Bushman, B. J., Gentile, D. A., Ridge, R., & Stockdale, L. (2012). Gaming in the Game of Love: Effects of Video Games on Conflict in Couples. *Family Relations*, 61(3), 388–396. <https://doi.org/10.1111/j.1741-3729.2012.00712.x>

Cutrín, O., Gómez-Fraguela, J. A., & Luengo, M. Á. (2015). Peer-group mediation in the relationship between family and juvenile antisocial behavior. *The European Journal of Psychology Applied to Legal Context*, 7(2), 59–65. <https://doi.org/10.1016/j.ejpal.2014.11.005>

De Bruyckere, P., Kirschner, P. A., Hulshof, C. D., De Bruyckere, P., Kirschner, P. A., & Hulshof, C. D. (2015). Chapter 4 – Myths about Technology in Education. In *Urban Myths about Learning and Education* (pp. 127–164). <https://doi.org/10.1016/B978-0-12-801537-7.00005-6>

Defanti, T. A. (1984). The Mass Impact of Videogame Technology. *Advances in Computers*, 23, 93–140. [https://doi.org/10.1016/S0065-2458\(08\)60463-5](https://doi.org/10.1016/S0065-2458(08)60463-5)

Dill, K. E., Brown, B. P., & Collins, M. A. (2008). Effects of exposure to sex-stereotyped video game characters on tolerance of sexual harassment. In *Journal of Experimental Social Psychology* (Vol. 44, Issue 5). <https://doi.org/10.1016/j.jesp.2008.06.002>

Do videogames need a character assassination? (2009). In *New Scientist* (Vol. 203, Issue 2727). [https://doi.org/10.1016/S0262-4079\(09\)62544-6](https://doi.org/10.1016/S0262-4079(09)62544-6)

Dorantes-Argandar, G. (2017a). El uso prolongado de videojuegos violentos influye en la percepción de la violencia de adultos jóvenes. *Psiencia Revista Latinoamericana de Ciencia Psicológica*, 9(2). <http://www.redalyc.org/pdf/3331/333152922002.pdf>

- Dorantes-Argandar, G. (2017b). Jugar videojuegos violentos no influye en la agresividad vial de adultos jóvenes. *Revista de Psicología y Ciencias Del Comportamiento*, 8(2), 51–73. <https://doi.org/http://dx.doi.org/10.1804/rpcc.v8i2.182.g215>
- Dorantes-Argandar, G. (2017c). Jugar videojuegos violentos no influye en la agresividad vial de adultos jóvenes. *Revista de Psicología y Ciencias Del Comportamiento de La Unidad Académica de Ciencias Jurídicas y Sociales*, 8(2), 2007–1833.
- Dorantes-Argandar, G. (2021). Playing violent videogames is unrelated to antisocial behavior in Mexican children. *Entertainment Computing*, 39(June), 100439. <https://doi.org/10.1016/j.entcom.2021.100439>
- Engelhardt, C. R., Bartholow, B. D., Kerr, G. T., & Bushman, B. J. (2011). This is your brain on violent video games: Neural desensitization to violence predicts increased aggression following violent video game exposure. In *Journal of Experimental Social Psychology* (Vol. 47, Issue 5). <https://doi.org/10.1016/j.jesp.2011.03.027>
- Ferguson, C. J. (2014). Is video game violence bad? *Psychologist*, 27(5), 324–327.
- Ferguson, C. J. (2015). Does media violence predict societal violence? It depends on what you look at and when. *Journal of Communication*, 65(1), E1–E22. <https://doi.org/10.1111/jcom.12129>
- Fling, S., Smith, L., Thornton, D., Atkins, E., & Nixon, K. (1992). Videogames, aggression, and self-esteem: A survey. *Social Behavior and Personality*, 20(1), 39–46. <https://doi.org/10.2224/sbp.1992.20.1.39>
- Forsman, M., Lichtenstein, P., Andershed, H., & Larsson, H. (2010). A longitudinal twin study of the direction of effects between psychopathic personality and antisocial behaviour. *Journal of Child Psychology and Psychiatry*, 51(1), 39–47. <https://doi.org/10.1111/j.1469-7610.2009.02141.x>
- Goh, L. Y. Q., Phillips, J. G., & Blaszczynski, A. (2011). Computer-mediated communication and risk-taking behaviour. *Computers in Human Behavior*, 27(5), 1794–1799. <https://doi.org/10.1016/j.chb.2011.03.006>
- Goldman-Segall, R., & Maxwell, J. W. (2003). Computers, the Internet, and New Media for Learning. In W. M. Reynolds & I. B. Weiner (Eds.), *Handbook of Psychology, Volume 7: Educational Psychology*. John Wiley & Sons, Inc. <https://doi.org/10.1037/005272>
- González, C. S., Gómez, N., Navarro, V., Cairós, M., Quirce, C., Toledo, P., & Marrero-Gordillo, N. (2016). Learning healthy lifestyles through active videogames, motor games and the gamification of educational activities. *Computers in Human Behavior*, 55, 529–551. <https://doi.org/10.1016/j.chb.2015.08.052>
- Greitemeyer, T. (2012). Exposure to media with prosocial content reduces the propensity for reckless

and risky driving. *Journal of Risk Research*, 16(5), 1–12.
<https://doi.org/10.1080/13669877.2012.726248>

GRIFFITHS, M. (2008). 8 – INTERNET AND VIDEO-GAME ADDICTION. In *Adolescent Addiction* (pp. 231–267). <https://doi.org/10.1016/B978-012373625-3.50010-3>

Gunter, W. D., & Daly, K. (2012). Causal or spurious: Using propensity score matching to detangle the relationship between violent video games and violent behavior. *Computers in Human Behavior*, 28(4), 1348–1355. <https://doi.org/10.1016/j.chb.2012.02.020>

Gutiérrez, E. J. D. (2014). Video Games and Gender-based Violence. *Procedia - Social and Behavioral Sciences*, 132, 58–64. <https://doi.org/10.1016/j.sbspro.2014.04.278>

Hahn, A. M., Simons, R. M., & Hahn, C. K. (2016). Five factors of impulsivity: Unique pathways to borderline and antisocial personality features and subsequent alcohol problems. *Personality and Individual Differences*, 99, 313–319. <https://doi.org/10.1016/j.paid.2016.05.035>

Ibáñez, J., & Delgado-Mata, C. (2011). Adaptive two-player videogames. *Expert Systems with Applications*, 38(8), 9157–9163. <https://doi.org/10.1016/j.eswa.2011.01.095>

Jackson, L. A., von Eye, A., Fitzgerald, H. E., Witt, E. A., & Zhao, Y. (2011). Internet use, videogame playing and cell phone use as predictors of children’s body mass index (BMI), body weight, academic performance, and social and overall self-esteem. *Computers in Human Behavior*, 27(1), 599–604. <https://doi.org/10.1016/j.chb.2010.10.019>

Jackson, L. A., von Eye, A., Witt, E. A., Zhao, Y., & Fitzgerald, H. E. (2011). A longitudinal study of the effects of Internet use and videogame playing on academic performance and the roles of gender, race and income in these relationships. *Computers in Human Behavior*, 27(1), 228–239. <https://doi.org/10.1016/j.chb.2010.08.001>

Jerabeck, J. M., & Ferguson, C. J. (2013). The influence of solitary and cooperative violent video game play on aggressive and prosocial behavior. *Computers in Human Behavior*, 29(6), 2573–2578. <https://doi.org/10.1016/j.chb.2013.06.034>

Kierkegaard, S. (2011). POSTAL 2 plays in US court - Schwarzenegger v. Entertainment Merchants Association. *Computer Law & Security Review*, 27(3), 278–290. <https://doi.org/10.1016/j.clsr.2011.03.008>

King, D. L., Herd, M. C. E., & Delfabbro, P. H. (2018). Motivational components of tolerance in Internet gaming disorder. *Computers in Human Behavior*, 78, 133–141. <https://doi.org/10.1016/j.chb.2017.09.023>

Ko, C.-H., Yen, J.-Y., Liu, S.-C., Huang, C.-F., & Yen, C.-F. (2009). The Associations Between Aggressive Behaviors and Internet Addiction and Online Activities in Adolescents. *Journal of*

Adolescent Health, 44(6), 598–605. <https://doi.org/10.1016/j.jadohealth.2008.11.011>

Lacasa, P., Martínez, R., & Méndez, L. (2008). Developing new literacies using commercial videogames as educational tools. *Linguistics and Education*, 19(2), 85–106. <https://doi.org/10.1016/j.linged.2008.02.001>

Laconi, S., Pirès, S., & Chabrol, H. (2017). Internet gaming disorder, motives, game genres and psychopathology. *Computers in Human Behavior*, 75, 652–659. <https://doi.org/10.1016/J.CHB.2017.06.012>

Lara-Cantú, M. A., Verduzco, M. A., Acevedo, M., & Cortés, J. (1993). VALIDEZ Y CONFIABILIDAD DEL INVENTARIO DE AUTOESTIMA DE COOPERSMITH PARA ADULTOS, EN POBLACION MEXICANA. *Revista Latinoamericana de Psicología*, 25(2), 247–255.

Larkin, M. (2000). Violent video games increase aggression. In *The Lancet* (Vol. 355, Issue 9214). [https://doi.org/10.1016/S0140-6736\(05\)74584-0](https://doi.org/10.1016/S0140-6736(05)74584-0)

Latner, J. D., Rosewall, J. K., & Simmonds, M. B. (2007). Childhood obesity stigma: Association with television, videogame, and magazine exposure. *Body Image*, 4(2), 147–155. <https://doi.org/10.1016/j.bodyim.2007.03.002>

Martins, N. (2013). Televised relational and physical aggression and children's hostile intent attributions. *Journal of Experimental Child Psychology*, 116(4), 945–952. <https://doi.org/10.1016/j.jecp.2013.05.006>

Miranda, C. S., Oliveira, T. D. P., Perez, D. B., Gouvêa, J. X. M. D., Marques, A. P., & Piemonte, M. E. P. (2015). Is it possible to transfer the gains obtained by videogames training to postural control in patients with chronic stroke? *Physiotherapy*, 101. <https://doi.org/10.1016/j.physio.2015.03.2138>

Mishra, J., Anguera, J. A., & Gazzaley, A. (2016). Video Games for Neuro-Cognitive Optimization. *Neuron*, 90(2), 214–218. <https://doi.org/10.1016/j.neuron.2016.04.010>

Molins-Ruano, P., Sevilla, C., Santini, S., Haya, P. A., Rodríguez, P., & Sacha, G. M. (2014). Designing videogames to improve students' motivation. *Computers in Human Behavior*, 31, 571–579. <https://doi.org/10.1016/j.chb.2013.06.013>

Moral de la Rubia, J., & Pacheco Sánchez, M. E. (2011). Desarrollo de una escala de conducta disocial en México. *Revista Electrónica de Psicología Iztacala*, 14(1), 199–221. <http://www.iztacala.unam.mx/carreras/psicologia/psiclin/vol14num1/Vol14No1Art11.pdf>

Nebel, S., Schneider, S., & Rey, G. D. (2016). From duels to classroom competition: Social competition and learning in educational videogames within different group sizes. *Computers in*

Human Behavior, 55, 384–398. <https://doi.org/10.1016/j.chb.2015.09.035>

O’Leary, K. C., Pontifex, M. B., Scudder, M. R., Brown, M. L., & Hillman, C. H. (2011). The effects of single bouts of aerobic exercise, exergaming, and videogame play on cognitive control. *Clinical Neurophysiology*, 122(8), 1518–1525. <https://doi.org/10.1016/j.clinph.2011.01.049>

Odacı, H., & Çelik, Ç. B. (2013). Who are problematic internet users? An investigation of the correlations between problematic internet use and shyness, loneliness, narcissism, aggression and self-perception. *Computers in Human Behavior*, 29(6), 2382–2387. <https://doi.org/10.1016/j.chb.2013.05.026>

Petry, N. M., Rehbein, F., Gentile, D. A., Lemmens, J. S., Rumpf, H. J., Mößle, T., Bischof, G., Tao, R., Fung, D. S. S., Borges, G., Auriacombe, M., González Ibáñez, A., Tam, P., & O’Brien, C. P. (2014). An international consensus for assessing internet gaming disorder using the new DSM-5 approach. *Addiction*, 109(9), 1399–1406. <https://doi.org/10.1111/add.12457>

Quiroga, M. A., Román, F. J., Escorial, S., Privado, J., & Colom, R. (2014). Visuospatial training is better than working memory training for improving Gf: Evidence from videogames. *Personality and Individual Differences*, 60, S46–S47. <https://doi.org/10.1016/j.paid.2013.07.139>

Raynor, H. A., Cardoso, C., & Bond, D. S. (2016). Effect of exposure to greater active videogame variety on time spent in moderate- to vigorous-intensity physical activity. *Physiology & Behavior*, 161, 99–103. <https://doi.org/10.1016/j.physbeh.2016.04.016>

Read, G. L., Ballard, M., Emery, L. J., & Bazzini, D. G. (2016). Examining desensitization using facial electromyography: Violent videogames, gender, and affective responding. *Computers in Human Behavior*, 62, 201–211. <https://doi.org/10.1016/j.chb.2016.03.074>

Roncero, D., Andreu, J. M., & Peña, M. E. (2016). Procesos cognitivos distorsionados en la conducta agresiva y antisocial en adolescentes. *Anuario de Psicología Jurídica*, 26(1), 88–101. <https://doi.org/10.1016/j.apj.2016.04.002>

Ruiz, M. A., Pardo, A., & Martín, S. (2010). Modelo de ecuaciones estructurales. *Papeles Del Psicólogo*, 31(1), 34–45. www.redalyc.org/articulo.oa?id=77812441004

Sadrieh, A., & Schröder, M. (2016). Materialistic, pro-social, anti-social, or mixed – A within-subject examination of self- and other-regarding preferences. *Journal of Behavioral and Experimental Economics*, 63, 114–124. <https://doi.org/10.1016/j.socec.2016.05.009>

Saleem, M., Anderson, C. A., & Gentile, D. A. (2012). Effects of Prosocial, Neutral, and Violent Video Games on College Students’ Affect. *Aggressive Behavior*, 38(4), 263–271. <https://doi.org/10.1002/ab.21427>

Santoso, G. A., Maulina, D., Adystia, C., & Oei, T. P. (2013). The influence of number of passengers

and music genre on driving speed of young adult angkot drivers. *Transportation Research Part F: Traffic Psychology and Behaviour*, 18, 1–10. <https://doi.org/10.1016/j.trf.2012.12.001>

Serrano-Laguna, Á., Torrente, J., Moreno-Ger, P., & Fernández-Manjón, B. (2012). Tracing a Little for Big Improvements: Application of Learning Analytics and Videogames for Student Assessment. *Procedia Computer Science*, 15, 203–209. <https://doi.org/10.1016/j.procs.2012.10.072>

Serrano-Laguna, Á., Torrente, J., Moreno-Ger, P., & Fernández-Manjón, B. (2014). Application of Learning Analytics in educational videogames. *Entertainment Computing*, 5(4), 313–322. <https://doi.org/10.1016/j.entcom.2014.02.003>

Sher, L., Siever, L. J., Goodman, M., McNamara, M., Hazlett, E. A., Koenigsberg, H. W., & New, A. S. (2015). Gender differences in the clinical characteristics and psychiatric comorbidity in patients with antisocial personality disorder. *Psychiatry Research*, 229(3), 685–689. <https://doi.org/10.1016/j.psychres.2015.08.022>

Swing, E. L., Gentile, D. A., Anderson, C. A., & Walsh, D. A. (2010). Television and Video Game Exposure and the Development of Attention Problems. *Pediatrics*, 126(2), 214–221. <https://doi.org/10.1542/peds.2009-1508>

Tear, M. J., & Nielsen, M. (2014). Video games and prosocial behavior: A study of the effects of non-violent, violent and ultra-violent gameplay. *Computers in Human Behavior*, 41, 8–13. <https://doi.org/10.1016/j.chb.2014.09.002>

Tisseron, S. (2009). Les dangers des jeux vidéo : diagnostic et conduite à tenir. *Archives de Pédiatrie*, 16(1), 73–76. <https://doi.org/10.1016/j.arcped.2008.10.022>

Treuille, A., & Das, R. (2014). Scientific rigor through videogames. In *Trends in Biochemical Sciences* (Vol. 39, Issue 11, pp. 507–509). <https://doi.org/10.1016/j.tibs.2014.08.005>

Van Rooij, A. J., Schoenmakers, T. M., Vermulst, A. A., Van Den Eijnden, R. J. J. M., & Van De Mheen, D. (2011). Online video game addiction: Identification of addicted adolescent gamers. *Addiction*, 106(1), 205–212. <https://doi.org/10.1111/j.1360-0443.2010.03104.x>

Vaughn, M. G., Salas-Wright, C. P., & Piquero, A. R. (2012). Buckle up: non-seat belt use and antisocial behavior in the United States. *Annals of Epidemiology*, 22(12), 825–831. <https://doi.org/10.1016/j.annepidem.2012.09.010>

Vera-Jiménez, J. A., Ávila-Guerrero, M. E., & Dorantes-Argandar, G. (2014). *Manual de evaluación de la victimización y percepción de la violencia, delincuencia, e inseguridad y la confianza en las instituciones* (1st ed.). Editorial UAEM. <http://libros.uaem.mx/?product=manual-de-evaluacion-de-la-victimizacion-y-percepcion-de-la-violencia-delincuencia-e-inseguridad-y-la>

confianza-en-las-instituciones

- Vicente-Rodríguez, G., Rey-López, J. P., Martín-Matillas, M., Moreno, L. A., Wärnberg, J., Redondo, C., Tercedor, P., Delgado, M., Marcos, A., Castillo, M., & Bueno, M. (2008). Television watching, videogames, and excess of body fat in Spanish adolescents: The AVENA study. *Nutrition*, 24(7), 654–662. <https://doi.org/10.1016/j.nut.2008.03.011>
- Witt, E. A., Massman, A. J., & Jackson, L. A. (2011). Trends in youth's videogame playing, overall computer use, and communication technology use: The impact of self-esteem and the Big Five personality factors. *Computers in Human Behavior*, 27(2), 763–769. <https://doi.org/10.1016/j.chb.2010.10.025>
- WordReference. (2020). *Multimedia*. Wordreference.Com. <https://www.wordreference.com/es/translation.asp?tranword=multimedia>
- Yeh, C. S.-H. (2015). Exploring the effects of videogame play on creativity performance and emotional responses. *Computers in Human Behavior*, 53, 396–407. <https://doi.org/10.1016/j.chb.2015.07.024>
- Zhang, J., & Gao, X. (2014). Background music matters: Why video games lead to increased aggressive behavior? *Entertainment Computing*, 5(2), 91–100. <https://doi.org/10.1016/j.entcom.2014.01.002>