

The Impact of Violent Online Games on Chinese Adolescents' Social Relationships

Xiaohan Wang*

OISE (Ontario Institute for Studies in Education): Department of Applied Psychology and Human Development, University of Toronto, Toronto, ON, M5S 1V6, Canada

*Corresponding author: xiaohanwang.wang@mail.utoronto.ca

Abstract. Under the Chinese internet system's anti-addiction policy, online games, particularly those with violent functions, are banned, and some previous research has only examined the harmful effects of online gaming. This study examines the parents' relationship, peer relationship, and romantic relationship levels of teenagers' social relationships from the perspective of violent online games, as well as the gender variations in social relationship positivity. Specifically, Chinese teenagers were split into the violent game and non-violent game groups, gathered the adolescents' social interaction scores in three aspects via questionnaires, and conducted a quantitative study. The data revealed that violent online games had no significant influence on teenagers' moms, peers, or romantic connections, with the exception of their ties with their fathers. This demonstrates that in families affected by violent video games, the relationships between adolescents and their parents warrants further investigation and debate in order to attain healthier parent-child relationships through the examination of the mothers' relationship pattern. In addition, peer relationship and romantic relationship scores of adolescent violent game players revealed that social behavior in violent games does not influence the development of positive social interactions in the real world. In the study of gender differences, it was determined by comparing the overall differences in social relations between males and females with the differences in the violent game group that violent games are the primary factor that boosts males' enthusiasm for social relationships. Consequently, examining the online social behavior of male online violent gamers players could be a breakthrough in enhancing the social relationships of Chinese adolescents.

Keywords: Chinese Adolescents; Social Relationships; Violent Online Games.

1. Introduction

In recent years, online games, particularly those involving violence, have received a great deal of attention due to China's stringent social intervention measures for online games. The National Press and Publication Administration (NPPA) of China issued a circular on August 30, 2021, to further restrict the video gaming activity of adolescents. The circular limited adolescent online gaming time to no more than three hours per week and specified the exact duration. The new policy is more restrictive than the 2019 regulations, which allowed minors to play online games for an average of 1.5 hours per day. During this period, a Chinese government-affiliated publication advocated for additional restrictions and referred to online gaming as "opium" Even though the article was removed and republished with a new headline that omitted the word "opium" the article's tone toward online games was unquestionably negative. Unquestionably, the tone of the article was negative toward online games. This traps the field in a cycle of control and criticism, restricting people's opportunities to interact with online games and ignoring research on their effects on adolescents' social relationships.

According to Erik Erikson's theory of psychosocial development, personality evolves from childhood to adulthood through eight stages in a predetermined order. Adolescence's "identity versus role confusion" is the fifth of these eight stages. This period is especially significant as a transition from childhood to adulthood, as adolescents complete a process of reintegrating their sense of self and attempting to confirm their adult identities, including their future professional and sexual identities, among others [1]. By combining their personal and group identities, adolescents protect themselves from the unpleasant emotions caused by identity crises [2]. Therefore, it is impossible to ignore the development of social relationships during adolescence [3]. Moreover, because

adolescence is the final stage of development before adulthood, the social relationships of adolescents are a crucial foundation for intimacy as opposed to isolation in the subsequent stage of psychosocial development.

2. Literature Review

Adolescents attempt to establish autonomy in their sense of emotional attachment to their parents during adolescence, resulting in alterations and conflicts in parent-child relationships [3]. Notably, the strength of adolescents' emotional attachment to their parents correlates more strongly with their happiness, according to Nishikawa et al. [4]. Previous research indicates that excessive Internet use appears to assist adolescents in achieving emotional satisfaction and well-being [5]. In addition, Schneider et al. analyzed 11 prior studies and found that poorer parent-child relationships correlate with the severity of online game addiction [6]. In addition, a Finnish study of adolescents aged 15 to 19 found that excessive internet and video game use can result in severe psychosocial dysfunction, such as family disputes and lying [7]. It is debatable whether this reciprocal effect will continue between violent online games and parental relationships.

Although family relationships play an important role in adolescents' social relationships, peer relationships cannot be overlooked at this stage. Cocking and Matthews argued, on the one hand, that friends in virtual networks are distinct from those in the real world and lack all characteristics of friendship [8]. In addition, it is believed that social networking in virtual networks promotes antisocial behavior and that online gaming communities are "toxic" [9, 10]. On the other hand, Briggles argued that online communication has the potential to result in intimate relationships [11]. In addition, there is evidence that moderate computer and Internet use is associated with better peer relationships [12]. According to studies, many adolescents, particularly boys, are primarily motivated to play computer and video games by the company of their peers. In other words, online games have a positive effect on peer relationships [13]. Notable is Munn's research, which focuses on interactive activities in the immersive virtual world of massively multiplayer online role-playing games (MMORPGs) and uses World of Warcraft (WOW) as a research tool to demonstrate that MMORPGs can provide the necessary conditions for the development of friendships [14]. This demonstrates that online games, specifically violent games, improve peer relationships.

According to Freud, adolescents are in the genital stage, which is the time when psychosexual maturity is attained. Freud believed that puberty reawakens the sexual drive that was dormant during the latency period. Thus, romantic relationships are essential to the development of social relationships. Although teens who identify as heterosexual and same sex sexually take somewhat different paths, the ups and downs of early romantic relationships are a significant theme of adolescent development [3]. Reiner et al. predicted that adolescents would use the Internet for online games and sex, despite the paucity of research on the effects of action, especially violent games on adolescents' romantic relationships [15]. They demonstrated that boys are more likely than girls to use online games for romantic relationships.

The vast majority of previous research on violent online games in China has focused on addiction issues and violent behaviors [16 -18], but rarely on its effect on social relationships. Faced with the Chinese policy of strict control over minors and the rise of online games among adolescents, there is an urgent need for additional research on violent online games, social relationships, gender, and their association with problematic internet use. Consequently, the purpose of this study is to investigate: (1) the effect of violent online games on the relationships of healthy Chinese adolescents with their parents, peers, and romantic partners; (2) the difference of social relationships between male and female adolescents who play violent online games. The gender of adolescents will be considered as a between-participants variable. Based on prior research, this study makes the following hypothesis: (1) violent online games have negative effects on the parental relationships of healthy Chinese adolescents, but positive effects on peer and romantic relationships; and (2) male Chinese adolescents will be more positively on social relationships than females.

3. Methodology

3.1 Participants and Procedure

Data were gathered between November 1 and November 15, 2022. By utilizing cluster sampling, a total of 608 Chinese adolescents are recruited from school advertising, consent letters were sent directly with a questionnaire to teachers who distribute them to the parents and students, and consent letters inform them about the study and requesting consent. The standard of participants is healthy Chinese teenagers aged 12-17. Among these participants, 10 did not sign their consent, 8 did not meet the age criteria, and 103 didn't finish the questionnaire, therefore, these participants were excluded from the analysis. Consequently, 487 participants made up the final sample (80% valid response rate). All the valid questionnaires are from grades 7 ($n=152$), 8 ($n=152$), 9 ($n=170$), and over grade 10 ($n=13$). Prior to the investigation, all teachers, parents, and students were informed that their information would be kept confidential, and the study would be conducted anonymously. Everyone who participated in the study did so voluntarily and was free to withdraw at any time. The average age of respondents was 13.66 ($S.D = 1.08$). The majority of respondents (51.54%) were male, among the remaining participants, 2.67% were unwilling to reveal their gender. 208 students in the 7th through 10th grades pretested the survey. Each participant responded to an anonymous survey that collected basic information about the student (e.g., age, gender, family members, etc.) but not identifying information, preferred types of games, and their attitude to social relationships and parenting style. When participants did not choose father or mother when choosing family members, they did not need to answer the corresponding blocks on the Lum Emotional Availability of Parents questionnaire.

3.2 Measures

3.2.1 Video game questionnaire

The author employed and appropriately adapted the violent online game questionnaire developed by Gentile et al. from Anderson and Dill to evaluate and differentiate action (violent) online game players from non-violent online game players [19, 20]. On a 7-point Likert scale, participants were asked to indicate the frequency of their three favorite online games they played (0 = rarely, 7 = often). Participants then rated the amount of violence in each game's visuals and content on a 7-point Likert scale (0 being very little or no violence and 7 being extremely violent). The standard for assessing and classifying adolescent groups was the combined average rating of the three online games (action game group and non-violent game group). In the grouping of participants, in this study, the participants whose average of the content and graphics rating in at least two games were more than 3, and the weekday and weekend frequency were both greater than 1 were marked as the violent game group. The formula to calculate the index is the total number of content ratings and graphics ratings is multiplied by the game frequency during weekdays and weekends and divided by 3 [21]. With those who had never played online games receiving a score of 0, and the higher scores represent greater exposure to violent online games. Scores greater than 14 will be placed in the action game group, while scores below 14 will be placed in the non-violent game group. In the present research, the scale's Cronbach's α was 0.94.

3.2.2 Lum Emotional Availability of Parents [22]

This study combined the "LEAP-mother and LEAP-father" questionnaires, which each contained the same 15 items rated on a six-point Likert scale ranging from 1 (never) to 6 to assess the respondents' perceptions of the parent-adolescent relationship. Both questionnaires have been shown to be successful in previous research [22, 23]. Higher scores indicate stronger parent-adolescent relationships. Since the subjects of this study are Chinese adolescents and the original questionnaire was written in English, the current version of the research is a Chinese translation of the original questionnaire that has been double-checked. Cronbach's alpha values of 0.975 for "LEAP-mother and LEAP-father", respectively, indicate high reliability.

3.2.3 Social Skills Rating System (SSRS) [24]

SSRS is a comprehensive, multi-rater assessment of students' social behaviors that may have an impact on relationships between teachers and students, peer acceptance, and academic performance [24]. The three forms of the SSRS are for preschool (ages 3-5), elementary (grades K-6), and secondary (grades 7-12). There are three domains covered by each form: social skills, problem behaviors, and academic competence. Only the social skills section of the Secondary (grades 7-12) student version questionnaire will be used because the focus of this study is on adolescent peer relationships. Therefore, only the social skills portion of the questionnaire for secondary school (grades 7-12) students will be used, and the questions related to peer relationships and romantic relationships will be intercepted to generate separate questionnaires. After sorting out and confirming the relevance of the questions, the Peer Social Skills Questionnaire included 19 questions, and the Romantic Relationship Social Skills Questionnaire included 5 questions, 2 of which were scored in reverse. Based on the students' perceived frequency of a particular behavior, each item on the SSRS is graded on a 3-point scale: "0—Never," "1—Sometimes," and "2—Very Often" (e.g., I smile, wave, or nod at others). The participant's social skill level is indicated by the higher score. The current version of the research is a double-checked Chinese translation of the original questionnaire because the study's participants are Chinese adolescents, and the original questionnaire was written in English. For Peer Social Skills Questionnaire, the Cronbach's α was 0.89, and Romantic Relationship Social Skills Questionnaire was 0.64.

4. Results

4.1 Group Characteristics in Social Relationships

The Group Statistics table shows the sample data violence is 118, and the number of Non-violence is 369. The mean of Adolescents' relationship with their fathers in the Online Game Group of violence is 62.7627, which is smaller than the Online Game Group of Non-violence. However, the standard deviations of the scores of the violent and non-violent samples in relation to adolescents' fathers were 22.32307 and 21.94855 respectively, indicating that the scores of each adolescent in the two groups in relation to the father fluctuated greatly. Similarly, the mean scores of the non-violent group in relation to adolescents' mothers and to their peers were 78.3144 and 48.3740 respectively, both of which were higher than the mean scores of the violent group. However, the non-violent group had a mean score of 8.9756, which was lower than that of the violent group.

Table 1. Group Statistics

	Online Game Group	N	Mean	Std. Deviation	Std. Error Mean
Adolescents' relationship with their fathers	violence	118	62.7627	22.32307	2.05500
	Non-violence	369	69.2331	21.94855	1.14260
Adolescents' relationship with their mothers	violence	118	75.0339	18.43581	1.69715
	Non-violence	369	78.3144	16.98397	.88415
Adolescents' relationship with their peers	violence	118	47.5508	6.68919	.61579
	Non-violence	369	48.3740	6.31604	.32880
Adolescents' relationship with their romantic partners	violence	118	9.2203	2.08427	.19187
	Non-violence	369	8.9756	1.60059	.08332

Based on whether there is a significant difference in the scores between the violence group and the nonviolence group regarding the relationship between the interviewees and various objects, the Independent Samples Test tables below describe two different results. So, before analyzing, determining whether the variances are equal is reasonable. According to the tables, Levee's test's

significant level is 0.739, which is greater than 0.05 and indicates that it falls within the acceptable range. It implies that the two variations in the father-adolescent relationship are equal.

The result shows that the significant level of the two-tailed test is 0.006, which is smaller than 0.05. Under this circumstance, it could argue that the mean scores of the non-violent group in relation to adolescents' fathers are larger than the violent group significantly. However, it cannot be assumed that the non-violent group's scores on the relationship between adolescents and their mothers were significantly higher than those of the violent group ($P=0.074>0.05$). Similarly, when analyzing the relationship between the effects of violent online games on adolescents with peers and lovers, the results do not indicate significant differences in the scores of adolescents with peers and lovers in the nonviolent and violent groups ($P=0.225>0.05$, $P=0.244>0.05$). Therefore, it can conclude that the negative effect of violent online games on adolescents' relationships with their fathers is significant, while the negative effect on adolescents' relationships with their mothers and peers is insignificant, and the positive effect on adolescents' relationships with their lovers is insignificant.

Table 2. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Adolescents' relationship with their fathers	Equal variances assumed	.111	.739	-2.776	485	.006	-6.47035	2.33084	-11.05013	-1.89057
	Equal variances not assumed			-2.752	194.608	.006	-6.47035	2.35129	-11.10763	-1.83307
Adolescents' relationship with their mothers	Equal variances assumed	.559	.455	-1.788	485	.074	-3.28046	1.83440	-6.88481	.32388
	Equal variances not assumed			-1.714	184.798	.088	-3.28046	1.91365	-7.05587	.49494
Adolescents' relationship with their peers	Equal variances assumed	2.213	.138	-1.215	485	.225	-.82314	.67770	-2.15472	.50845
	Equal variances not assumed			-1.179	188.356	.240	-.82314	.69807	-2.20018	.55391
Adolescents' relationship with their romantic partners	Equal variances assumed	12.207	.001	1.338	485	.182	.24473	.18293	-.11470	.60416
	Equal variances not assumed			1.170	163.442	.244	.24473	.20918	-.16832	.65778

4.2 Gender Crosstabulation

The chi-square analysis shows that the proportion of males who plays violent games on the Internet is 41.0%, while the proportion of female who plays violent games on the Internet is 9.3%, indicating that the proportion of males who choose to play violent games is higher than that of females. The chi-square test results reveal a significant difference between males and females when it comes to their decision to play violent games online ($P=0.000-0.01$).

Table 3. Online Game Group * Gender Crosstabulation

Online Game Group		Count	Gender		Total	Pearson Chi-Square	P
			female	male			
Non-violence		234	135	369	66.596	0.000	
	% Within Gender	90.7%	59.0%	75.8%			
Violence		24	94	118			
	% Within Gender	9.3%	41.0%	24.2%			
Total		258	229	487			
	% Within Gender	100.0%	100.0%	100.0%			

The Group Statistics table shows the sample data for males is 229, and the number of females is 258. The mean of Adolescents' relationship with their fathers in the Online Game Group of males is 68.7249, which is larger than the Online Game Group of females. Similarly, the mean scores of the male in relation to adolescents' mothers, to their peers and to their romantic partners were 78.3144, 48.5939 and 9.1790 respectively, both of which were higher than the mean scores of the females.

Table 4. Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Adolescents' relationship with their fathers	male	229	68.7249	22.25605	1.47072
	female	258	66.7248	22.13379	1.37799
Adolescents' relationship with their mothers	male	229	78.6681	15.76065	1.04149
	female	258	76.5000	18.67961	1.16294
Adolescents' relationship with their peers	male	229	48.5939	6.47574	.42793
	female	258	47.8023	6.34265	.39488
Adolescents' relationship with their romantic partners	male	229	9.1790	1.91675	.12666
	female	258	8.9070	1.54034	.09590

According to whether there is a statistically significant difference in the scores between the males and females' groups regarding the relationships between interviewees and different objects, the independent samples test tables below describe two different results. This study could see that there is no significant difference between females and males' scores on relationships with father, mother, peers, and romantic partners ($p = 0.322$, $p = 0.166$, $p = 0.174$, $p = 0.088$). Therefore, this study argues that gender cannot influence adolescents' relationships with their fathers, mothers, peers, and romantic partners.

Table 5. Independent Sample Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Adolescents' relationship with their fathers	Equal variances assumed	.000	.995	.993	485	.321	2.00008	2.01475	-1.95863	5.95880
	Equal variances not assumed			.992	477.532	.322	2.00008	2.01541	-1.96008	5.96025
Adolescents' relationship with their mothers	Equal variances assumed	5.473	.020	1.375	485	.170	2.16812	1.57689	-.93026	5.26651
	Equal variances not assumed			1.389	483.783	.166	2.16812	1.56113	-.89932	5.23556
Adolescents' relationship with their peers	Equal variances assumed	.500	.480	1.361	485	.174	.79156	.58156	-.35113	1.93425
	Equal variances not assumed			1.359	475.643	.175	.79156	.58228	-.35260	1.93572
Adolescents' relationship with their romantic partners	Equal variances assumed	8.798	.003	1.735	485	.083	.27206	.15684	-.03611	.58024
	Equal variances not assumed			1.712	436.934	.088	.27206	.15887	-.04018	.58431

5. Discussion

This study looked into how violent video games affected Chinese adolescent players' social relationships. As anticipated, violent online games negatively impacted father-child relationships among healthy Chinese adolescents. However, contrary to expectations, when comparing social relationships between the violent game group and the nonviolent game group, adolescents in the violent game group did not demonstrate poorer social performance with their mothers. Differences in parenting styles provide an explanation for this finding. Mothers are generally seen as being more accepting, receptive, and supportive than fathers, as well as being more behaviorally controlling, demanding, and giving autonomy [25]. In addition, adolescents perceive their mothers to be less likely to reject them than their fathers [26], resulting in a generally positive social relationship between adolescents and their mothers, and it is hypothesized that adolescents' choices and behaviors in violent game are less likely to be rejected by their mothers. Therefore, violent video games did not negatively affect their relationships with their mothers. Positive parenting styles can therefore be a breakthrough in mitigating the negative effects of violent online games on adolescents' social relationships with their parents.

Surprisingly, contrary to the hypothesis, positive peer and romantic relationships were also not significant in the violent game group. Even though there are many opportunities to form groups and socialize in violent games, peer and romantic socialization in virtual communities are not the same as social relationships in the real world, as demonstrated by this result. The research of Morio and Buchholz clarifies that online social interaction is typically anonymous, resulting in the separation of people's natural and online identities [27], which can explain the conclusions of this study. Due to the high anonymity in personal online social networking in Eastern societies, although Morio & Buchholz only compared online social groups in Japan and the United States in their research [27], it is reasonable to assume that the anonymous socialization of Chinese adolescents in violent games has contributed to their lack of positive peer and romantic relationships in real life. Considering the impact of unknown social interaction on adolescents' social relationships, when safety and privacy are ensured, online games, particularly in the teamwork of violent games, should adopt a recognizable name or reduce the use of anonymity to help adolescents bridge the gap between their online and real identities and enhance their real-world social relationships through online social skills.

This study's findings, which are in line with those of Veltri et al, show that men are more likely than women to select violent video games [28]. In addition, the study found that in generally, there were no significant differences between men and women in their social relationships. However, when the social relationships of males and females in the violent game group were separately analyzed, male adolescents scored higher than females for their relationships with fathers, mothers, peers, and romantic partners, confirming the alternative hypothesis that the social relationships of male Chinese adolescents who engage in violent online gaming are more likely than females to be affected positively. Therefore, there is reason to infer from this study that violent video games are the primary contributor to the higher score of male social relationships. In terms of males' relationships of parents in the violent game group, since fathers' traits are only related to the social relationships with daughters [30], and previous findings in this study have shown that violent games have a negative impact on adolescents' relationships of fathers rather than mothers, this can also explain why males in the violent game group had higher parental social relationship scores than females. Besides, although prior studies have shown that women are more likely to use social networks to engage in social interactions in order to maintain interpersonal relationships, the majority of this social behavior consists of uploading photos and updating their status more frequently than male users, whereas men are more likely to engage in task-oriented activities on social networks and use social network dating more frequently than female users [28, 30]. Therefore, males are more adept at utilizing team tasks in violent video games to develop their social skills, and they have the courage to form genuine relationships in virtual social environments.

This research concludes that violent online games are significant factors in the father-child relationships of Chinese adolescents, but relationships of mothers are not affected. Although there

are differences in peer and romantic social relationships and predictions, reasonable guess the anonymous socialization of Chinese adolescents in violent games can explain the deviation between the findings and predictions. In addition, despite the fact that gender differences indicate that male adolescent gamers of violent games score higher and more positively in social relationships than females, this difference is primarily attributable to male social behavior in violent games. Therefore, female players can improve their peer and romantic relationships by adopting the social behavior of male adolescent violent game players.

6. Conclusion

Due to the supervision and limitation of Chinese policies on teenagers' online games in recent years, a paucity of studies on the influence of violent online games on the social interactions of Chinese teens is unavoidable. This study examined the impact of online violent games on the parental, peer, and romantic relationships of adolescents and analyzed the gender differences. Contrary to the detrimental effects of violent gaming on adolescents' relationships with their fathers, there were neither good nor negative impacts of violent gaming on adolescents' relationships with their mothers, peers, or romantic partners.

A limitation of this study is that these results do not account for parental characteristics, anonymous socialization patterns, or teenagers' online socialization preferences. First, the research has been conducted extensively exclusively among Chinese adolescents, without addressing good or negative parenting patterns, thereby disregarding the impact of parenting patterns on adolescents' social interactions with their parents. Moreover, despite the fact that the violent games stated in this study had neither positive nor bad effects on peer and romantic relationships, this conclusion may be affected by the online social preferences and personalities of adolescents. Future research should examine the influence of parental parenting styles and adolescents' online social preferences on the association between online violent games and teenagers' social interactions.

The author wishes to conclude by discussing the significance of this study's findings on violent online gaming and social connections among Chinese adolescents. Regarding the relationship between adolescents and their parents, this study suggests that Chinese adolescent families who enjoy playing violent video games should pay special attention to the relationship between adolescents and their fathers and utilize positive mother-child relationships in regulating father-son relationships and promoting education. Additionally, the study's initial findings show that online communities have little effect on the peer and romantic relationships of adolescents. Therefore, the social relationship in the virtual community may not be compatible with the social interaction in the real world. On the other hand, male players of online violent games have more positive social interactions than female players, suggesting that in-depth research on guys' social conduct in violent games could assist adolescents in achieving more success in social relationships.

References

- [1] H. L. Bee, *The developing child*, London: HarperCollins, 1992.
- [2] E. H. Erikson, *Identity and the life cycle*, W W Norton & Co, 1980.
- [3] D. Boyd, P. Johnson, & H. Bee, *Lifespan Development (7th ed.)*, Pearson Canada Inc, 2018.
- [4] S. Nishikawa, E. Sundbom, B. Hägglöf, Influence of Perceived Parental Rearing on Adolescent Self-Concept and Internalizing and Externalizing Problems in Japan, *Journal of Child and Family Studies*, 19(1), 57–66, 2010.
- [5] M. M. Spada, B. Langston, A. V. Nikčević, G. B. Moneta, The role of metacognitions in problematic Internet use, *Computers in Human Behavior*, 24(5), 2325–2335, 2008.
- [6] L. A. Schneider, D. King, P. H. Delfabbro, Family factors in adolescent problematic Internet gaming: A systematic review, *Journal of Behavioral Addictions*, 6(3), 321–333, 2017.

- [7] H.-M. Sinkkonen, H. Puhakka, M. Meriläinen, Internet use and addiction among Finnish Adolescents (15–19 years), *Journal of Adolescence* (London, England.), 37(2), 123–131, 2014.
- [8] D. Cocking, S. Matthews, Unreal Friends, *Ethics and Information Technology* 2, 3(4), 223–231, 2001.
- [9] E. Zinovyeva, W. K. Härdle, S. Lessmann, Antisocial online behavior detection using deep learning, *Decision Support Systems*, 138, 113362, 2020.
- [10] W. Y. Tang, F. Reer, T. Quandt, Investigating sexual harassment in online video games: How personality and context factors are related to toxic sexual behaviors against fellow players, *Aggressive Behavior*, 46(1), 127–135, 2020.
- [11] A. Briggles, Real friends: How the Internet can foster friendship, *Ethics and Information Technology*, 10(1), 71–79, 2008.
- [12] T. Willoughby, A short-term longitudinal study of Internet and computer game use by adolescent boys and girls: Prevalence, frequency of use, and psychosocial predictors, *Developmental Psychology*, 44(1), 195–204, 2008.
- [13] C. Chou, M. J. Tsai, Gender differences in Taiwan high school students' computer game playing, *Computers in Human Behavior*, 23(1), 812–824, 2007.
- [14] N. J. Munn, The reality of friendship within immersive virtual worlds, *Ethics and Information Technology*, 14(1), 1–10, 2012.
- [15] I. Reiner, A. N. Tibubos, J. Hardt, K. Müller, K. Wölfling, M. E. Beutel, Peer attachment, specific patterns of internet use and problematic internet use in male and female adolescents, *European Child & Adolescent Psychiatry*, 26(10), 1257–1268, 2017.
- [16] Y. Sun, Y. Li, Y. Bao, S. Meng, Y. Sun, G. Schumann, T. Kosten, J. Strang, L. Lu, J. Shi, Brief Report: Increased Addictive Internet and Substance Use Behavior During the COVID-19 Pandemic in China, *The American Journal on Addictions*, 29(4), 268–270, 2020.
- [17] H. Zhao, X. Li, J. Zhou, Q. Nie, J. Zhou, The relationship between bullying victimization and online game addiction among Chinese early adolescents: The potential role of meaning in life and gender differences, *Children and Youth Services Review*, 116, 105261, 2020.
- [18] J. Li, Q. Du, X. Gao, Adolescent aggression and violent video games: The role of moral disengagement and parental rearing patterns, *Children and Youth Services Review*, 118, 105370, 2020.
- [19] D. A. Gentile, P. J. Lynch, J. R. Linder, D. A. Walsh, The effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance, *Journal of Adolescence* (London, England.), 27(1), 5–22, 2004.
- [20] C. A. Anderson, K. E. Dill, Video Games and Aggressive Thoughts, Feelings, and Behavior in the Laboratory and in Life, *Journal of Personality and Social Psychology*, 78(4), 772–790, 2000.
- [21] M. Yao, Y. Zhou, J. Li, X. Gao, Violent video games exposure and aggression: The role of moral disengagement, anger, hostility, and disinhibition, *Aggressive Behavior*, 45(6), 662–670, 2019.
- [22] J.J. Lum, V. Phares, Assessing the Emotional Availability of Parents, *Journal of Psychopathology and Behavioral Assessment*, 27, 211–226, 2005.
- [23] A. Babore, L. Picconi, C. Candelori, C. Trumello, The emotional relationship with parents: A validation study of the LEAP among Italian adolescents, *European Journal of Developmental Psychology*, 11(6), 728–739, 2014.
- [24] F. M. Gresham, S. N. Elliott, *Social Skills Rating System*, American Guidance Service, 1990.
- [25] Y. Yaffe, Systematic review of the differences between mothers and fathers in parenting styles and practices, *Current Psychology* (New Brunswick, N.J.), 2020.
- [26] M. C. Miranda, G. Affuso, C. Esposito, D. Bacchini, Parental acceptance–rejection and adolescent maladjustment: Mothers' and fathers' combined roles, *Journal of Child and Family Studies*, 25(4), 1352–1362, 2016.
- [27] H. Morio, C. Buchholz, How anonymous are you online? Examining online social behaviors from a cross-cultural perspective, *AI & Society*, 23(2), 297–307, 2009.
- [28] Q. Yao, H. Ma, H. Yan, Q. Chen, Analysis of Social Network Users' Online Behavior from the Perspective of Psychology, *Advances in Psychological Science*, 22(10), 1647–1659, 2014.

- [29] M. E. Starrels, Gender Differences in Parent-Child Relations, *Journal of Family Issues*, 15(1), 148–165, 1994.
- [30] N. L. Muscanell, R. E. Guadagno, Make new friends or keep the old: Gender and personality differences in social networking use, *Computers in Human Behavior*, 28(1), 107–112, 2012.