

Original Research **Open Access****Aggressiveness and life satisfaction as predictors for video game addiction among Palestinian adolescents****¹FAYEZ AZEZ MAHAMID, ²DANA BDIER**¹Psychology and Counseling Department
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Email: mahamid@najah.edu**Abstract**

Previous studies demonstrate that life satisfaction and aggression could be predictive factors for video game addiction. Despite these findings, the relationship between these factors and video game addiction has not been examined among Palestinian adolescents. This study is the first to explore the relationship between video game addiction and life satisfaction and aggression among adolescents (12-18 years) in Palestine. The sample was comprised of 560 school students. Findings revealed that video game addiction scores were negatively associated with life satisfaction and positively associated with aggression. Further studies are needed in order to encourage protective and therapeutic strategies for video game addiction.

Keywords: Life satisfaction, Aggressiveness, Video game addiction, Palestinian adolescents

**العدوانية والرضا عن الحياة ودرجة تنبؤهما بإدمان ألعاب الفيديو لدى المراهقين الفلسطينيين
ملخص**

أشارت نتائج العديد من الدراسات السابقة أن الرضا عن الحياة والعدوانية من العوامل التي قد تتنبأ بإدمان الألعاب الفيديو الإلكترونية لدى المراهقين، بالرغم من ذلك، لم تتناول الدراسات التي أجريت في المجتمع الفلسطيني تلك العلاقة بين المتغيرات المذكورة. تكونت عينة الدراسة الحالية من (560) طالب وطالبة من طلبة المدارس الحكومية في شمال فلسطين، ضمن الفئة العمرية (12-18) سنة، تم إختيارهم باستخدام الطريقة العشوائية البسيطة. أظهرت نتائج الدراسة وجود علاقة ارتباطية سالبة دالة إحصائياً بين الرضا عن الحياة وإدمان ألعاب الفيديو الإلكترونية، كما أظهرت النتائج وجود علاقة ارتباطية موجبة بين العدوانية لدى المراهقين وإدمان ألعاب الفيديو الإلكترونية. بناءً على تلك النتائج توصي الدراسة بضرورة إجراء مزيد من الدراسات التي تستهدف تطوير إستراتيجيات وقائية وعلاجية للحد من إدمان الألعاب الإلكترونية لدى المراهقين.

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Introduction

With the emergence of the video gaming industry in the early 1970s, video gaming has become one of the most popular forms of entertainment among children and adolescents in recent years (Nogueira et al., 2019). Despite the educational and social benefits people claim to gain from video gaming, a greater usage of video games, especially when the game never ends, may lead to the appearance of pathological symptoms that are similar to those of addictive disorders (Rehbein & Baier, 2013). When users seem to be unable to control their excessive gaming habits, despite associated pathological symptoms, or resulting social or emotional problems occur, this is referred to as “video game addiction” (Brunborg et al., 2015).

Researchers debate whether video game addiction is related to the game itself, or pre-existing mental health and psychological conditions of the players themselves (Elliott et al., 2012). As it is still an ambiguous matter, it is important to explore the psychological characteristics and the mental health status of video game addicts, in order to find ways to protect against the addiction.

Video Game Addiction

As the video game industry develops, the number of its users is increasing. In 2012, the global video game industry posted revenues of \$78.5 billion (Wallace, 2014). Among European adolescents, video gaming is considered to be one of the most entertaining activities, where 48% identified themselves as video game players (Ipsos Media CT, 2012). This is also seen in high proportions amongst American adolescents, with 97%, identifying themselves as video game players (Wittek et al., 2016). The developing rate of this industry grows day by day, and as a result, it is estimated that users will be more vulnerable to developing a video game addiction. In fact, a recent meta-analysis showed that the estimated prevalence of pathological video game addiction was 3.1% in Internet addiction studies (Ferguson et al., 2011).

The prevalence of video game addiction among European adolescents seems to be variant. For example, Rehbein et al. (2010) recorded a 1.7% addiction rate among German adolescents, whereas a study by Festl et al. (2013) reported a lower prevalence of 0.2% among school adolescents. In the Netherlands 1.3% of adolescents and adults were found to have a video game addiction (Haagsma et al., 2012). A higher prevalence of pathological video gaming was estimated to be at 7.7% for Spanish and 14.6% for British adolescents (Lopez-Fernandez et al., 2014). In China, 1 in 6 (15.6%) adolescents in Hong Kong had a video game addiction (Wang et al., 2014) and around 8.7% of youth in Singapore (Choo et al., 2010). In Arabian countries, 16% of school students in Saudi Arabia and 14 % of school students in

Sfax/Tunisia seemed to have a video game addiction (Chérif et al., 2018; Saquib et al., 2017). Moreover, 9.2% of Lebanese adolescents met the criteria for an Internet gaming disorder (Hawi et al., 2018).

Like any other behavioral addiction, video game addiction consists of a compulsive behavioral involvement, a lack of interest in other activities, interactions mainly with other addicts, and physical and mental symptoms of withdrawal when attempting to stop the behavior (Soper & Miller, 1983). On the other hand, the DSM-5 characterizes video game addiction based on the following criteria:

- (1) Salience (by thinking about games and playing during and after the play),
- (2) Euphoria/Mood Modification (by relieving negative emotions and feelings such as hopelessness through gaming),
- (3) Tolerance (continue and spend more time playing in order to satisfy an urge),
- (4) Withdrawal (feeling anxious or sad for example when it is impossible to play),
- (5) Conflict (continue playing despite all problems and loss of job and relationships due to gaming) and
- (6) Relapse/Reinstatement (being unable to quit or stop playing). (p. 795)

There are several factors that may contribute to the development of a video game addiction: (1) its social aspect (i.e. it is easy for the player to interact and communicate with others and build relationships); (2) dominancy and control (i.e. the player has autonomy over the game and all its properties, and is the one who decides the nature of interactions and communications); (3) identity (i.e. the player decides which character they prefer to play with, become a part of that community and interact with others through it); (4) winning and loss (i.e. the rewards the player may gain by winning and what may be lost as a result of losing the game); and (5) presentation (i.e. features related to the game itself such as sounds, colors, decoration, lights, etc.) (King et al., 2013).

There are different theoretical models that try to explain video game addiction. One model argues that individuals play video games in order to escape from: (1) responsibilities that are related to different life aspects; and (2) negative self-reflection (Chung et al., 2011). The Choi and Kim (2004) model suggests that individuals are likely to continue to play video games as they become satisfied with the pleasant feelings experienced while playing, or because of the enjoyable communication and interaction with other players while playing.

Video game addiction may negatively impact the mental and physical health of adolescents, and contribute to depression, lower academic achievement, sleep disturbances, decreased levels of psychosocial well-being, loneliness, poorer social skills, aggression, and behavioural problems (Brunborg et al., 2014; King et al.,

2013; Qureshi et al., 2013). In addition, negative physical effects can include: obesity, wrist pain, muscular-skeletal disorder, epileptic seizures, and neck pain (Ayenigbara, 2018; Griffiths et al., 2012).

Individuals with video game addictions appear to have poor or decreased mental health and cognitive functioning; including poor impulse control, depression and anxiety, feelings of social isolation, feelings of lack of psychosocial support, and general life dissatisfaction (Gaetan et al., 2012; Hyun et al., 2015; Stockdale & Coyne, 2018; Sussman et al., 2018). Despite these findings, factors that may lead to video game addictions among adolescents in Palestine are still unclear.

Adolescents in conflict zones, such as Palestine, are exposed to several stressors (i.e. economic, social, and political). Economic stressors include poverty and unemployment, while political stressors relate to militarization and occupation. Social stressors are highly connected to political stressors, as there are heightened restrictions on movement not only between Palestinian cities, but between Palestine and other countries. To cope with such stressors, Palestinian adolescents may use the Internet to escape negative feelings and emotions as well as increase interactive communication with others (Berte et al., 2019; Mahamid & Berte, 2018; Mahamid & Berte, 2019).

Life Satisfaction and Video Game Addiction

Life satisfaction is a critical risk factor for developing video game addiction among Palestinian adolescents. Life satisfaction, as presented in this article, is defined as a cognitive assessment that enables the individual to determine to what extent he or she can positively evaluate his or her quality of life due to different personal and social factors (Suldo et al., 2006). It is one of the most well-established indicators of happiness, well-being, and positive functioning among young people (Proctor & Linley, 2014).

Adolescents with high levels of life satisfaction have fewer instances of risk behaviors, such as substance abuse and delinquency (Sun & Shek, 2010). Moreover, it was found that adolescents with low levels of life satisfaction are more likely to be drug users (Visser & Routledge, 2007). Problematic Internet use and smartphone addiction are also related to low levels of life satisfaction (Cao et al., 2011; Samaha & Hawi, 2016). Given that previous research has shown that low levels of life satisfaction are correlated with multiple risk behaviors, it is worthwhile to observe it as a possible risk factor for the development of a video game addiction.

Results of recent studies are consistent in regards to the association between video game addiction and life satisfaction. Barger and Hormes (2017) found that video game addiction is correlated with low levels of life

satisfaction, while Gulp (2017) found that lower life satisfaction leads to greater amounts of Internet gaming disorder symptoms. Moreover, results from Brookes et al. (2016) showed that lower life satisfaction was linked to video gaming addictions among girls. Furthermore, Festle et al (2013) found that gaming addiction is associated with lower life satisfaction. Gaetan et al (2012) explored the relationship between psychosocial variables (self-perception and life satisfaction) and adolescents' use of video games. They found that adolescents addicted to video games perceive their lives as less satisfying than others

Aggression and Video Game Addiction

Aggression is a possible factor which may explain the development to video game addiction among Palestinian adolescents. Bandura (1973) described aggression as any behavior that is directed to cause personal damage or destruction of property. However, current research adopts Buss and Perry's (1992) definition of aggression, which refers to any behavior linked to hostile thoughts, misconceptions, and negative feelings (Agbaria & Natur, 2018).

Aggressive adolescents seem to have delinquent behavioral problems (Barnow et al., 2005). Moreover, aggressive behavior leads to increases in alcohol use (White et al., 1993). High levels of life satisfaction predict lower levels of Internet addiction among adolescents (Agbaria & Bdier, 2019). Adolescents with lower life satisfaction are at greater risk of aggressive behavior making them more vulnerable to video game addiction (Finkenauer et al., 2005).

Recent studies have shown a significant positive relationship between aggression and video game addiction. For example, according to Hajkhodadadi et al. (2014), a positive relationship between aggressive students and video game addiction was found. Furthermore, the study put forth by Yuh (2018) examined whether or not aggression and social factors (i.e., family relationships and commitment to school) predicted Internet gaming addiction in Korean adolescents. Researchers found that aggression, family conflict, and a lower commitment to education significantly predicted Internet gaming addiction. Another study by Madran and Çakılıcı (2014) investigated the relationship between aggression and online video game addiction of massive multiplayer online video gamers. The results revealed that massive multiplayer video game addiction related positively to high level of aggressiveness. In addition, Festl et al. (2013) found that high gaming addiction scores were associated with aggression.

Current Study

This research study is the first to examine the associations between life satisfaction and aggression with video game addiction among Palestinian adolescents. The degree of life satisfaction among Palestinian adolescents may be at risk, as they experience ongoing occupation and violence, which negatively affects well-being (Veronese & Castiglioni, 2015). Moreover, ongoing exposure to violent conditions caused by occupation seems to increase aggressive behaviors among Palestinian adolescents (Al-Krenawi & Graham, 2012). As previous studies have shown, there is a negative relationship between life satisfaction and video game addiction (Brooks et al., 2016; Gulp, 2017), and a positive relationship between aggression and video game addiction (Hajkhodadadi et al., 2014; Madran & Çakılcı, 2014). Therefore, Palestinian adolescents are expected to be more vulnerable to video game addiction.

Specifically, this study was designed to answer the following questions:

- 1- What are the levels of video game addiction, aggressiveness, and life satisfaction among Palestinian adolescents?
- 2- Are there significant correlations between video game addiction, aggressiveness, and life satisfaction among Palestinian adolescents?
- 3- To what extent does aggressiveness and life satisfaction predict video game addiction among Palestinian adolescents?

Based on previous research findings, the current study hypothesizes that 1) life satisfaction is negatively correlated with video game addiction among Palestinian adolescents, and 2) aggression is positively correlated with video game addiction among Palestinian adolescents.

Methodology

Participants

Participants in the study consisted of 560 adolescents (388 females and 172 males), recruited through a convenience sample within ten public schools in Northern Palestine; 56 students from each school were selected randomly. (300) 53.6% of participants were aged between 11 and 13 years, (204) 36.6% between 14 and 16 years, and (56) 9.8% between 17 and 18 years. (168) 30% of participants were from cities, (322) 57.5% from villages, and (70) 12.5% from refugee camps. The research was conducted after receiving required authorization from the

Institutional Review Board (IRB) of An-Najah National University.

Measures

A translation/back translation procedure was used. Five researchers; psychologists, counselors, and Arabic language educators conducted the translation. The scales were then back-translated into English by an independent translator. The translated version was then pilot-tested by 50 Palestinian students selected from 3 schools in the city of Nablus, and further refined for clarity according to their comments. The content of all instruments used in the study was validated by Arab scholars and used previously in other published studies. None of the questions on any of the measures were altered for content.

Demographic Variables Questionnaire

This instrument's variables included gender, age, and locality.

Game Addiction Scale (GAS)

To measure the participant's level of video game addiction, a 21-item game addiction scale was used (Lemmens et al., 2009), based on Brown's clinical criteria of pathological gambling (Brown, 1993), as previously adapted by Griffiths (2005). This scale included three items for each of the seven underlying criteria of pathological gaming: (1) Salience, (2) Tolerance, (3) Mood modification, (4) Relapse, (5) Withdrawal, (6) Conflict, and (7) Problems. Every item was preceded by the statement: "During the last six months, how often ...". Participants rated all items on a five-point Likert scale: 1 (never), 2 (rarely), 3 (sometimes), 4 (often), and 5 (very often). A participant who responded "sometimes" or higher on at least four items was considered to be addicted to gaming (Lemmens et al., 2009). The GAS had been tested and achieved high reliability (Cronbach alpha: 0.82–0.87) in various settings (Khazaal et al., 2016; Lemmens et al., 2009; Rajab, 2020).

Satisfaction with Life Scale (SWLS)

Life satisfaction was measured with the Satisfaction with Life Scale (SWLS) (Diener et al., 1985), which consists of 5 items designed to measure global cognitive judgments of satisfaction with one's life (e.g., "the conditions of my life are excellent"). All items are rated on a seven-point Likert scale: 1 (Extremely satisfied), 2 (Satisfied), 3 (Slightly satisfied), 4 (Neutral), 5 (Slightly dissatisfied), 6 (Dissatisfied), and 7 (Extremely dissatisfied). The minimum score is 5, while the maximum score is 35. El-Akkad and Jouda (2015) validated the scale in a Palestinian context by using construct and content validity; the scale ended with 5 items to test life satisfaction, and Cronbach's alpha coefficients also

indicated high internal consistency for the total scale (0.81).

Aggression Questionnaire (AGQ)

Participants completed the 28 item aggression general questionnaire (AGQ, Buss & Perry, 1992) in order to assess to what extent they engaged in aggressive behaviors toward others. Items of the scale examined four elements of violence: physical violence (8 items), verbal violence (5 items), anger (7 items), and hostility (8 items). Example items were: "I tell my friends openly when I disagree with them" and "I have trouble controlling my temper." Responses were based on a five-point Likert scale ranging from 1 (very much disagree) to 5 (very much agree). In a previous study of Palestinian adolescents, internal consistency was found to be good ($\alpha = 0.84$) (Agbaria & Daher, 2015).

Research Procedures

The research was conducted in the academic year of 2019-2020 and lasted for five months. After obtaining the needed clearances from the Palestinian Ministry of Education and the Institutional Review Board IRB of An-Najah National University, the sample was obtained by non-random convenience sampling across ten schools in Palestine. Out of 620 questionnaires, 560 questionnaires were completed and analyzed. The aims and nature of participation were explained to the participants by one of the authors.

Statistical analysis

Means, standard deviations, and percentages were used to test the degree of video game addiction, life satisfaction and aggressiveness among school students. Pearson's Correlation Coefficient was also conducted to test the relationship between video game addiction, life satisfaction, and aggressiveness, and a regression analysis was performed to test the causal relationship between aggressiveness, life satisfaction, and video game addiction.

Results

Table 1 shows the means and standard deviations for each of the study variables, Table 2 presents the correlations between the study variables, and Table 3 presents regression analysis for study variables. As Table 1 indicates, the students scored within a mild level of video gaming addiction overall, with medium scores on life satisfaction and aggressiveness.

The data confirms Hypothesis 1. Table 2 showed a statistically significant positive correlation between video game addiction and aggressiveness ($r = .38, p < .01$).

Hypothesis 2 was also confirmed. Table 2 shows a statistically significant negative correlation between life satisfaction and video game addiction ($r = -.15, p < .05$).

The regression analysis for predicting game addiction (Table 3) found that aggressiveness contributes in a way that was statistically significant towards explaining variance in game addiction ($B = .43, SE = .04, \beta = .36$).

Table 1

Means and standard deviations for research variables (N=560)

Variable	Mean	SD	Min	Max
Game addiction	55.17	18.66	21	105
Life satisfaction	23.36	6.92	5	35
Aggressiveness	80.47	22.03	34	104

Table 2

Correlations among study variables (N=560)

Measures	(1)	(2)	(3)
(1) Game addiction	-	-.15*	**38.
(2) Life satisfaction		-	-.29**
(3) Aggressiveness			-

* $p < 0.05$; ** $p < 0.01$

Table 3

Regression analysis for study variables (N=560)

Variable	B	SE	<i>B</i>	t	p	95% CL
Life Satisfaction	-.86	.11	-.27	-7.24	0.000**	[-1.09 - -.62]
Aggressiveness	.43	.04	.36	9.77	0.000**	[.34 - .51]
Gender	-2.89	2.48	-.04	-1.16	.24	[-7.76 - 1.98]
Age	.88	.45	.07	1.93	.06	[-.01 - 1.78]

*** $p < 0.001$

Discussion

This study aimed to examine the associations between life satisfaction and aggression with video game addiction among Palestinian adolescents.

Life Satisfaction and Video Game Addiction

Life satisfaction was negatively associated with video game addiction, which supports our first hypothesis. This finding echoes the results of previous studies, confirming the importance of high levels of life satisfaction in avoiding problematic and risky behaviors (Cao et al., 2011; Samaha & Hawi, 2016; Sun & Shek, 2010; Visser & Routledge, 2007) and being less likely to become addicted to video games (Bargeron & Hormes,

2017; Brooks et al., 2016; Festl et al., 2013; Gaetan et al., 2012; Gurp, 2017). This could be because adolescents with a high level of life satisfaction are characterized by having a positive relationship with their parents and peers, greater social acceptance, high levels of self-esteem, and generally tend to be happy, positive people with a healthy lifestyle, therefore, Life satisfaction may work as a protective factor for video game addiction among adolescents (Proctor et al., 2010). Moreover, students with high levels of life satisfaction were found to have less high risk behaviors (e.g., sexual risk-taking behaviors and substance abuse, such as cigarette smoking, chewing tobacco, marijuana, or cocaine, regular alcohol use, and binge drinking) (Sun & Shek, 2010).

Aggression and Video Game Addiction

A positive correlation between aggression and video game addiction was observed, supporting the second hypothesis of this study and was consistent with earlier studies (Festl et al., 2013; Hajkhodadadi et al., 2014; Madran & Çakılcı, 2014; Yuh, 2018). This could be related to other factors, such as self-control, since adolescents with low self-control have a greater risk of aggressive behavior (Finkenauer et al., 2005). For example, Agbaria (2020) found that self-control mediated the positive association between Internet addiction and aggressive behavior. Teng et al. (2014) also observed a positive correlation between violent online game exposure, Internet addiction, and low self-control. Aggression was not only directly predicted by violent online game exposure and Internet addiction, but also mediated by low self-control. Furthermore, Kim et al. (2008) explored the relationship between online game addiction and aggression, self-control, and narcissistic personality traits, which are known as the psychological characteristics linked to “at-risk” populations for online game addiction; they found that aggression and narcissistic personality traits are positively correlated with online game addiction, whereas self-control is negatively correlated with online game addiction.

In addition, aggressive adolescents were found to have low levels of social competence, engaging in video gaming as a way to escape from the real world and interact with others (Milani et al., 2018; Undheim & Sund, 2010). Moreover, smartphone addiction was found to be related to low levels of emotion regulation among adolescents; adolescents who were unable to regulate their emotions tended to show aggressive behaviors (Undheim & Sund, 2010; Van Deursen et al., 2015).

This study has several limitations, providing opportunities for future studies. First, the study was entirely based on quantitative data collected via self-reported instruments completed by participants. Second, the scales used, and their psychometric characteristics had not previously been tested with this specific population.

Third, the representation of the sample is limited by gender, age, and locality, so findings may differ when other demographic variables are considered.

Conclusion

The current study supports previous findings demonstrating that general life satisfaction was significantly negatively related to excessive and problematic video gaming, and that aggression was significantly positively related to excessive and problematic video gaming. Additional research is recommended to further understand the relationship between current study variables and other psychological factors in order to prevent video game addiction in adolescents.

Compliance with Ethical Standards

Conflict of Interest

The authors declare that they have no conflict of interest. No funding was received for this study.

Ethical Approval

All procedures performed in this study involving human participants were in accordance with the ethical standards of University’s Research Ethics Board, the American Psychological Association (APA, 2010) and with the 2013 Helsinki Declaration.

Informed Consent

Informed consent was obtained from all participants.

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