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ABSTRACT

While many researchers have focused on how players' levels of aggression are affected by the video game experiences, very few have studied the specific types of aggressive responses exhibited by players. s. This study aims to identify the levels of aggression and aggressive reaction categories, and how individuals react when they become frustrated by games. To achieve this goal, qualitative methodology was used for data collection. An online survey consisting of seven multiple-choice close-ended questions and one short open-ended question was administered. While devices, weekly playing hours, game categories, levels of competition, and violence were addressed in closed-ended questions, the types of aggressive reactions were asked with one open-ended short question. Participants' answers were used to conduct narrative analysis to categorize aggressive responses. Of the 136 participants in the study, 49% reported exhibiting aggressive responses while playing video games. The most frequent responses were categorized as verbal aggression, followed by physical aggression, anger, and, lastly, hostility.

ÖZ

Birçok araştırmacı, oyuncuların saldırganlık düzeylerinin video oyunu deneyiminden nasıl etkilendiğine odaklanmış olsa da, çok az sayıda araştırmacı, oyuncular tarafından ne tür saldırgan tepkiler verildiğini araştırmıştır. Bu çalışma, saldırganlık düzeyini, saldırgan tepki kategorilerini ve insanların oyunlar nedeniyle hayal kırıklığına uğradıklarında ne tepki verdiklerini belirlemeyi amaçlamaktadır. Bu amaca ulaşmak için bilgi toplamak amacıyla nitel metodoloji kullanılmıştır. Saha araştırmasında yedi birden çok seçenekli kapalı uçlu ve bir açık uçlu kısa cevaplı sorudan oluşan çevrimiçi anket uygulanmıştır. Cihazlar, haftalık oyun saatleri, oyun kategorileri, rekabet ve şiddet düzeyleri kapalı uçlu sorularla sorulurken, saldırgan tepkilerin türü bir açık uçlu kısa soruyla sorulmuştur. Saldırgan tepkileri kategorize etmek için katılımcıların cevapları anlatı analizi yapmak için kullanılmıştır. Araştırmaya katılan 136 kişiden %49'u video oyunu oynarken saldırgan tepkiler verdiğini beyan etmiştir. Bu tepkilerin en yoğun olarak sözel, ardından fiziksel, üçüncü sırada öfke ve son olarak düşmanlık kategorilerinde olduğu belirlenmiştir.

INTRODUCTION

Video games can be run on a computing device, such as a laptop, gaming console, or smartphone. According to A Dictionary of Media and Communication video game is a computer-based game involving a single player or any number of players (Chandler & Munday, 2011). Since the early 1970s, video games have been around and have grown in popularity across a variety of portable (smartphones, tablets) and stationary (computer or console) platforms. Social networks and multiplayer gaming are possible thanks to technological advancements, notably on mobile devices. Even though gaming does not need physical endurance and is not limited by factors like age, gender, or fitness, adolescents make up most gamers (Tan, 2023). Despite the wide variety of game kinds, there is a 'terminological ambiguity' among academics and educators due to the absence of precise, agreed-upon definitions and nomenclature (Klabbers, 2009). While researchers and game creators can sometimes use different taxonomies in defining games, most generally speaking, games can be categorized as action, adventure, fighting, role-playing, simulations, sports, and strategy games (Gros, 2007). In this study, games are categorized as massive multiplayer online role-play games (MMORPG), first-person shooter (FPS), role-playing games (RPG)/ story, sports, racing, puzzles, and others which mostly fit with Gros's classification.

Game related problems keep getting more common global problem as the number of people playing video games worldwide getting higher (Turner, 2023). It is estimated that 3% of the world's 3.4 billion gamers suffer from gaming disorder (Intenta Digital, 2021). The World Health Organization (WHO) categorized gaming disorders in their International Classification of Diseases in 2018 (WHO, 2020). The ICD-11 is a list of diseases and medical conditions that aids medical professionals in identifying patients with various conditions and devising treatment plans for them. It should be noted that many involved in medical and mental health have engaged in a vigorous and oftentimes contentious discussion in response to the WHO's decision to add gaming disorder to the ICD-11. The Diagnostic and Statistical Manual of Mental Disorders (DSM5), a publication of the American Mental Association, states that although it is a topic of therapeutic interest, further clinical study is necessary before Gaming Disorder is properly accepted as a Mental Disorder(WHO, 2020). To stimulate more studies into problematic gaming activity, including prevention and rehabilitation, the WHO highlights that gaming disorder is now included in ICD-11 (WHO, 2020).

According to Maldondo (2016) aggressive behaviors do not relate to how enthusiastic gamers are, they relate to the frustration levels gamers involvement in during games. The more frustration a person experienced while playing the game, the more likely he or she was to exhibit aggressive thoughts, feelings, or behaviors (Maldonado, 2016). Highly difficult or poorly designed games are the main cause of a player becoming more aggressive and violent although if it is a seemingly nonviolent game. For that reason, some nonviolent games might be more destructive in comparison to super-violent games which as bad reputations (Maldonado, 2016). Another research has tried to understand the relationship between online game addiction and aggression, self-control, and narcissistic personality traits. These are known as the psychological characteristics linked to 'at-risk' populations for online game addiction (Kim et al., 2008). Their findings showed that while narcissistic personality traits and aggression are positively correlated with online game addiction, self-control is negatively correlated with online game addiction. Moreover, the results indicate that "certain psychological characteristics such as aggression, self-control, and narcissistic personality traits may predispose some individuals to become addicted to online games" (Kim et al., 2008, p. 212). Some researchers (Lérida-Ayala et al., 2022; Li et al., 2023) imply that excessively playing video games is a kind of addiction and it can cause the development of aggressive behaviors.

The purpose of the study is to understand if participants ever showed aggressive reactions while they are playing video games and if they do so what kind of aggressive reactions they showed when they frustrated because of video games.

LITERATURE REVIEW

Game Categories

In recent years, the study of video games in higher education has gained popularity. This covers other games, digital learning games, and instructional games (Çankaya & Karamete, 2009; Van Roessel & Van Mastrigt-Ide, 2011; Yang et al., 2012). Furthermore, it has been reported that scholars have expanded the definition of games to include interactive activities, video games, and even next-generation video games (Biddiss & Irwin, 2010). Computers and video game consoles are examples of technological platforms that use digital game code to implement web-based games (Salen & Zimmerman, 2004). They can be played on mobile devices and other portable gaming consoles by using a web browser (Willoughby, 2008).

Numerous carefully crafted pragmatic research examining the impact of serious video games on education results have been issued in recent years (F. E. Anderson et al., 2009; Connolly et al., 2007; Sawyer, 2002). According to Sawyer, serious games are those created by the video game trade that have a significant assembly on education (Sawyer, 2002). Adding to Sawyer's classification, Zyda (2005) defines serious games as those whose main objective is not amusement, enjoyment, or fun. Virtual worlds created for education, educational video games, and serious games show how new technology may engage people in ways beyond simple entertainment (F. E. Anderson et al., 2009). Game-based learning is the use of game-based technology to provide, assist, and enhance teaching, learning, assessment, and evaluation (GBL). Numerous studies have been conducted to investigate the potential educational advantages it might have (Connolly et al., 2007).

Response-based video games categorize as action games. "Adventure games involve solving puzzles to 10 advance through stages in an online setting. In the fighting game, players control characters that are either controlled by computers or by other players. In role-playing video games, players take on the identities of imaginary characters. Simulations are video games that are modeled after real-world or artificial systems or events and require players to complete predetermined objectives. Sports games are video games based on various sports. Video games imitate actual events or made-up situations and demand that players devise winning strategies. This study has questioned respondents on response-based video games that they are playing to categorize according to their aggressive reactions if they have.

Video Game Statistics

According to Bankmycell, there has been a significant increase in the number of gamers since 2017 (Turner, 2023). There were 1.75 billion gamers in 2017, 1.89 billion in 2018 (up 7.99%), 2.07 billion in 2019 (up 5.52%), 2.44 billion in 2020 (up 17.87%), 2.63 billion in 2021 (up 7.79%), 2.53 billion in 2022 (down -4.18%), and 2.17 billion in 2023 (up 7.14%). Statistics show that there was a significant spike in video game playing in 2020, which was around the time of the pandemic. By growth rates from recent years, it is predicted that there will be 3.1 billion gamers worldwide in 2027 (Turner, 2023). As the number of video gamers grows, pros and cons of the sector will grow and the academic interest to this trendy sector will increase simultaneously. Furthermore, video games and aggression are an area of academic study that has attracted interest in recent years (Adachi & Willoughby, 2013; C. A. Anderson et al., 2010a, 2010b; Goldbeck & Pew, 2024; Kim et al., 2008; E.-J. Lee et al., 2021; H. R. Lee et al., 2016; Li et al., 2023).

Table 1. Top 10 Number of Gamers Worldwide by Country (Turner, 2023; World Bank, 2023; Worldometer, 2023)

Country	Number of Video Game Players (In Millions) *	Gross National Income Per Capita 2022**	Countries in The World by Population (2023) ***	The Percentage of Number of Video Game Players Compared to The Population ****
China	742.19	12,850	1,425,671,352	52.06
United States	197.16	76,370	339,996,563	57.99
Brazil	100.74	8,140	216,422,446	46.55
Japan	78.1	42,440	123,294,513	63.34

* *Turner*, 2023
** World Bank, 2023
*** Worldometer, 2023
**** Calculated by the author by using the Number of Video Game Players in comparison to Countries in The World by Population

In Table 1, eight out of ten (80%) countries belong to the developed countries (2023a) with upper-income levels with high technological infrastructures, and only China and Brazil are classified as developing countries (2023b) with upper-middle incomes by World Bank (2023) data. As video games are deeply related to technology, technologically developed countries take the top ranks in accordance. The percentage of the number of video game players compared to the population shows that around three out of five people in these top 10 ranked countries are video gamers.

Table 2. Global Gamers by Region (Zandt, 2023)

Region	Gamers in Millions (n)
Asia- Pacific	1,789
Middle East & Africa	574
Europe	447
Latin America	335
North America	237

According to Table 2, only Asia-Pacific has more than a billion gamers, as opposed to the other areas. For years, there has been a close race between the number of gamers in the world who are male and female. Only 38% of gamers worldwide were female in 2006, compared to 62% men. By 2021, 45% of gamers worldwide and 55% of gamers worldwide were men. The figure is getting closer, and in the United States, the proportion of male-to-female players is practically equal. In the United States, Statista reports that 48% of women played video games, an increase of 3% from 2021 (Tan, 2023).

Table 3. Global Gamers by Age (Tan, 2023)

Age categories	Gamers in %
Under 18 years old	20
18 to 34 years old	38
35 to 44 years old	14
45 to 54 years old	12
55 to 64 years old	9
Over 65 years old	7

By Table 3, 38% of gamers are between the ages of 18 and 34, as can be shown. As we get older, the percentage appears to decline as well (Tan, 2023). Over 42% of gamers played games on console gaming systems (PlayStation, Xbox, etc.) in 2022, followed by 66.2% of players who used a mobile device and 37.9% of gamers who used a PC, which includes desktop and laptop computers (Tan, 2023). With a total revenue of 103.5 billion dollars, the mobile gaming sector leads all other industries in the world. Of the 53 billion dollars in market revenue for the console sector, 40.4% comes from PC gaming. The handheld single-game systems available on that market are not included in these statistics(Tan, 2023).

According to GWI research, shooter games are the most popular gaming genre, with 57% of consumers saying that they played at least one shooting game in the preceding 12 months. With 54% of the market, action/adventure games are the second most popular gaming category, trailing only sports at 39%, racing at 39%, and puzzle/platform games at 37% (Astre, 2023). The game categories that each generation likes to play, however, is an equally important

statistic. Entertainment and stress relief are among Gen Z and Gen Y (millennial) gamers' top reasons for playing, according to GWI data (Astre, 2023). Many studies have found that younger generations (Gen Z and Gen Y), especially those who play video games, respond more aggressively, while older generations have fewer angry reactions (C. A. Anderson & Dill, 2000; Lemmens et al., 2011; Maldonado, 2016).

The statistics show that Call of Duty, a shooter video game, is the most popular franchise among Gen Z, while FIFA, a football sports game, is the most popular franchise among Millennials and Gen X (Astre, 2023).

Tetris, which was first launched in 2006 but has since undergone numerous adaptations for more than 50 gaming platforms, is the most played video game of all time, with 520 million copies sold. With 238 million copies sold, Minecraft, a computer game developed by Mojang studios and now owned by Microsoft, is the second most popular title. Grand Theft Auto 5 has sold 175 million copies, followed by Wii Sports with 82.9 million, PUBG (Play Unknowns Battle Grounds) with over 75 million, Mario Kart 8 + Deluxe with over 62.25 million, Red Dead Redemption with over 50 million, Overwatch with 50 million, Super Mario Bros with 48 million, and Pokémon Gen 1 with 47 million (Turner, 2023). There are 831,523 video games in existence overall, according to Web Tribunal, which provides data on this topic. This includes 67,821 games on Steam, 4,333 games on GOG, 265 games on the Ubisoft Store, 12,062 games for the Nintendo Switch, 5,366 games for the PlayStation 4, 974 games for the PlayStation 5, and 3,059 games for the Xbox. 93,880 video games on conventional platforms in total. But there are also 449,490 games on the Google Play Store and 288,153 games on the App Store, bringing the total to 831,523. Nevertheless, it's challenging to estimate the number of original video games that exist. Since most games are released across many platforms, a sizable portion of the figures above correspond to duplication or various iterations of the same game, so, the true count is probably far smaller (Prodanoff, 2023). These statistics help to understand how the game industry and its effect on video game player big is.

Effects of Video Games

Potentially Psychological Beneficial Effects

Video games have several advantageous qualities. Theoretically, portraying minorities in a more favorable light ought to have an impact on players' impressions of reality. Greitemeyer and Osswald (2010) researched the 'prosocial' impacts of video games with the premise that playing a 'prosocial' (as opposed to a 'neutral') video game results in an increase in players' helpful behavior. By the end of the trial, participants who had played a 'prosocial' video game were more willing to assist the researcher in cleaning up dropped pencils and assist a 'harassed' experimenter (Greitemeyer & Osswald, 2010). They demonstrated that these video games enhanced both unrequested and asked aid, as well as low-cost and high cost helping from players by utilizing these various forms of 'prosocial' behavior (Greitemeyer & Osswald, 2010). When individuals played video games for a short while, the same results were seen (Greitemeyer & Osswald, 2010). It indicates that playing video games has behavioral effects largely on cognitive processes, which can have both positive and negative effects (Greitemeyer & Osswald, 2010).

Youngminds is a registered charity in UK which defines themselves as "The UK's leading charity fighting for a

Table 4. Favorite Game Franchises by Gen Z, Y, and X Generations (Astre, 2023)

Game Franchises	Call of Duty	Minecraft	Pubg	Fifa	Grand Theft Auto	League of Legends	Mario	Fortnite
	%	%	%	%	%	%	%	%
Gen Z	26	26%	23	23	21	-	-	-
Gen Y	23	-	17	23	-	18	20	-
Gen X	15	15	-	18	-	-	15	11

world where no young person feels alone with their mental health"(Youngminds, 2023). According to Youngminds (2023) playing video games can be beneficial for young's mental health. Benefits of video games can help players connect with people and feel wonderful. It can assist with issues like taking a break from our busy lives to relax and unwind by playing video games. This enables young person to allow you time to reflect on their day and refuel after school, college, work, or university. Online communication with friends may be a terrific method to socialize and can provide a relaxed setting for a young person to check in with each other, speak about what's happening in their lives, and express their true emotions. Online communication with pals may feel more comfortable if they have trouble sharing their thoughts and feelings in person. Knowing that their friends are there for them and that they're not alone can be comforting. Gaining knowledge of practical skills, such as problem-solving and teamwork. Playing video games can help people to see things differently or think about how they solve problems. It can also be beneficial to develop their teamwork skills. Players can comprehend the duties that each person will perform and how they can collaborate as a team, for instance, if they are working in a group (Youngminds, 2023).

Catharsis is a term that is used in connection with psychoanalysis which can be explained as the underlying problems cannot be resolved if the emotions connected with them are also discharged. In other words, it can be defined as the expression of formerly repressed feelings to overcome problems associated with them (Nickerson 2023). Some other researchers (E. J. Lee et al., 2021; H. R. Lee et al., 2016) argue that playing games can cause a catharsis effect on video game players. This can cause lowering stress levels.

Disorders in Video Games

Video gamers might discover that they frequently consider when they will be able to play games or that they put other activities on hold to play. Video gamers could feel out of control and as like gaming is taking over their life as a result. When gaming interferes with daily activities like school, sleep, or job, it might cause feelings of loneliness, depression, or low mood. According to the WHO (2020) draught 11th Revision of the ICD-11, the disorder is identified by a pattern of "digital-gaming" or "videogaming" behavior characterized by impaired control over gaming activity, increasing priority given to gaming over other activities to the point where gaming takes precedence over other interests and daily activities, and the continuation or escalation of gaming despite the occurrence of negative consequences (Who, Addictive behaviors: Gaming disorder)(WHO, 2020). Internet gaming disorder (IGD), which the American Psychiatric Association (APA) designated as needing additional investigation in the DSM-5, is comparable to gaming disorder. The APA no longer specifically recognizes IGD as a condition. The WHO's recommendations state that a person's behavior must be extreme enough to gravely, plainly impede, and degrade personal, familial, social, educational, occupational, or other significant areas of functioning for at least a year. The NHS has treated hundreds of gamers for gaming problems, including children and their families. Data showing 745 referrals for treatment have been made to the UK's sole gaming clinic since its opening in October 2019 has been made public for the first time. Occasionally playing games can become excessive

Aggression in Video Games

Calvert et al. (2017) with the study of "The American Psychological Association Task Force Assessment of Violent Video Games: Science in the Service of Public Interest" argued that violent video games are a risk factor for aggression. Same study implied that violent video game subjection has associate to higher aggressive emotions, thoughts, and behaviors, also decreased empathy. Same wise according to National Center for Health Research "the longer that individuals are exposed to violent video games, the more likely they are to have aggressive behaviors, thoughts, and feelings" (Goldbeck & Pew, 2024). Some studies have focused on how competition among players in video games a cause of aggressive behavior than is the level of violence (Adachi & Willoughby, 2013; Hartmann et al., 2015). Another study has tried to understand pathological game disorder and its relationship with aggression comparably in genders and in different ages (Lemmens et al., 2011). Also, some other researchers (C. A. Anderson et al., 2007; C. A. Anderson & Dill, 2000) argued that violent games cause aggression.

METHODOLOGY

Purpose of the Study, Sample, and Method

The purpose of this study is to understand the if video game players who show aggressive reactions while they are playing video games, kind of reactions that they do and exhibit aggressive behavior categories when the game does not go the way they want. To demonstrate this, field research was conducted on 136 people during the period between 27 May and 13 November 2023. This study designed with qualitative methodology with an inductive approach. Within the scope of the study, an online survey via Google Sheets and a structured interview questions to support the survey with qualitative data were used as data collection tools. All completed questionnaires answer automatically saved to google sheets. The surveys were shared on the Reddit social media platform to reach video gamers on a global level. The reason why Reddit, which works like a forum site, was chosen is that users can share different posts on the topics on the site after becoming a member of the platform. Many experts on Reddit also make special posts on their topics which can be used as a research area. Reddit, which defines itself with the slogan 'Dive Into Anything', defines the purpose of the platform as follows: "Reddit is home to thousands of communities, endless conversation, and authentic human connection" (Reddit, 2023). According to October 2023 data, Reddit's daily number of users is more than 70 million, active communities are 100K and 16B+ posts and comments are made per day (Reddit, 2023). It was thought that a social media platform that reaches such a wide audience and can be accessed globally by participants would be effective in terms of the reliability of the study. Stratified random sampling is known as quota random sampling and proportional random sampling method. It is a probability sampling technique that tries to (strata) to complete the sampling process by dividing the total population into homogeneous groups (strata) to complete the sampling process. In this study, each stratum (the singular for strata) is formed based on shared characteristics or attributes characteristics, age categories, and game categories. Random samples were then selected from each stratum and compared against each other to reach the result with cross-tabulations. As part of the interpretive paradigm, narrative analysis includes how people interpret their daily life experiences. This method, which helps to reveal the ideologies and narratives underlying everyday life stories, is a suitable method that can be used to understand the broader culture. In this type of analysis, texts or visual data with a narrative form are attempted to be interpreted, and a narrative is derived from them. Narrative analysis, part of a qualitative ontology, refers to a set of analytical methods for interpreting texts or visual data that have a narrative form (Figgou & Pavlopoulos, 2015; Riessman, 2007). In this study, which aims to find the meaning created by the actions taken, narrative analysis will focus on the theme of the narrative, not its structure. While the thematic version questions what a story is about, the structural version questions how a story is constructed to achieve specific communicative goals.

The effect of video game types on players was tried to be understood through semi-structured online questionnaires using the stratified sampling technique, the game categories that the participants played and whether they experienced any anger while playing games. After the questions were prepared, two experts in the field examined the questionnaires, the questionnaires were completed in line with the requests for corrections, and the research was completed before being sent to the Ethics Committee for approval. It was implemented in a pilot study on 10 graduate students. In line with the feedback received, the research questions were finalized, and an ethics committee application was made. Approval for the research questions was received from the Arkin Creative Arts and Design University Ethics Committee on May 26, 2023, with the ethics committee approval number 2022-2023/03. The research was applied to people over the age of 18, and participants were informed in writing in the information section of the survey that everyone who completed the online survey would have approved the consent form if they started the survey. The research sought answers to the following questions:

RQ1: What is the percentage of players who show aggressive reactions while they are playing video games?

RQ2: If the video game players experienced aggressive reactions while they were playing video games, what were

the aggression categories (physical aggression, verbal aggression, anger and hostility) that they have showed?

RQ3: What kind of aggressive reactions do the video game players who have showed aggressive reactions when they get frustrated while they are playing?

Criteria

Within the scope of the research, questions were asked to the participants in two sections titled 'Demographic Information' and 'Game and Aggression'. Demographic questions include two closed-ended questions: Age categories (18-20, 21-25, 26-30, 31-35, 36-40, 41-45, 46-50), gender (Female, Male), and region of nationality (Asia, Africa, Caribbean, Central America, Europe, Mediterranean, Middle East, North America, Oceania, and South America). In addition to this country of residence was asked as an open-ended question type in demographic questions.

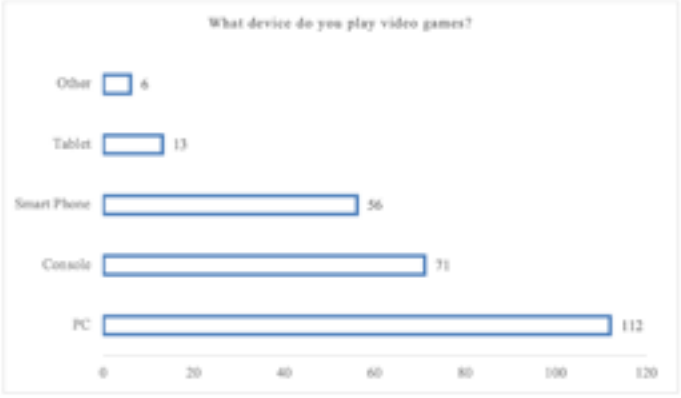
Seven closed-ended with multiple option selection chance and one short-answer questions were asked under the title 'Game and Aggressive Reactions'. The first of the questions was 'What device do you play video games on?', which was asked in a closed-ended manner where more than one option could be selected. The second one is again closed-ended, 'How many hours do you play', with answers limited to '1-3', '4-6', '7-9', '10-12', '13-15' and 'more than 15 hours'. video games? (In a week)' was the question. The third was 'What category of video games do you play?', which tried to find out which category of games the participants played, where multiple options could be selected. In this question, participants could select one or more options among the following answers: Massive Multiplayer Online Role Play Game (MMORPG), First Person Shooter (FPS), Role Playing Game (RPG) / Story, Sports, Racing, Puzzle, Other. The following two closed-ended questions tried to measure the competition levels of the participants while playing the game. First, 'How often do you play competitive games or casual games?' An attempt was made to determine whether they played competitive games with the question (Only competitive, only casual, or mixed). Then, 'How competitive are you on a scale of 1 to 10 when playing video games?', which tries to determine how competitive the participants are on a scale of 1-10 (1 Casual - 10 Serious). The question was posed. Then 'Have you ever acted aggressively because of a video game?' With the question (Yes, No, Maybe), an attempt was made to determine whether the participants had ever exhibited an aggressive attitude due to video games before. Finally, with a short-answer open-ended question, 'If yes, what kind of behavior did you show when you became aggravated?' The answer to the question was sought. The data obtained were first separated according to age, gender, region and country of residence, types of games played, degree of competition, and anger caused by video games. Graphs and tables were created with the data obtained. Then, short-answer questions and comments regarding anger-related reactions were used in the research using the narrative analysis method.

Table 5. Demographic Features of Participants

Demographics	Study Group	
Participants, n (%)	136 (100)	
Age Categories, n (%)	30 (22.1)	Female/ Male n (%) 13 (43.3)/ 17 (56.7)
18-20	53 (39)	24 (45.3)/ 29 (54.7)
21-25	24 (17.6)	6 (25) / 18 (75)
26-30	14 (10.3)	6 (42.7)/ 8 (57.3)
31-35	3 (2.2)	3 (100)/ 0 (0.0)
36-40	9 (6.6)	3 (33.3)/ 6 (66.6)
41-45	3 (2.2)	0 (0.0) / 3 (100)
46-50		
Gender, n (%)		
Female	55 (40.4)	
Male	81 (59.6)	
Region of Nationality, n (%)	19 (14)	
Asia	2 (1.5)	
Africa	2. (1.5)	
Caribbean	0 (0.0)	
Central America	49 (36)	
Europe	8 (5.9)	
Mediterranean	1 (0.7)	
Middle East	46 (33.8)	
North America	6 (4.4)	
Oceania	3 (2.2)	
South America		

As can be seen in Table 5, a total of 136 people participated in the research and more than three-fifths (61.1%) of the participants were young adults aged 25 and under. The yearly increase in the number of female video gamers worldwide also manifested itself in this study, with 40.4% of the participants being women. When the data obtained is compared to the male and female ratios according to age ranges, there are no deep differences in the gender ratios of participants who play video games, especially those aged 25 and under. It is possible to say that male dominance in video games has decreased, based on research findings. When the nationality distribution by region was examined, it was determined that there were participants from every region except Central America and that the majority of the participants were of European and North American origin. In this research, which was conducted with participants from 37 different countries, the country with the highest participation was the USA (31.7%), the second place was the Netherlands (17.7%) and the third place was Germany (7.4%). When the gender distribution of participants under the age of 26 is examined, it is striking that there is a balance between male and female video game players.

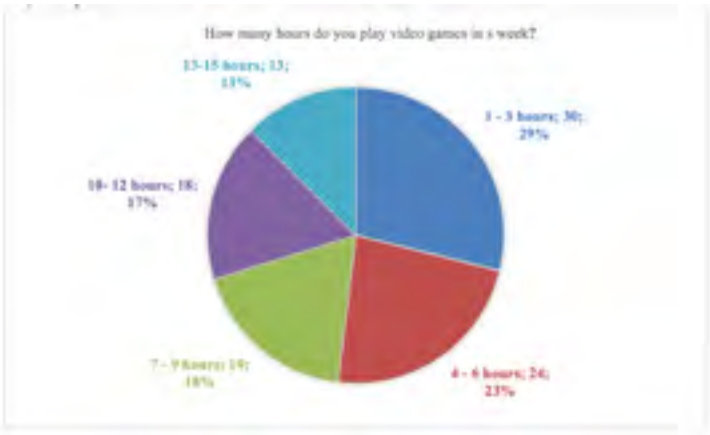
RESEARCH FINDINGS AND DISCUSSION



Graph 1. Frequency of Device Usage for Video Gaming

Most replies offered two or three possibilities; however, PC or Console was frequently one of those options. Graph 1 shows that PC is the most popular device for video gaming, followed by a console and a smartphone. This question included numerous possible answers; thus, the response does not necessarily imply that people only play video games on their computers or consoles. A total of 112 persons selected a PC as their primary device, as opposed to 71 choosing a console, 56 a smartphone, 13 a tablet, and 6 choosing other. Similar to this research results smartphones and PCs are the most popular gaming devices in video games accross the globe (Clement, 2024; Dsouza, 2022).

Graph 2. Video Game Playing Hours in a Week



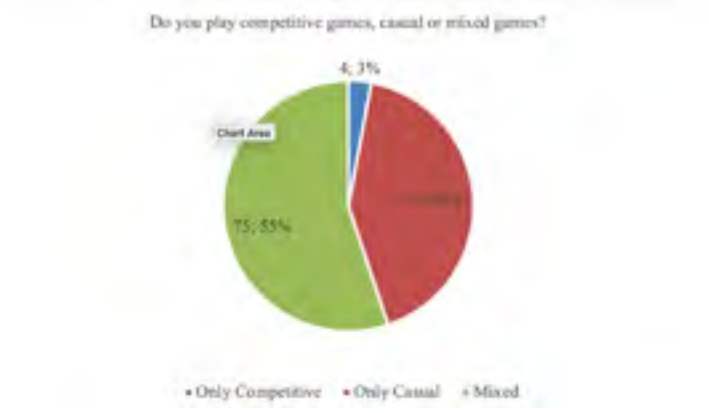
As seen in Graph 2, one-third of the video gamers play video games for 1 to 3 hours per week with 29%, with 4-6 hours per week coming in second with 23% and 7-9 hours per week comes as third with 18%. It is clear from the graph that the total number of hours played is reasonably consistent with the world statistics (Dimitrevski, 2023) on video gaming. Playing video games is a time-consuming activity. Spending time playing video games extensively and internalizing video games can lead to increased aggressive reactions.

Graph 3. Preferred Video Game Categories

Graphic 3 shows that the most preferred video game category is RPG with 76.5%, second is Other with 58.1%, and third rank is FPS with 52.9%. The puzzle is coming in

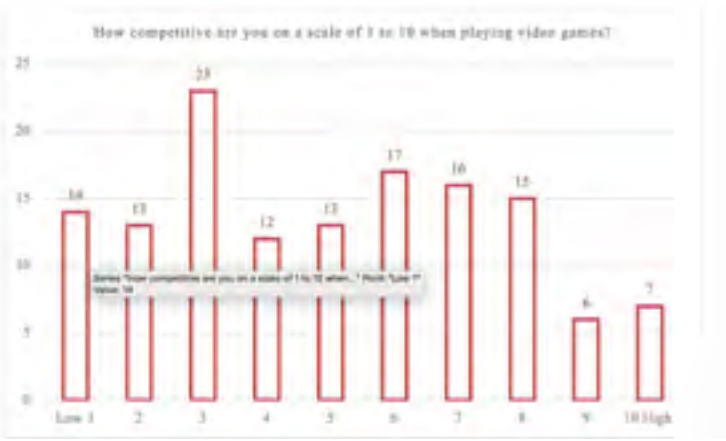
fourth rank with 47.8%, MMORPG is in fifth place with 33% and sports video game playing is the last preferred video game among participants with 7.4%. RPG is a game in which players take on the roles of imaginary characters who engage in adventures, typically in a particular fantasy setting overseen by a referee. RPG can be action, strategy, fantasy, and adventure based.

Approximately 60% of the participants in the study are from Generation Z, around %38 Gen Y and only 2.2% Gen X. Global basis, Gen Xers typically play video games to unwind and relax. Shooters, with a preference of 66%, are Gen Z's preferred gaming genre, with sports games at 41%, action/adventure at 62%, simulation at 43%, and online battle arena games at 42%, following. Shooters are the most popular gaming genre among millennials (Gen Y) 62%, followed by action/adventure 58%, racing, sports, and simulation games 44%. With 46% of Gen X players, action/adventure and shooter games are tied for first place, followed by platform and puzzle games 35%, sports 34%, and racing 33% (Astre, 2023). This study results are consistent in compared to global statistics.



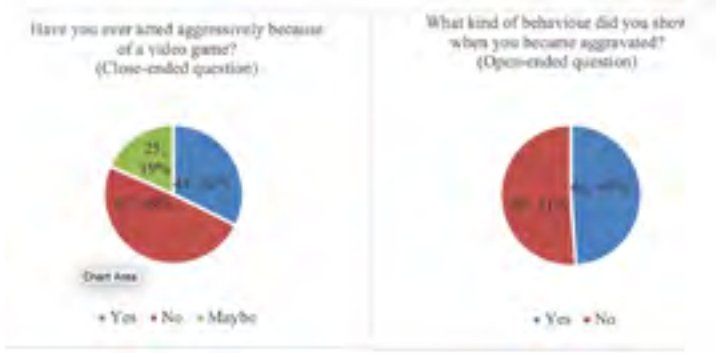
Graph 4. Competitive, Casual or Mixed Genres in Prefered Games

More than half of the participants (55%) play a variety of games, both competitive and informal, rather than just one kind of game. Casual game players come second with 42% and competitive only preferred 3%. There is a study that report that there is a link between competitive games and aggression (Adachi & Willoughby, 2013).



Graph 5. Competitiveness Level of Participants While They Are Playing Video Games

While 55.14% of the participants evaluated themselves as 5 or below in the competitiveness level assessment from 1 to 10, 44.85% evaluated themselves as 6 or above competitive. In this case, slightly more than half of the participants evaluated themselves as less competitive, while slightly less than half of the participants described themselves as little more competitive.



Graph 6. Becoming Aggressive Because of a Video Game

In the question 'Have you ever acted aggressively because of a video game?' in close-ended question, 49% of the participants believed that they had never acted aggressively because of any game. 32% of participants have acted aggressively and 19% of participants may have acted aggressively. However, when crosschecking on the open-ended question 'What kind of behaviors did you show when you became aggravated?', results show something different. Most of the 'Maybe' answers become 'Yes', only

five of them can be 'No', and three of 'No' answers become 'Yes'. This means, more than half of the participants (51%) have never become aggrevated while they are playing video games and less than half of the participants (49%) became aggrevated. Whenever competitiveness level results compared with if the participants show any aggressive reactions there are not any consistent result on it. Therefore, it is not possible to state in the context of this study that those who play video games with a high level of competition give more aggressive reactions.

Table 6. Cross-tabulation of Aggressive Action, Age Categories, Gender and Narratives of Participants on Their Reaction Cause by Video Game

Have you ever acted aggressively because of a video game?	Age categories	Gender	What category of video games do you play?	If yes, what kind of beha.ior did you show when you became aggravated?	Thematic Categorization of Reaction*
	18-20	Female	FPS, RPG/ Story, Puzzle	Use of curse words	Verbal aggression
			RPG/ Story, Other	Losing or performing badly because of glitches or lag/other factors outside my control, repeatedly and consecutively losing to opponents	Anger
			RPG/ Story, Other	Raised voice and irritability, never directed towards another person however	Verbal aggression
			RPG/ Story	Throwing my phone or pc mouse very aggressively	Physical aggression
			MMORPG, FPS, RPG/ Story, Puzzle, Other	Yell	Verbal aggression
No			MMORPG, Racing, Puzzle, Other	I ate my keyboard	Physical aggression
Yes					
			MMORPG, FPS, RPG/ Story	Ranting to my friends on discord how incompetent that person is	Hostility
			FPS, Puzzle	Threw controller	Physical aggression

Yes	18-20	Female	FPS	I yelled at someone and felt more on edge.	Verbal aggression
			FPS, RPG/ Story	Depending on the game, I will rage or like. Stop gaming for a long period of time	Anger
			MMORPG, FPS, RPG/ Story, Sports, Racing	Was very angry	Anger
			FPS, RPG/ Story, Puzzle, Other	Yelling, quitting the game, pressing the keys/mouse in a more aggressive way	Verbal aggression Physical aggression
			FPS, RPG/ Story, Puzzle, Other	Screaming, punching the table	Verbal aggression Physical aggression
			FPS, Puzzle	I would groan, scream or hit my desk	Verbal aggression Physical aggression
			RPG/ Story, Other	Swearing, stress, nervousness	Anger
Yes	21-25	Female	FPS, Puzzle	I yell at the TV when I get very aggravated on a video game	Verbal aggression Anger
			MMORPG, FPS, RPG/ Story, Racing, Puzzle, Other	Yelling, and hitting my desk	Verbal aggression Physical aggression
			FPS, RPG/ Story, Puzzle	Scream , throw the controller	Verbal aggression Physical aggression
Maybe		Male	FPS, RPG/ Story, Puzzle	Complaining and general mood change	Anger
			FPS, RPG/ Story, Racing	Yelling, saying rude things. Rarely happens	Verbal aggression
			Other	Maybe some raising of my voice	Verbal aggression

Maybe		Male	FPS, RPG/ Story, Other	Cursing	Verbal aggression
			FPS, Racing	Sudden shouting	Verbal aggression
			FPS, Sports, Puzzle	Frustration became louder	Anger
			MMORPG, FPS, RPG/ Story, Other	I've yelled at people in my life once or twice for dumb stunts and pranks that sabotaged my game or for deleting saved files once or twice in my life.	Verbal aggression Physical aggression
			RPG/ Story, Sports, Puzzle, Other	Generally, I just turn the game off before it's over (i.e. "rage quitting")	Anger
			Other	Swearing	Verbal aggression
No			RPG/ Story, Other	Only a higher sense of irritability	Anger
Yes			FPS, RPG/ Story, Sports, Racing	I usually hit my desk and flame my team	Physical aggression
			Other	Hit the table very hard	Physical aggression Verbal aggression
			FPS, RPG/ Story, Sports, Puzzle, Other	I break desk	Physical aggression
			FPS, RPG/ Story, Other	When I get frustrated at a game I tend to throw my controller, this isn't caused by the games I just tend to overreact	Physical aggression
			FPS, RPG/ Story, Puzzle, Other	Swearing, screaming, jumping out of my chair	Verbal aggression Physical aggression
			FPS, RPG/ Story	Hitting desk	Physical aggression
			MMORPG, RPG/ Story	I broke a mouse	Physical aggression

Yes		Male	Puzzle	Cussing off the Cunt when he takes my queen	Verbal aggression
			MMORPG, FPS, RPG/ Story, Other	I become racist	Hostility
			MMORPG	Broke my monitor	Physical aggression
			FPS	Punching the desk	Physical aggression
			FPS	Cursing	Verbal aggression
			FPS, RPG/ Story	I broke my mouse and keyboard	Physical aggression
			FPS, RPG/ Story	Squeezed the device I'm holding in my hand (mouse/ smartphone) hard	Physical aggression
			RPG/ Story, Other	Hitting pillows, biting pillows, hitting self	Physical aggression
			RPG/ Story, Puzzle, Other	Swore, Annoyed, Additionally Focused, Silent, Disregard	Verbal aggression
			Puzzle, Other	Break my phone, swear at someone because I was mad I lost	Physical aggression
			FPS, RPG/ Story, Puzzle, Other	I once threw a controller when I was young, but I quickly learned my lesson when I had to pay for a replacement. Aside from that, I will occasionally shout things like "god damnit" or "that's bullshit." It takes a lot to get me worked up though.	Physical aggression Verbal aggression

Yes		Male	FPS, Other	Punching my bed, punching my thigh, ripping paper, snapping plastic, stomping, slamming fist on table, shouting, swearing, growling	Physical aggression Verbal aggression
			RPG/ Story, Puzzle, Other	Swearing	Verbal aggression
			FPS, RPG/ Story, Puzzle, Other	rage quit, hardware abuse	Anger Physical aggression
Maybe	26-30	Female	FPS, RPG/ Story, Puzzle, Other	I just talk to my friends and complain about a mechanic that annoyed me.	Anger
			RPG/ Story	I used cheats to get past the difficult bit	Physical aggression
		Male	RPG/ Story, Other	Slamming desk with fist	Physical aggression
			MMORPG, FPS, RPG/ Story, Racing	Swearing	Verbal aggression
No		Male	FPS, RPG/ Story, Puzzle, Other	I'm not aggressive in behavior, but sometimes I am irritated and I have aggressive thoughts (it's not very common though)	Anger
Yes		Female	MMORPG, Other	Jealous	Anger
		Male	FPS, RPG/ Story, Racing	Self-harm after losing matches in high school, breaking controllers and phones shortly after in college all due to losing online competitive games	Physical aggression
			MMORPG, RPG/ Story, Puzzle	I swear and shout, and get very fighty	Verbal aggression Anger

Yes	26-30	Male	FPS, RPG/ Story, Sports, Racing	Annoyed	Anger
			MMORPG, FPS, RPG/ Story	Irritated	Anger
			FPS, RPG/ Story, Puzzle, Other	Swearing mostly. And my body tensing up	Verbal aggression
			MMORPG, FPS, RPG/ Story, Sports, Racing, Puzzle	Blamed teammates in chat	Verbal aggression
	31-35	Male	FPS, RPG/ Story, Racing, Puzzle, Other	Destroyed a controller	Physical aggression
Maybe	41-45	Female	FPS, RPG/ Story, Other	Cursing, taking a break, hitting sth soft with my controller (e.g. pillow)	Verbal aggression Physical aggression
		Male	RPG/ Story, Other	Mostly just a short temper and being generally aggravated. I try not to take it out on others, but when one is weary/annoyed it tends to leak to other areas and limit your patience.	Anger
Yes	46-50	Male	MMORPG, FPS, RPG/ Story, Sports, Racing, Puzzle, Other	I shoved the game controller up my ass.	Physical aggression
			MMORPG	Punched a wall	Physical aggression

* Lee et al. (2021)"Violent Video Games and Aggression: Stimulation or Catharsis or Both?" used as a source of aggression categorization: Physical aggression, verbal aggression, anger, and hostility).

Table 6 shows that 49% of participants have aggressive reactions because of video games. While 59.6% of the participants in the study were male and 40.4% were female, 66.67% of the participants who showed aggressive reactions were male and 33.33% were female. In this case, it is possible to say that men who play video games react more aggressively than women. The most intense aggressiveness level was exhibited by men in the 21-25 age category with 47%. As it mentioned before (under Table 3), younger generations are more aggresive in compare to older generations in global scale (C. A. Anderson & Dill, 2000; Lemmens et al., 2011; Maldonado, 2016). The results are parallel with the world statistics.

However, when the 18-20 age range is examined, it is striking that all those who give aggressive reactions are women. Young women who are just entering adulthood and play video games show more aggressive reactions to games in copmare to men at the same age category. 40% of women between the ages of 18 and 20 who showed aggressive reactions showed reactions that included physical agression as hitting or throwing something. In general, none of the women who showed physical anger reactions broke anything. In contrast, men between the ages of 21-25 have been found to give more aggressive reactions to video games than women at the same age category. Also results showed that these 21-25 age category young adult men are responsible of 47% of total aggressive reactions in total. 48.39% of the men who showed aggressive reactions between the ages of 21-25 showed reactions that included physical aggression. Unlike women, the level of physical aggression shown by men has increased. Things like hardly hitting and/or punching the wall, breaking cell phone, monitör, keyboard and/or mouse have been added to physical reactions.

The competitiveness level median of the participants with aggressive attitudes is 5.94 out of 10. Of the participants with these attitudes, 66.6% play mixed games, 28.8% casual games, and 4.6 play only competitive games. Participants with aggressive behavior prefer to play RPG/ story at 27.5%, FPS at 22.8%, other game categories at 20.1%, puzzle a 14.8%, MMORPG at 8.5%, and 6.5% play games in the Racing categories.

Table 7: Type of Reaction Cause by Video Game

Aggression Reaction Category	RPG/ Story	FPS	Other	Puzzle	MMORPG	Racing	Sports	Total
Verbal Aggression	23	22	18	14	7	6	3	93
Physical Aggression	18	21	17	16	6	5	1	84
Anger	14	11	8	7	4	2	4	50
Hostility	2	2	1	-	2	-	-	7
Total	57	56	44	37	19	13	8	234

According to Table 7, the game category that has the most reactions is Role Play/ Story (RPG) games which are games where you play as a character and follow a story narrative, with 24.4%, which highly includes verbal aggression (40.4%) as cursing/raising their voices. Also, RPG players who have given aggressive reactions to video games sometimes show some physical aggression (31.6%). The second rank is First Person Shooter (FSP) games, which is a game category where the player aims to kill other people or characters to win, with 23.9%. 39.3% of them cursed or raised their voice, and 36.5% showed physical aggression or action. The third category is other games, which can be games that are a mix of all categories or some categories that are not listed, with 18.8%, the fourth category is puzzle games (15.8%) which can be games like Chess or Tetris which the player needs to solve something to progress. The fifth category is MMORPG (Massively Multiplayer Online Role-Playing Game, which is a game category where depending on the game the player is set in a massive world with thousands of players aiming to do quests or tasks to gain progress, with 8.1%, The sixth category is racing games, with 5.5% and the last category is Sports games with 3.4%. When the aggression reaction category is the subject, the first is verbal aggression at 39.7%, the second is physical aggression at 35.9%, the third is anger at 21.4% and the last is hostility at 3%.

CONCLUSION

In the research conducted, although 51% of the participants did not show any signs of aggression while playing video games, 49% is not an insignificant percentage. Approximately half of the research participants have shown aggressive reactions during the video game. Although the male participants were more likely to show agressive reactions the findings are in parallel with the result of Hartman et al. (2015) on men are more aggressive in compared to women while they are playing video games. As the age categories progressed, the number of women playing video games decreased in the study in parallel with world statistics. In addition, as the age categories progressed, the number of participants playing video games also decreased. The inference that can be made from this is that the age group playing video games is dominated by young people who have much more free time. Furthermore, the fact that young adults have fewer responsibilities than mature adults results in them having more time and finding time to play video games. Maturity level and its relationship with agrressive reactions while playing video games need to be studied. When the world statistics of the game industry have been checked, in this study, in which results are parallel to the prevalence of the game industry, especially among the younger generations, the high level of aggression of the young participants is remarkable. It has been determined that 50% of the people aged 18-20, 68% of the people aged 21-25 and, 50% of people between the ages of 26-30 display aggressive attitudes. However, gender differences and aggressive reactions in different age categories are differentiating. 18-20 aged women are more aggressive incompare to same aged men. On the other hand especially 21-25 aged men are too aggressive in compare to same aged women.

On the other hand, although RPG seems to be the video game with the most intense level of aggression when Table 7 is compared with Graph 5. Games in the puzzle category rank second in terms of aggressiveness with 56.9%. As it mentioned before it suggests that no matter how violent is game it is, the level of frustration may have effect on aggressive reactions (Maldonado, 2016). Games in the other category came in third place with an aggressiveness level of 55.7%, while RPGs ranked 4th with 54.8%.

The videogame players who did aggressive reactions while they are playing mostly showed verbal and physical aggressions, then anger and less hostility. Swearing and feeling annoyed are the main reactions that the most video game players reactions when they felt frustrated. Verbal reactions such as swearing, yelling, increasing voice were declared by most video game players that they do as aggressive reactions. Throwing, broke, hit or destroying something are mostly mentioned by aggressive physical reactions by video game players. Feeling irritated, annoyed or frustrated are some examples of anger. Becoming racist is one of the examples of hostility. The physical reactions of men generally differ from women and include more serious physical reactions such as breaking things.

For further studies it is strongly suggested to study being young and high level of aggressiveness relationship. Also the level of maturity seems significant variable in aggressive reactions while playing video games. This can be a subject to study in further studies: Maturity and aggressiveness level in video games. Men have significant relationship with aggressive reactions while women have

lower level of relationship with aggressive reactions while playing video games. Aggresiveness level and resons behind that of young adult women aged between 18-20 needs to delved into. As it known last worldwide statistics still shows that the number of the male video gamers are more than women, however the number of the women gamers are increasing rapidly. As the number of women video gamers increase in gaming industry these results may vary. Gender research on male and female gamers and their attitudes on aggression may another subject to study in future.

The evaluation of the subject of aggressive reactions in video games, which is a field of study that includes many different disciplines, within an interdisciplinary working environment will provide much more meaningful results. On the one hand, psychology (how personal factors affect aggressive reactions and their types), on the other hand, communication, sociology and social psychology (people actually socialize while playing video games. Sometimes they should team up with people they know, sometimes they should team up or compete with people they don't know in different parts of the world. Cultural differences can also emerge in the reactions given.) studies can work together in these areas.

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