THE ASSOCIATION OF GAME CONTENT WITH WELL-BEING AND SELF-ESTEEM

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Contents

1. Introduction

1.1 Online gaming

Online gaming has become an important part of daily free time for many adolescents engaging worldwide. It has quickly evolved into very important cultural phenomena which has been highlighted by latest data that shows how there are around 3.09 billion active video gamers worldwide and this number keeps rising to expectation of 3.32 billion by the end of 2024 (Howarth, 2024). Additionally, Kuss and Griffiths (2012) have found that between 2% and 5% of those aged from 10 to 17 years have been suffering from online gaming addiction. Gaming has been shown to be associated with many negative effects such as addiction and aggression (Grüsser et al., 2007), while other authors (Johnson et al., 2013) have also pointed out its positive effects such as many creative, social and emotional benefits. Online gaming has become more accessible on mobile phones as well as other devices with 1.4 billion gamers just in Asian region (GilPress, 2024). This means it is no longer limited to specific places with pc or similar devices. Its prevalence highlights the significance of online gaming in many people's daily lives and identities, making it an important subject for academic study (Crawford et al., 2013). These games may differ from competitive first-person shooters to cooperative multiplayer games, educational simulations as well as violent and other genres.

1.1.1 Gender and age trends in online gaming among youth

Among 8-25-year-olds in the Digital Youth Index survey, 47% play online games. More boys/young men (51%) than girls/young women (42%) engage in online gaming, with the highest prevalence among 8-to-10-year-olds (53%). Also 87% of young gamers play online at least three times a week (Baynton, 2023). According to the Young and Healthy CRC the term “youth” refers to people between the ages of 12 and 25. This age group has bigger access and greater chance to engage with computers and video games. This results in giving them more opportunities to participate in multiplayer environments (Brand, 2012).

1.2 Psychological aspects of online gaming

Common views often connect gaming with violence and addiction. Because of that, there are many concerns about potential negative influence on mental and emotional health. Among these concerns there is an important question. Are these assumptions rooted in scientific evidence, or do they oversimplify a complex interaction between gaming and well-being?

1.2.1 Negative aspects of online gaming

Online gaming can have both positive and negative consequences on mental health of individuals as we can see from various research papers (Kuss et al., 2012; Qu, 2023) which say how these games may lead to addiction, social problems, violence and escapism but also give many social opportunities for teens and may enhance teamwork as well as some other abilities such as self-awareness and communication skills.

On the negative side there is addiction, which may more easily appear on younger adolescents, can lead to antipathy to real world. It can further lead to isolation, decrease in social skills and distortion of reality (Genc et al., 2024). In one research significant relationship was found between students' computer game addiction and loneliness (Hülya & Örsal, 2018). Furthermore, it has been shown there is a risk of excessive online gaming which may result in both physical and psychological issues such as emotional dysregulation and stress ("Free Papers Compiled", 2022). On the other hand, video games might help mental health by lowering the symptoms of depression and anxiety (Pine et al., 2020). Studies focusing on games like Candy Crush, Angry Birds, and Limbo have shown that playing in moderate amounts can enhance users' mood by reducing negative emotions, stimulating enjoyment and increasing motivation, particularly in relation to depression (Sternlicht & Sternlicht, n.d.)

1.3 Gaming and self-esteem

Ryan et al. (2006) found that video games can boost self-esteem by promoting feelings of autonomy, competence, and relatedness. Their study showed that players who felt competent and autonomous in their gaming experience had higher self-esteem and more positive moods. This means that gaming may provide psychological benefits, such as increased self-esteem and satisfaction, by fulfilling intrinsic psychological needs.

The fantasy features of World of Warcraft, namely those of avatar creation can improve self-esteem in those unhappy with the reality of their situation as a consequence of representing their ideal selves (Bessière et al., 2007). The resolution of the discrepancy between ideal and actual self serves as a mechanism by which poor mental health (particularly those with high depression scores) might be resolved. The game showed particularly effective in the traits of conscientiousness, extraversion, and neuroticism, with players considering their virtual personas to have more desirable traits, in opposition to this (conscientious, more sociable, and less anxious), a succinct demonstration of MMORPGs offering an escape from the realities of situations that might contribute to poor self-esteem, and allowing players to embody desirable traits (Bessière et al., 2007). Self-esteem, or perception of one's ideal self compared to one's actual self, is crucial to psychological well-being (Mann et al., 2004). Durkin and Barber (2002) found that, regardless of gambling habits, girls generally reported lower self-esteem and more depressed moods than boys, but less gambling behavior was associated with higher self-esteem. A similar pattern was shown in a study of students in secondary education: girls experienced more loneliness and lower self-esteem compared to boys, though suggesting that gambling addiction may not be the primary problem, but a symptom of deeper issues with social competence and self-esteem.

1.4 Gaming and well-being

Huppert and So (2013) determined that for well-being, it is important to understand competence, emotional stability, engagement, meaning, optimism, resilience, self-esteem, positive emotion, positive relationships and vitality. Well-being encompasses overall life satisfaction and emotional health, which are closely linked to optimism and vitality (Johnson et al., 2013). Optimism is the tendency to view situations positively and expect favorable outcomes. It can enhance well-being by fostering a hopeful outlook and reducing stress. Vitality, characterized by high energy and enthusiasm for life, contributes to well-being by promoting physical and mental health, and enhancing one's ability to engage in activities and relationships. Together, optimism and vitality support a positive self-view and resilience, thereby reinforcing overall well-being.

It was observed that in games dependent in self-regulation can negatively affect "vitality" (Przybylski et al., 2009), this effect is also seen when gamers felt compelled to play or played obsessively. On the other hand, when playing from a genuine desire, the negative effect did not

persist. This is consistent with the theories from self-determination that suggest that the feelings of capability and connection are important to feelings of wellness (Deci & Ryan, 2000).

Optimism may be an important combative factor in feelings of low mood, contributing to well- being and mental health, and is influenced by self-confidence and social support (Karademas, 2006). Children with sadness often feel hopeless and have low self-worth. A study showed that video games can help in therapy for sad children by building communication and coping skills. The games: “Lego Star Wars” and “Transformers” (which contain metaphors for strength and overcoming challenges) were found, in a population of 6 boys (aged 9-14), to improve feelings of self-confidence and self-worth, and an overall reduction in sadness. Overall, video games helped these children feel better and improve in school and social areas, though more research is needed to confirm these results (Hull, 2010). This also proves how playing video games can help individuals grow personally by aligning their ideal self-image with their actual self (Bessière et al., 2007).

One comprehensive review explored videogame play with positive well-being. They found range of evidence suggesting that videogames have positive impact on young people's wellbeing. Existing research suggests that videogames contribute to young people's emotional, social and psychological wellbeing. Specially, videogames have been shown to positively influence young people's emotional state, self-esteem, optimism, vitality, resilience, engagement, relationships, sense of competence, self-acceptance, social connections and functioning (Johnson et al., 2013).

1.5 The Role of Online Socializing in Games

Given the new tools available to young people, it was inevitable that online socializing would play a crucial role in their social and emotional well-being (Amichai-Hamburger et al., 2013; Bagwell & Schmidt, 2011). Though they may superficially appear different, research has shown that both shallow and deep friendships exist, both online and offline. In particular, bonding is facilitated by MMORPGs, as shown in the study by Cole and Griffiths (2007) demonstrating that they showed opportunities for social bonding and emotional connection. In fact, young gamers have been observed to perceive their online relationships as equal to or greater than those of the real world (Williams et al., 2006; Yee, 2006), as further evidence of the platform’s importance.

Some potential changes (Valkenburg & Peter, 2011) in terms of closeness and intimacy among friends, particularly relating to how these friendships are maintained and formed have been researched by Snodgrass et al. (2011). Specifically, the effects on World of Warcraft (WoW) players who were already friends, studying the transfer of positive experiences in the game to real life. They found a mitigation of the risks involved with the problematic play, with the moderation of immersive experience as well as a strengthening of social bonds and self- regulation (Snodgrass et al., 2011). These findings are corroborated by similar studies observing emotional and social motivations in gameplay (Colwell, 2007; Hull, 2010; Trepte et al., 2012; Wack & Tantleff-Dunn, 2009).

In their 2007 cross sectional survey, Cole and Griffiths found 912 MMORPG players from 45 countries, found positive links between online gaming and long-lasting friendships, which, again are linked to well-being through the mechanisms of emotional connection and social support. Similar mechanisms in areas of psychological adjustment, self-concept and social involvement were found in a Durkin and Barber (2002) study of 16-year-old students. Similarly, Allahverdipour (2010) and his colleagues studied 444 middle school students and found that moderate gamers had better mental health compared to non-gamers and excessive gamers. Non-gamers experienced the poorest mental health outcomes, whereas moderate gaming offered social and emotional benefits, particularly for boys.

2. Aim and Hypotheses

Research Aim

The aim of this study was to investigate the relationship between different categories of online game content, including those characterized as violent, cooperative, competitive, and educational, and their association on the well-being and self-esteem of players 18 years old and above in different countries.

Hypothesis

Hypothesis 1: Players who engage in cooperative or educational online game content will experience higher well-being and self-esteem compared to players who engage in competitive or violent online game content.

3. Methods

3.1 Study design

A cross-sectional design was employed in this study, utilizing an online survey methodology design, utilizing an online survey methodology.

3.2 Survey description

The survey sought to investigate the relationship between online gaming habits and individuals' well-being and self-esteem. The survey comprised of sections on demographic information, gaming habits, psychological well-being, and self-esteem. Each section was designed to capture specific aspects of the participants' experiences and attitudes towards gaming.

3.2.1 Demographic data

Demographic data was captured through 8 questions.

The following demographic variables were assessed:

a) Assigned sex at birth (*male, female, prefer not to state*);

b) Age measured as an open ended question (18 and above);

c) Nationality measured as free-answer question but has been categorized (*Europe, Africa, Middle East, America, Asia*);

   Europe: Sweden, Austria, Belgium, Bosnia and Herzegovina, Croatia, Denmark, England, Finland, France, Germany, Greece, Hungary, Italy , Kosovo, Netherlands , Norway, Poland, Portugal, Romania, Scotland, Spain, Ukraine, Malta, Ireland

   Africa: Algeria, Morocco, Libya

   Middle East: Lebanon, Egypt, Saudi Arabia, Jordan, Palestine

   America: United States, Brazil, Canada, California, Trinidad and Tobago, Costa Rica, Mexico, Ecuador

   Asia: India, Malaysia, China, Pakistan

d) One game played the most in the past month as a free-answer question;

e) Category of that game (*violent, cooperative, educational, competitive, other*);

Other: Fashion and Gacha, Open world survival/horror, Incremental, Single player, Fun, AI, Adult Visual Novel, De-stressing, Strategy, Driving/Looting Game

f) Time spent playing games daily (*I do not use games on daily basis, less than 1 hour, 1 hour, 2-5 hours, 5-7 hours, 7-10 hours, more than 10 hours*)

g) Optional question for those who are not active on daily basis; the frequency playing games (*3 times per week or more, 1-2 times per week, 1-2 times per month, every few months, I am not playing at all*)

h) Has playing games affected their lives (*yes, no, I don't know*)

3.3 Questionnaire description

Self-Esteem

Rosenberg's Self-Esteem Scale (Rosenberg, 1965) is probably the most widely used measure of self-esteem for adult populations. The scale is composed of 10 items, 5 of which are negatively worded. Although originally constructed as a Guttman-type scale (i.e., items with an ordinal pattern on the attribute), most researchers use a 4-point response format ranging from strongly agree to strongly disagree. Rosenberg's Self-Esteem Scale is the standard measure of self-esteem in psychological research. The scale provides a short, straightforward, and convenient method for measuring global self-esteem. Hagborg (1993) discovered that among 150 adolescents the internal consistency reached 0.89. In other study, Martín-Albo et al. (2007) conducted two evaluations revealing Cronbach's alpha values of 0.85 and 0.88.

Well being

Participants' psychological well-being was assessed using a 6-point Likert scale questionnaire, comprising of 18 items. The psychological well-being scale is originally a scale comprised of 42 items developed by the psychologist Carol D. Ryff. Psychological Wellbeing (PWB) Scale measures six aspects of well-being and happiness: Autonomy, Environmental mastery, Personal growth, Positive relations with others, Purpose in life, and self-acceptance (Ryff, 1989). A

shortened 18-item version was used, which is quicker to administer. This version's subscales have correlation coefficients ranging from 0.70 to 0.89 (Ryff & Keyes, 1995). In the pursuit of understanding well-being, researchers have identified six theory-guided dimensions.

Self-acceptance is reflecting one's attitude towards oneself. Those high in self-acceptance embrace their complexity, acknowledging both strengths and flaws.

Positive relations with others highlight the significance of social connections. Cultivating warm, trusting relationships fosters a profound sense of belonging and mutual support.

Autonomy empowers individuals to navigate life on their terms, resisting societal pressures and adhering to personal values and convictions.

Environmental mastery involves effective management of one's surroundings, using opportunities, and creating surrounding aligned with personal needs and values.

Purpose in life infuses existence with meaning and direction, guiding actions and choices towards meaningful outcomes.

Personal growth is an ongoing journey of self-discovery and development, characterized by openness to new experiences and evolving towards greater self-awareness and efficacy (Ryff & Keyes, 1995, p. 1072).

The Autonomy subscale items are Q15, Q17, Q18. The Environmental Mastery subscale items are Q4, Q8, Q9. The Personal Growth subscale items are Q11, Q12, Q14. The Positive Relations with Others subscale items are Q6, Q13, Q16. The Purpose in Life subscale items are Q3, Q7, Q10. The Self-Acceptance subscale items are Q1, Q2, and Q5, Q4, Q5, Q6, Q7, Q14, Q15 and Q16 are reverse-scored. Reverse-scored items are worded in the opposite direction of what the scale is measuring.

3.4 Data collection

Procedure

The survey was conducted using the Google Forms https://www.google.com/forms/about/ platform and it consisted of eight distinct sections with a total of 38 questions. Out of these, 37 questions were mandatory. The only non-mandatory question asked participants, "If you are not active on a daily basis, how frequently do you play video games?"

Participants were initially presented with an informed consent statement, outlining the purpose of the study, voluntary participation, and confidentiality assurances. Following this, they confirmed their age eligibility and willingness to participate in the research study.

The questionnaire was advertised on Discord servers, Reddit communities, WhatsApp, Facebook and TikTok. It was further shared and advertised by acquaintances. After the collection of data was done survey links were deleted from the social media. The links and further advertising information is posted in an online supplement. The collection of data lasted about two weeks starting 19th of February.

Participants

The target population for the study encompassed individuals aged 18 years and above who engaged in online gaming activities. Upon completing the questionnaire, participants received a confirmation message, affirming the successful submission of their responses and providing contact information for further questions. Our target population is any individuals that have been or are currently playing games and are above 18 years old.

3.4.1 Piloting and refinement

The questionnaire underwent a pretesting phase to ensure its clarity and relevance to the study's objectives. This process involved multiple repetitions of testing, with adjustments made to the questionnaire based on feedback received. The pretesting method employed a small sample of individuals who met the criteria for the study, namely, being aged 18 years and above and actively engaged in gaming activities. Feedback from the pretest participants was asked through online or

face to face. The number of pretest repetitions varied based on the extent of revisions required to refine the questionnaire. Overall, the pretesting process served to enhance the validity and reliability of the questionnaire, ensuring that it effectively captured the intended constructs and minimized potential sources of bias or misunderstanding among participants.

The eligibility criteria for participants was that they are above 18 years old and that they are playing or have played some games in the past. The sampling techniques used were convenience and snowball sampling.

3.5 Ethical considerations

Before the research was conducted the Ethics Committee of the Faculty of Faculty of Humanities and Social sciences in Split has considered the applicant's assurances regarding the maintenance of participants' anonymity and voluntariness, and upon review, has determined that the proposed research is by the Ethical Code. Ethical Committee approval number: 2181-190-24-00004.

By ethical principles, participants in this research were provided with detailed information about the study, including its objectives, procedures, potential risks and benefits, confidentiality measures, and their rights as participants. Before participating, individuals were asked to read and understand this information. By voluntarily agreeing to participate in the survey, participants provided informed consent, indicating their understanding of the study and their willingness to take part in the study. If they declined to participate in the study, they would be directed to the end of the survey and would not be included in the study. Data collection was conducted anonymously to prioritize participant privacy and confidentiality. No personal information, such as email addresses or any other identifying details, was collected besides the responses provided in the survey. Additionally, it is important to note that IP addresses were not collected. Furthermore, all electronic data were securely stored on a password-protected, encrypted computer, ensuring the integrity and security of the collected information.

3.6 Statistical analysis

Descriptive analysis

Descriptive statistics summarized key variables using the arithmetic mean to show the average, the median for the central value, and the 95% confidence interval (CI) to indicate the range within which the true mean likely falls, providing a clear snapshot of the data's central tendencies and variability. The normality of distribution was tested using the Shapiro-Wilk test at a significance level of 0.05.

Comparison analysis

The Kruskal-Wallis test was employed for comparison every type of the game (violent, cooperative, educational, competitive) with well-being and self-esteem. It was compared to the six distinct subscales of well-being as well. Statistical analysis was conducted using JASP Team (2023). JASP (Version 0.18.1).

4. Results

Reliability of the measures

The Autonomy subscale consisted of 3 items (α = 0.50) with 95% CI (0.42, 0.58), the Environmental subscale consisted of 3 items (α = 0.43) with 95%CI (0.33, 0.51), Personal growth subscale consisted of 3 items (α = 0.64) with 95% CI (0.58, 0.7), Positive relation with others subscale consisted of 3 items (α = 0.46) with 95%CI (0.36, 0.54), Purpose in life subscale consisted of 3 items (α = 0.38) with 95%CI (0.27, 0.47), Self-acceptance subscale consisted of 3 items (α = 0.57) with 95%CI (0.49, 0.63). The well-being inventory was found to be highly reliable (18 items; α = 0.82) with 95%CI (0.79, 0.84). The self-esteem inventory was found to be reliable as well (10 items; α = 0.77) with 95%CI (0.74, 0.8).

Demographic characteristics

Majority of sample was male and coming from Middle East with age median of 22 years old. (Table 1). Majority of sample plays cooperative games and spends two to five hours daily on games (Table 2).

Table 1

Demographic characteristics of participants

Sample Characteristics		N(%)
Gender		
	Male	305 (68.2)
	Female	123 (27.5)
	Prefer not to say	17 (3.8)
Age (Md, IQR)		22 (18-26)
Nationality category		
	Europe	156 (34.9)
	Africa	6 (1.3)
	Middle East	230 (51.4)
	America	40 (10.3)
	Asia	11 (2.4)
	Australia	2 (0.4)

Note. For demographic characteristics of each question included in the survey refer to the appendix.

Table 2

Demographic characteristics of participants

Sample Characteristics		N(%)
Perceived genre		
	Cooperative	247 (54.8)
	Violent	91 (20.2)
	Educational	34 (7.5)
	Competitive	63 (14.1)
	Other	10 (2.2)
Time playing		
	I do not use games on daily basis	51 (11.3)
	Less than 1 hour	28 (6.2)
	1 hour	86 (19.1)
	2-5 hours	191 (42.4)
	5-7 hours	60 (13.3)
	7-10 hours	14 (3.3)
	More than 10 hours	15 (3.3)

Majority of participants believes that playing games has affected their lives (Table 3). The Shapiro-Wilk test was conducted to evaluate the normality of the data distribution. The results indicated that the data significantly deviated from a normal distribution for Well-Being ($W = 0.942$, $p < .001$), Self-Esteem ($W = 0.974$, $p < .001$), Autonomy ($W = 0.975$, $p < .001$), Environment ($W = 0.986$, $p < .001$), Positive Relation with Others ($W = 0.984$, $p < .001$), Personal Growth ($W = 0.978$, $p < .001$), Purpose with Others ($W = 0.985$, $p < .001$), Self-Acceptance ($W = 0.985$, $p < .001$), and Age ($W = 0.763$, $p < .001$). These results indicate that the distributions of all tested variables significantly deviate from normality.

Table 3

Descriptive statistics of participants

Variable	Levels	N(%)
Time playing		
	3 times per week or more	15(3.3)
	1-2 times per week	21(4.6)
	1-2 times per month	9(2.0)
	every few months	2(0.4)
	I am not playing at all	4(0.8)
Has playing games affected their lives		
	Yes	240(53.9)
	No	111(24.9)
	I don't know	94(21.1)
Self-esteem (Md, IQR)		25 (23-26)
Well-being (Md, IQR)		76 (70-90)
Autonomy (Md, IQR)		14 (11-16)
Environment (Md, IQR)		13 (10-15)
Personal Growth (Md, IQR)		13 (11-15)
Positive Relation with Others (Md, IQR)		13 (11-16)
Purpose in Life (Md, IQR)		13 (11-16)
Self-acceptance (Md, IQR)		12 (10-15)

Table 4 presents the median scores and 95% confidence intervals for various measures of well-being (Autonomy, Environment, Purpose with others, Personal growth, Self-acceptance, Positive relation with others) and self-esteem across different types of online games (cooperative, competitive, violent, educational). The results indicate that there are no statistically significant differences in well-being measures across different types of online games ($p > 0.05$). Therefore,

there is no strong evidence to suggest that different types of online games are associated with well-being or self-esteem.

Table 4

Comparison of Well-Being and Self-Esteem Across Different Game Content Categories Using Kruskal-Wallis Test

	Md (95%CI)				
	Cooperative	Competitive	Violent	Educational	Kruskal-Wallis p value
Autonomy	13 (12- 14)	13 (12-14)	14 (13-15)	15 (13-17)	.119
Environment	13 (12- 13)	12 (11-14)	13 (12-14)	13 (11-15)	.583
The purpose with others	13 (13- 14)	13 (12-14)	13 (12-14)	14 (12-16)	.407
Personal Growth	13 (12- 13)	14 (12-14)	13 (12-14)	13 (12-14)	.702
Self-acceptance	12 (12- 13)	12 (11-13)	13 (12-14)	12 (11-14)	.974
Positive relation with others	13 (13- 14)	13 (12-14)	13 (13-14)	13 (12- 15)	.749
Well-being	76 (74- 78)	75 (71-78)	78 (74-84)	80.5 (73-89)	.369
Self-esteem	25 (24- 25)	25 (24-25)	25 (24-26)	24.5 (23-27)	.908

The results from Table 5, derived from Mann-Whitney tests, are comparing well-being subscales and self-esteem between "League of Legends" players and non-players. They indicate

significant differences. Players of the game reported lower levels of autonomy, environmental satisfaction, purpose with others, personal growth, self-acceptance, positive relations with others, and overall well-being compared to non-players ($p < 0.001$). While the difference in self-esteem was less, it remained moderately significant ($p = 0.008$). These findings suggest that engaging with "League of Legends" may be negatively associated with various aspects of well-being, challenging stereotypes about gaming's impact on mental health. However, further research is needed to establish causation and understand long-term effects.

Table 5

Comparison of self-esteem and well-being scores between those that play League of Legends and those that do not

	Md (95%CI)		
	League of Legends		
	Yes	No	Mann-Whitney p value
Autonomy	13 (12, 13)	15 (14, 16)	< .001
Environment	12 (12, 13)	13 (13, 14)	< .001
The purpose with others	13 (12, 13)	14 (14, 15)	< .001
Personal Growth	12 (12, 13)	14 (14, 15)	< .001
Self-acceptance	12 (12, 12)	14 (13, 15)	< .001
Positive relation with others	13 (12, 12)	14 (13, 15)	< .001
Well-being	73 (72, 74)	86 (82, 89)	< .001
Self-esteem	25 (24, 25)	25 (25, 26)	.008

5. Discussion

This study wanted to explore the relationship between game content, self-esteem and well-being. Findings suggest that there is no relationship between different game content with well-being and self-esteem. This implies that the type of game played may not be a major determinant of how players feel about themselves or their general life satisfaction. Instead, other factors might play a more substantial role in influencing well-being and self-esteem. Additionally, the predominance of League of Legends players among participants could skew results, potentially overlooking nuances in how other game types affect well-being and self-esteem. Since most of the participants were League of Legends players, the study explored their relationship with self-esteem and well-being, revealing significant results that indicate a negative association. Specifically, League of Legends players showed lower levels of self-esteem and well-being compared to players of other games.

In exploring the relationship between game content and players' self-esteem and well-being, Social Identity Theory (SIT) provides a useful framework. Gaming encourages social interactions and fosters a sense of belonging among players, a phenomenon well-explained by Social Identity Theory (SIT). According to SIT, an individual's sense of self is shaped by their connection to a particular social group, with the "personal self" merging with the "collective self" based on their affiliation with that group (Hodson & Earle, 2020). This connection significantly influences self-esteem and self-perception. This framework aligns with the behaviors observed in League of Legends (LoL), a popular multiplayer online battle arena (MOBA) game that combines a highly competitive and social environment. Players in LoL often form teams, participate in ranked matches, and engage in extensive communication both within and outside the game. They identify strongly with specific in-game roles (e.g., jungler, support) and their teams, which provide a sense of identity and belonging. The ranking system in LoL facilitates social comparison, impacting players' self-esteem and motivation. For instance, reaching a high rank like Diamond or Challenger can enhance a player's self-esteem through positive comparisons with lower-ranked players. Conversely, poor performance or losing matches can negatively affect self-esteem. The connection to SIT is evident as players' self-esteem is tied to their in-game success and team achievements. They may display behaviors such as blaming teammates to protect their self-esteem and exhibit strong loyalty to their champions and teams. This interplay between in-game

performance and self-perception underscores how their virtual identity impacts real-life self-esteem and well-being.

The interplay between in-game identity and real-life self-perception is a critical aspect to consider in understanding the impact of online gaming on self-esteem and well-being However, a disconnect can occur between how players perceive themselves in the game and how they feel in their personal lives. This dissonance between their in-game identity and real-life self can lead to negative effects on self-esteem and well-being. While the game promotes a sense of camaraderie among team members and friends, it also fosters fierce rivalries, leading to mixed emotional experiences for players. This competitive environment, while rewarding at times, can also contribute to feelings of inadequacy or frustration, especially when players fall short of their in-game expectations.

Research by Gaetan et al. (2012) found that teens addicted to video games not only feel less capable in real life compared to their peers, but they also report lower life satisfaction. This lower life satisfaction likely contributes to their decreased self-esteem and overall well-being. In contrast, these teens view their virtual selves as more skilled and better suited to the game environment, finding their virtual life more satisfying than their real one. This dynamic can lead to addiction, as the game allows them to "live" as a better version of themselves, ultimately causing a conflict between their virtual identity and their real-life identity, which aligns with the negative correlations found in this research.

As players' self-worth is tied to their in-game performance and interactions, toxic behavior can escalate, impacting overall well-being. Implementing chat restrictions and bans for toxic behavior can help mitigate these issues by fostering a more positive environment. By reducing the frequency of negative interactions, these measures can lower stress levels and contribute to a healthier gaming experience, aligning with SIT’s emphasis on maintaining a supportive group dynamic.

Furthermore, players form deep connections with their champions through personalized elements such as backstory, gameplay, and skins. The lore behind each champion enhances engagement by providing rich narratives and personalities, while skins, which can be purchased with real money or earned through gameplay, allow for further customization. This effort and financial investment increase attachment to the champions and the game itself. This immersion

links in-game success to players' self-esteem, so poor performance or a lack of progress can negatively affect their well-being. Research by John and Geoff supports this idea, showing that identifying with game characters who exhibit strength can improve self-esteem and help players cope with real-life challenges like bullying (Hull, 2010). Thus, the game's immersive experience, coupled with the effort and money invested, both enhances player attachment and can impact emotional health.

To further explore this connection, participants were asked to categorize their game content to reveal their primary reason for playing. For example, selecting "cooperative" might suggest a focus on social interaction, whereas choosing "competitive" indicates a goal-oriented mindset. This classification might help in understanding how the perceived purpose of the game influences players' behavior and emotional responses, aligning with the observed impact on self-esteem and well-being.

Interestingly, although many participants identified their gameplay as cooperative, their actual in-game behavior could potentially appear competitive and toxic. One study highlights that negative emotional experiences, such as competitiveness and perceived loss, can directly induce toxic behaviors (Kou, 2020). For instance, when a team is losing, players may become frustrated and start acting aggressively towards their teammates, which can manifest as flaming or other forms of communicative aggression. This paper shows how competition in games like League of Legends is closely tied to toxicity due to the high-stakes environment it creates, where players often experience intense emotions such as frustration, anxiety, and stress. This competitive atmosphere can lead to aggressive behaviors directed at teammates, as players may lash out when they feel their chances of winning are threatened. This discrepancy between identified game content and behavior in game could stem from subjective perception influenced by one's own reasons of playing the game which may be in dissonance with the behavior displayed in the game. The subjective perception of why players choose certain game types might be at odds with their actual behavior. For example, while players may claim to prefer cooperative gameplay for social reasons, the competitive elements of the game could drive them to exhibit more competitive behavior. This competitive aspect of the game may overshadow the cooperative intentions, leading to a greater focus on competition and a potential impact on players' well-being and self-esteem.

Further improvements for future research could enhance the accuracy of the findings. A cross-sectional approach was used, allowing for data collection from a geographically diverse sample of participants. However, future research could benefit from a longitudinal study to better understand the long-term effects of different game content on players' well-being and self-esteem. A longitudinal approach would enable tracking changes in players' mental health over time, offering deeper insights into how ongoing engagement with specific types of game content might influence psychological well-being. This method could help identify patterns and causal relationships that a cross-sectional study cannot fully capture. The method of recruiting participants, primarily through Discord, may have unintentionally introduced a bias toward cooperative game players. This bias could affect how participants classified their game genres based on personal reasons rather than the actual game genres defined by developers. Additionally, the current approach, which required participants to select only one genre, might have limited their ability to accurately describe the multifaceted nature of some games. Future research could benefit from exploring alternative recruitment methods and offering multiple genre options to better capture the diversity of gaming experiences. Furthermore, it would be valuable to further explore the reasons behind players' choices to engage with specific game content and compare these reasons to discrepancies observed in their in-game competitive behavior. Understanding how these motivations relate to mental health and well-being could provide deeper insights into the impact of game content on players' emotional and psychological states.

Recent studies suggest that life satisfaction and well-being might be strongly linked to personality traits. Research involving multiple language samples has shown that life satisfaction is highly consistent with personality traits, such as emotional stability and extraversion (Mõttus et al., 2024). This indicates that well-being could reflect underlying personality characteristics. Therefore, future research should explore how personality traits might influence the relationship between gaming experiences and well-being. This perspective could provide a deeper understanding of the factors affecting self-esteem and well-being in various gaming contexts.

6. Conclusion

This research explored the relationship between different categories of online game content and their impact on players' well-being and self-esteem, with a specific focus on League of Legends players due to their prevalence among participants. No significant differences were found between different game content categories on self-esteem and well-being. Further research should consider alternative recruitment methods and allow for multiple genre classifications to capture the nuanced nature of gaming experiences more accurately.

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Abstract

This study investigates the relationship between various categories of online game content and their association with players' self-esteem and well-being, with a particular focus on players of League of Legends (LoL) due to high prevalence of participants playing it. The research aimed to explore whether different game genres, including cooperative, competitive, educational, and violent games, correlate with players' self-esteem and well-being. A cross-sectional design was employed using an online survey distributed to a geographically diverse sample. Descriptive statistics and the Kruskal-Wallis test in statistical software JASP were utilized to analyze differences across game content categories. Results indicated no significant association between any game content type and players' self-esteem or well-being. However, a notable exception was observed among League of Legends players, who displayed a negative association with both self-esteem and well-being compared to players of other game genres. This negative association may be further explored through Social Identity Theory, which examines how group affiliations and competitive dynamics influence self-perception and emotional outcomes, or through the specific competitive aspects inherent in the game. The study also highlighted that these players reported lower levels of well-being and self-esteem, suggesting that the highly competitive environment and the effort and financial resources invested in personalization might be contributing factors to this association. Future research should delve deeper into the motivations behind players' engagement with different game types and investigate the broader mental health implications of competitive gaming environments. Additionally, a longitudinal approach could provide more insights into how these dynamics evolve over time.

Sažetak

Ova studija istražuje povezanost između različitih kategorija online igara i njihove povezanosti s samopouzdanjem i dobrobiti igrača, s posebnim fokusom na igrače League of Legends (LoL) zbog visoke prevalencije sudionika koji igraju ovu igru. Istraživanje je imalo za cilj ispitati povezanost između različitih žanrova igara, uključujući kooperativne, kompetitivne, obrazovne i nasilne igre, sa samopouzdanjem i dobrobiti igrača. Koristio se presječni dizajn uz online anketu distribuiranu geografskom raznoliku uzorku. Deskriptivna statistika i Kruskal-Wallisov test u statističkom softveru JASP korišteni su za analizu razlika između kategorija sadržaja igara. Rezultati su pokazali da nema značajne povezanosti između bilo koje vrste sadržaja igre i samopouzdanja ili blagostanja igrača. Međutim, zapažena iznimka primijećena je kod igrača League of Legends, koji su pokazali negativnu povezanost s oboje, samopouzdanjem i dobrobiti, u usporedbi s igračima drugih žanrova igara. Ova negativna povezanost može se dodatno istražiti kroz Teoriju socijalnog identiteta, koja proučava kako grupne pripadnosti i kompetitivna dinamika utječu na samo-percepciju i emocionalne ishode, ili kroz specifične kompetitivne aspekte inherentne igri. Studija je također istaknula da su ti igrači izvijestili o nižim razinama dobrobiti i samopouzdanja, što sugerira da visoko kompetitivno okruženje i uložen trud i financijska sredstva u personalizaciju mogu biti doprinosni faktori ovoj asocijaciji. Buduća istraživanja trebala bi dublje istražiti motive iza angažmana igrača s različitim vrstama igara i istražiti šire mentalno zdravlje u kontekstu kompetitivnih okruženja igara. Dodatno, longitudinalni pristup mogao bi pružiti dublje uvide u to kako se ove dinamike razvijaju s vremenom.

Supplement

Table 6

Descriptive statistics self-esteem

	M	SD
1. On the whole, I am satisfied with myself*	2.36	0.89
2. At times I think I am no good at all	2.64	0.89
3. I feel that I have a number of good qualities*	2.27	0.91
4. I am able to do things as well as most other people*	2.29	0.96
5. I feel I do not have much to be proud of	2.31	0.95
6. I certainly feel useless at times	2.58	0.95
7. I feel that I'm a person of worth, at least on an equal plane with others*	2.4	0.95
8. I wish I could have more respect for myself	2.6	0.95
9. All in all, I am inclined to feel that I am a failure	2.21	0.94
10. I take a positive attitude toward myself*	2.23	0.95

Note: The items with * are reverse scored. The range of each item is from 1.00 to 4.00

Table 7

Descriptive statistics Well-being

	M	SD
11. I like most parts of my personality	4.21	1.73
12. When I look at the story of my life, I am pleased with how things have turned out so far	4.27	1.45
13. Some people wander aimlessly through life, but I am not one of them	4.03	1.59
14. The demands of everyday life often get me down*	4.22	1.56
15. In many ways I feel disappointed about my achievements in life*	4.41	1.64
16. Maintaining close relationships has been difficult and frustrating for me*	4.62	1.71
17. I live life one day at a time and don't really think about the future*	4.37	1.66
18. In general, I feel I am in charge of the situation in which I live	4.29	1.63
19. I am good at managing the responsibilities of daily life	4.07	1.55
20. I sometimes feel as if I've done all there is to do in life*	5	1.72
21. For me, life has been a continuous process of learning, changing, and growth	4.87	1.64
22. I think it is important to have new experiences that challenge how I think about myself and the world	4.77	1.77
23. People would describe me as a giving person, willing to share my time with others	4.35	1.58

24. I gave up trying to make big improvements or changes in my life a long time ago*	4.75	1.68
25. I tend to be influenced by people with strong opinions*	4.47	1.59
26. I have not experienced many warm and trusting relationships with others*	4.51	1.72
27. I have confidence in my own opinions, even if they are different from the way most other people think	4.67	1.69
28. I judge myself by what I think is important, not by the values of what others think is important	4.7	1.72

Note: The items with * are reverse scored. The range for each item is from 1.00 to 7.00.

Figure 1

Daily frequency of playing videogames

Obrazac A.Č.

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