

ROLE OF PROTECTIVE AND RISK FACTORS IN INTERNET GAMING ADDICTION AMONG YOUNG ADULTS: AN EXPLORATORY STUDY

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ABSTRACT

People suffering from internet gaming addiction have been frequently suffered from difficulties in emotion regulation. This paper aims to explore the protective factors that might lower the chances of an individual developing internet gaming addiction, with an emphasis on the role of emotion regulation and mindfulness and risk factors that may increase the internet gaming addiction which includes social anxiety and loneliness. A sequential exploratory design was adopted in this study. In the qualitative phase, six informants living in Rawalpindi and addicted to internet games participated in interviews. In the quantitative phase, 345 respondents between the ages of 18 to 25, exhibited internet gaming addiction and lived in Rawalpindi were included using purposive sampling technique. The following instruments were used: Emotion regulation Questionnaire, Problematic Online Gaming Questionnaire, mindfulness attention awareness scale, social interaction anxiety scale and RULS loneliness scale. The result indicates significant positive correlation between social anxiety and loneliness and negative correlation between mindfulness and emotion regulation. The findings of the study will help parents and caregivers adopt healthier practices to promote positive emotional regulation and reduce the risk of internet gaming addiction. Emotional regulation treatment can assist in ending the never-ending cycle of negative feelings, and practitioners should effectively apply emotional regulation techniques.

Keywords: Internet gaming addiction, Social Anxiety, Loneliness, Emotion Regulation, Mindfulness

CHAPTER 1 INTRODUCTION

In today's digital age, young adults are increasingly drawn to screens and gaming, seeking both entertainment and social connections. However, this growing involvement in online gaming has raised concerns about the

impact it may have on mental health. It is also becoming more evident how engaging in online gaming can lead to internet gaming addiction (Gao et al., 2022).

Internet gaming addiction, a relatively new and potentially addictive behavior, has gained significant global research attention. Meta-

analyses indicate that its overall prevalence ranges from 3.05% to 3.3% worldwide, though studies with representative data report rates below 2% (Kim et al., 2022; Stevens et al., 2021).

(Cheng et al., 2014) conducted a meta-analysis of 80 researches with an average participant age of 18.42 years and concluded that the prevalence of Internet addiction was 6.0% worldwide. The prevalence rates for the seven world regions examined were 10.9% in the Middle East, 8.0% in North America, 7.1% in Asia, 6.1% in South and East Europe, 4.3% in Oceania, 2.6% in North and West Europe, and 0% in South America. These figures show that addiction to online gaming is spreading throughout the world and affecting a sizable percentage of young adults.

Research has shown that online gaming is increasingly replacing various life activities, including studying, employment, social interactions, family events, and routine daily activities such as watching television and participating in sports (Van Rooij, 2011).

The present study aims to explore the risk and protective factors of internet gaming addiction using a sequential exploratory design, which facilitates a clear understanding of the problematic nature of internet gaming addiction.

Internet Gaming Addiction

According to (Lemmens et al., 2009), internet gaming addiction is the excessive and uncontrollably high level of computer or video game use, despite the negative effects that come with it. It is regarded as both a mental health condition and a kind of behavioral addiction (Gentile et al., 2009).

The following are the DSM-5 criteria for internet gaming addiction: Internet gaming-related symptoms include: (i) obsession with the game; (ii) withdrawal symptoms when it is stopped; (iii) tolerance, which is the need to play games for longer periods of time; (iv) ineffective attempts to control gaming; (v) loss of interest in past hobbies and forms of entertainment because of gaming; (vi) continued excessive use of the game despite awareness of psychosocial problems; (vii) lying to family, therapists, or other people about how much time is spent playing games; (viii) using

gaming as a way to escape from or relieve a bad mood; and (ix) endangering or losing a significant relationship, job, or opportunity for education or career (APA, 2013).

Online and offline gaming are distinguished in the most recent edition of the International Classification of Diseases (WHO, 2018). There isn't much research on how these two gaming genres differ from one another. According to one study by (Hainey et al., 2011), gamers motivations remained largely the same whether they played games online or off. On the other hand, compared to offline gamers, (Liu & Peng, 2009) found that players of enormously multiplayer online role-playing games tended to game longer and displayed more signs of gaming addiction.

In 2017, Mihara and Higuchi reviewed thirteen longitudinal and twenty-eight cross-sectional studies from around the world. These studies looked into a range of risk and protective factors linked to internet gaming addiction, such as gender and demographics, game-related factors (like how much time is spent gaming), psychological factors (like anxiety and depression), and influences from family and education (like parenting styles). However, it was difficult to determine which factors are most important in the spread of internet gaming addiction due to the lack of research into the strength of these correlations and the lack of quantitative syntheses (Mihara & Higuchi, 2017). Various risk and protective factors influence the development of internet gaming addiction. Risk factors such as impulsivity, parental attitudes, loneliness, and social anxiety have been widely associated with increased vulnerability to gaming addiction (Genis & Ayaz, 2012; Kok Eren, 2018; Weinstein et al., 2015). These factors often lead individuals to use gaming as a coping mechanism for negative emotions or unmet social needs, creating a reinforcing cycle of addiction. Protective factors, including mindfulness, emotional regulation, resilience, and positive social support, act as buffers by promoting emotional stability, self-awareness, and healthier coping strategies (Estevez et al., 2017; Guadix et al., 2016; Mirchica et al., 2020).

Among these factors, emotional regulation, mindfulness, social anxiety, and loneliness are particularly important due to their interconnected nature and strong predictive value in both risk and resilience pathways. Emotional regulation, for instance, serves as a key protective factor by reducing impulsivity and enhancing adaptive responses to stress (Yen et al., 2017; Akbari et al., 2023). Similarly, mindfulness fosters self-awareness and reduces maladaptive behaviors, while loneliness and social anxiety are significant risk factors that often drive excessive gaming. Understanding these factors provides a foundation for targeted interventions, such as mindfulness-based therapies and emotional regulation training, which can mitigate risks and promote mental well-being.

A variety of factors have been investigated as protective and risk factors for internet gaming addiction as personality factors, environmental factors, cultural factors and psychosocial factors (Mihara & Higuchi, 2017).

Emotion regulation

The term emotional regulation refers to the processes involved in either amplifying positive emotions (i.e., up-regulation) or reducing negative emotions (i.e., down-regulation). It entails controlling emotional arousal, understanding, and accepting emotions, as well as having the potential to behave in ways that one wants to regardless of how they are feeling (Gratz & Roemer, 2004).

The two most often used techniques for suppressing emotions are reappraisal and repression. Reappraisal is a process that takes place early in the emotion-generating process and entails changing how a situation is interpreted in order to lessen its emotional impact (Gross, 2002). Conversely, suppression occurs later in the emotion-generating process and involves suppressing the expression of inner emotions (Gross, 2002). The application of different emotion regulation techniques frequently aids in the development of emotional control. Adjusting/reappraising, accepting/tolerating emotions, and problem-solving are a few examples of adaptive emotion regulation

techniques. On the other hand, maladaptive emotion regulation techniques are generally thought to include rumination, suppression, and hiding or avoiding feelings.

As a type of cognitive change, cognitive reappraisal is a previous tactic that requires interpreting a situation that may bring out strong emotions in a way that modifies the situation's emotional effect before it has fully materialized (Gross & John, 2003). Numerous studies have compared suppression and reappraisal. Reappraisal and adjustment techniques entail reinterpreting the circumstances through a cognitive lens in order to alter feelings. Inhibiting actions linked to emotional reactions is the definition of suppression (Gross & Levenson, 1993).

According to (Gross & Levenson, 1993), One response-focused strategy is emotion suppression, which involves purposefully preventing ongoing emotional expression. According to a theory put forth regarding emotion regulation, people with greater deficits in this area are more likely to take risks in an effort to lessen or eliminate the experience of unpleasant emotions (Weiss et al., 2015). Emotion suppression, according to research, is helpful when people wish to change how they express their emotions, but it has a significant negative impact on relationships, physiology, and cognition. It also fails to provide subjective relief from the experience of negative emotions (Gross, 2002). Due to these findings, emotion suppression is now generally viewed as a "maladaptive" regulatory strategy and cognitive reappraisal as a "adaptive" strategy (Gross & John, 2003). According to study those who lack the potential to control their emotions are more likely to engage in addictive behaviors (Weiss et al., 2015).

Mindfulness

Mindfulness is commonly defined as the observation of mental phenomena in a nonjudgmental manner (Bishop et al., 2004). Rooted in various Eastern and Western religious and spiritual traditions, mindfulness can manifest in different forms across these traditions (Arsalan et al., 2022). It involves the intentional

observation of the body and mind, accepting experiences as they occur in the present moment (Heon, 2008).

In order to promote educated and self-endorsed behavioral regulation—which has long been linked to improved well-being—mindfulness is important in assisting people in breaking free from automatic thinking, habits, and detrimental behavior patterns (Ryan & Deci, 2000). The central aim of recent research has been to examine the empirical links between mindfulness and well-being (Brown & Ryan, 2023). Moreover, mindfulness is considered a personality trait related to perceived emotions and behaviors. Individuals with high levels of mindfulness adopt an open and receptive attitude toward their current experiences, effectively mitigating the impact of stressors.

Social anxiety

Social anxiety commonly referred to as social phobia, which can start in childhood and adolescence and possibly develop into a long term condition that lasts the entirety of a person's life. Its hallmarks include a severe fear of one or more social situations that causes extreme distress, an exaggerated perception of the possible drawbacks of social evaluation, and a diminished capacity to face feared social situations (Lee & Stapinski, 2012).

The differentiation of social phobia from agoraphobia and specific phobias occurred over fifty years ago, in 1966. Humans have an inbuilt desire to form and sustain meaningful, long-lasting, and meaningful social relationships, but people with severe social anxieties or social phobias frequently find it difficult to fulfill this basic need. Since then, the perception of social phobia has changed from one of a rare and ignored illness to one that is acknowledged as widespread throughout the world (Moore & Johnson, 2009).

Irrational concerns and internalized emotions of inadequacy, which often impede social interaction, are characteristics of social phobia. These anxieties may be the outcome of shame experiences in childhood or adolescence, which can lead to low self-esteem, self-dissatisfaction,

and an increased sensitivity to humiliation (Pinto et al., 2006). Because social contacts can make one feel unwelcome and undervalued, people who suffer from social phobia typically steer clear of them. Participation in online gaming provides a safer avenue for social connection (Lee & Stapinski, 2012). While interpersonal communication is rarely required in online games, it is simple to initiate and regulate. These games give players the ability to manage the breadth and depth of their social relationships. Therefore, in order to satisfy their social relational demands and avoid the stress that comes with offline social settings, socially phobic gamers may turn to online gaming (King et al., 2014). However, this reliance on online interactions may lead to increased feelings of loneliness, which can be a risk factor for internet gaming addiction.

Loneliness

According to (Heinrich et al., 2006), loneliness is an emotional state marked by subjective feelings of social isolation and can be a sign that one's relationships aren't fulfilling or adequate. It describes both the sensation of being deprived in comparison to others as well as the experience of being alone (Larose et al., 2002). Certain studies distinguish between social and emotional loneliness. Emotional loneliness is a lack of intimacy with close friends, regardless of the number of friends one has, whereas social loneliness is related to one's lack of company and is frequently associated with the absence or low number of close friends.

Thus, some individuals may experience social isolation without feeling lonely, whereas others may feel lonely even in the presence of others (Qualter & Munn, 2002). Research supports the subjective nature of loneliness, revealing that it is more closely related to the quality rather than the quantity of relationships (Masi et al., 2011).

Furthermore, the experience of loneliness is found to be unrelated to the duration of social activities or the amount of time spent alone (Hawkey et al., 2003). Loneliness has been identified as the most significant predictive variable of problematic internet use (Ceyhan,

2008). Given the relationship between online game addiction and internet addiction (Jiang, 2014), it can be inferred that loneliness is linked with online game addiction, thereby contributing to existing studies on the connection between loneliness and online gaming.

Literature Review

Emotion regulation and Gaming Addiction

People diagnosed with Internet gaming addiction often experience symptoms of depression, anxiety, and hostility, with emotional regulation playing a significant role in these mood disturbances. A study conducted by (Yen et al., 2017) evaluated emotional regulation in individuals with IGA and explored the relationships between emotional regulation, depression, anxiety, and hostility among young adults. The researchers recruited 87 participants with IGA and a control group of 87 individuals without a history of gaming addiction. All participants underwent diagnostic interviews based on the criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, and completed questionnaires assessing emotional regulation, depression, anxiety, and hostility. The findings revealed that individuals with internet gaming addiction were less likely to engage in cognitive reappraisal and more likely to suppress their emotions. Linear regression analysis indicated that higher levels of cognitive reappraisal and lower levels of expressive suppression were associated with reduced depression, anxiety, and hostility among those with internet gaming addiction. Thus, the emotional regulation strategies employed by individuals with internet gaming addiction could be contributing factors to their tendencies toward depression and hostility.

In a separate study involving a sample of 380 adolescent students from a secondary school in Italy, (Akbari et al., 2023) confirmed that emotion regulation was negatively correlated with dysfunctional internet use. However, there remains a gap in understanding which specific emotion regulation strategies play a predominant role in these dysfunctional behaviors. This highlights the need for further research to

identify the most impactful strategies in relation to internet gaming addiction and emotional regulation.

In the study conducted by (Estevez et al., 2017), 472 students between the ages of 13 and 21 were selected from high schools and vocational education centers to make up the sample. The results showed that emotion regulation predicted all addictive behaviors evaluated, such as problematic internet use, alcohol and drug abuse, gambling disorders, and addiction to video games. On the other hand, it was discovered that attachment was a predictor of addictions unrelated to substances, like gambling disorders, video game addictions, and problematic internet use.

Another study with 1,291 teenagers looked at the connections between problematic online gaming and age, gender, difficulty regulating emotions, and perceived social support. Under the guidance of their professors, participants filled out the Multidimensional Scale of Perceived Social Support, the Game Addiction Scale (GAS), and the Difficulties in Emotion Regulation Scale (DERS). Participants' average age was 14.7 years, and 13.5% of them (n = 144) reported having IGA. The findings showed that men were far more likely than women to engage in harmful online gaming. Furthermore, problematic internet gaming was substantially correlated with male gender, high emotional dysregulation, and low perceived social support (Uçur & Dönmez, 2021). These studies highlight the critical role of emotion regulation in predicting various addictive behaviors, emphasizing the need for targeted interventions that address emotional regulation strategies to mitigate the risk of addiction among adolescents.

Loneliness and gaming addiction

The feeling of loneliness, which can manifest at every stage of human development, has particularly significant effects during adolescence and young adulthood (Qualter et al., 2015).

According to (Krosbakken et al., 2018), the purpose of the study was to look into the causes and effects of video game addiction as a unidimensional construct (pathological gaming).

A nationally representative sample of 3,000 teenagers, who were on average 17.5 years old, was selected in 2012 from Norway's population registry and asked to take part in yearly surveys for a period of three years. The participants filled out questionnaires about their addiction to online games, loneliness, anxiety, and depression. The results of the study indicated that problematic gaming behaviors were associated with loneliness.

Another study focused on 4th-grade students at a primary school in a city center during the 2017–2018 academic year, where all students in the grade were included without sampling. Data was collected using the “Personal Information Form,” “Computer Game Addiction Scale,” and “UCLA Loneliness Scale.” Statistical analyses, including Mann Whitney U test, Kruskal Wallis test, and Correlation Analysis, were employed to evaluate the data. Of the participants, 50.7% (n=104) were female, with the most common number of siblings being one (39.0%, n=80). The majority of students stated that their father (34.1%, n=69) and mother (31.7%, n=65) had both earned their high school diplomas. The Computer Game Addiction Scale had an average score of 48.66 ± 27.02 (minimum: 21.00, maximum: 105) and the UCLA Loneliness Scale had an average score of 40.55 ± 8.50 (minimum: 22.00, maximum: 64). Students' scores on the loneliness scale and their scores on the computer game addiction scale showed a weak, positive, and statistically significant relationship ($r=0.357$; $P<0.000$) (Kok Eren, 2018).

These studies highlight the complex relationship between loneliness and gaming addiction, suggesting that loneliness may not only be a consequence of gaming addiction but also a contributing factor to its development, particularly among adolescents and young adults. A comprehensive survey was conducted to collect data from youths aged 15 to 25 years across three countries: the United States (N=1212; mean age 20.05, SD 3.19; 50.17% women), South Korea (N=1192; mean age 20.61, SD 3.24; 50.42% women), and Finland (N=1200; mean age 21.29, SD 2.85; 50.00% women). The study assessed perceived loneliness using a 3-item Loneliness

Scale and measured three addictive behaviors: excessive alcohol use, compulsive internet use, and problem gambling. Linear regression analyses revealed that loneliness was significantly associated with compulsive internet use among youths in all three countries ($P<.001$). Even after accounting for confounding psychological variables, this association held true for excessive alcohol consumption ($P<.001$) and problem gambling ($P<.001$) in the South Korean sample (Salovanian et al., 2020).

Another study examined the relationship between internet addiction and loneliness among Greek adolescents. The participants included 100 students aged 13 to 15 years (mean age 14.3, SD 0.647) from Volos. The Greek version of the Internet Addiction Test (Young, 1999) was used to assess internet addiction, while the Children's Depression Inventory (Kovacs, 1981) was utilized to investigate loneliness. The findings indicated a high positive correlation between loneliness and internet addiction, with statistically significant differences ($p < 0.001$) observed between addicted students and those in the control group. The results suggest that students with internet addiction experience significantly higher levels of loneliness, highlighting the urgent need for further study on this phenomenon (Argyris et al., 2015). These studies underscore the critical relationship between loneliness and various forms of addiction, particularly compulsive internet use, across different cultural contexts. They suggest that loneliness may serve as both a precursor and a consequence of addictive behaviors, emphasizing the importance of addressing emotional well-being in prevention and intervention strategies.

Social Anxiety and Gaming Addiction

Even after adjusting for general anxiety and depression, social anxiety was found to be a significant predictor of problematic internet use in a study involving a general sample of 338 participants. The results showed that although perceived relationship quality was the same, people with social anxiety felt more in control and were less likely to receive a negative evaluation when interacting online. Moreover,

the association between problematic internet use and social anxiety was partially explained by negative expectations during face-to-face interactions. Additionally, preliminary data indicated that a predilection for online communication might make avoiding in-person interactions even more difficult. The study also showed that social anxiety may cause people to seek solace in online settings, where they feel more at ease because of the perceived safety and control over interactions. This dependence on online communication has the potential to reinforce face-to-face avoidance, starting a vicious cycle that could eventually make social anxiety worse.

One study aimed to determine the relationships among digital game addiction, social anxiety, and parental attitudes in adolescents, identifying risk factors associated with these parameters. This cross-sectional study involved a sample of 1,379 students aged 14–17 years. Data were collected using a Personal Information Form, the Digital Game Addiction Scale, and the Social Anxiety Scale for Adolescents, and the Parental Attitude Scale. Boys were 2.6 times more likely than girls to be affected by digital game addiction, according to the findings, which showed a prevalence of 12.9%. While social anxiety was highest in adolescents who thought their parents were authoritarian, digital game addiction was most common in those who thought their parents were careless. Overall, it was discovered that parental attitudes had a significant impact on adolescents' social anxiety and addiction to digital games (Genis & Ayaz, 2012).

In a different study, researchers examined two samples of 120 university students, 60 of whom were male and 60 of whom were female, in order to examine the relationship between internet addiction and social anxiety. In both samples, the results showed a correlation between social anxiety and internet addiction ($r = .411$, $P < .001$; $r = 0.342$, $P < .01$). There were no discernible differences in the degrees of internet addiction between males and females, and those with high levels of social anxiety did not exhibit a preference for social networks. These results underline the need for additional research to

elucidate this association and corroborate earlier findings of the co-occurrence of internet addiction and social anxiety (Weinstein et al., 2015).

Mindfulness and Gaming Addiction

One of the study investigate the variations in emotion regulation (ER), mindfulness, and impulsivity among emerging adult gamers who fulfilled the criteria for either depression, internet gaming disorder, or both. An online survey was completed by a sample of 1,536 gamers (45% male, Mage = 20.45 years) to gauge their levels of impulsivity, mindfulness, depression, and ER difficulties. The clinical groups with IGD, depression, and Dep + IGD reported higher levels of impulsivity, lower mindfulness, and more ER difficulties than the individuals below the IGD and depression cutoffs (control group) (Mirchica et al., 2020).

Another study by involved 901 adolescents (546 girls; mean age = 15.81 years) in which they answered questions about problematic internet use and mindful awareness. Higher levels of mindful awareness were found to be significantly associated with a lower likelihood of reporting a preference for online social interactions, using the internet to regulate mood, having poor self-regulation, and experiencing negative outcomes from problematic internet use, according to structural equation modeling. The findings imply that mindfulness might act as a preventative measure against problematic internet use (Guadix et al., 2016).

327 Chinese people with online gaming experience who were full-time employees (mean age = 31.93 years) were recruited for a cross-sectional study in Shenzhen, China. The results demonstrated a negative correlation between the symptoms of internet gaming disorder and three positive psychology factors, with mindfulness standing out as the most significant protective factor. Additionally, there was a positive correlation between the symptoms and stress.

Higher mindfulness levels, on the other hand, may act as a buffer against the emergence of problematic internet use by lowering maladaptive outcomes and behaviors. The potential

advantages of using mindfulness-based therapies in the treatment of gaming disorder and associated mental health conditions are highlighted by these findings.

Theoretical Framework

Emotion regulation And Self Determination Theory

This study integrates Emotion Regulation Theory (Gross, 1998) and Self-Determination Theory (Deci & Ryan, 1985) to provide a holistic understanding of how emotional regulation and psychological needs influence gaming addiction. According to Emotion Regulation Theory, individuals experiencing negative emotions, such as those stemming from loneliness or social anxiety, may struggle to regulate their feelings effectively, leading them to engage in maladaptive coping strategies like gaming. Gaming can serve as an escape mechanism, offering temporary relief from emotional discomfort but reinforcing a cycle of avoidance and addiction (Caplan, 2007).

For instance, individuals with high emotional dysregulation are more likely to experience problematic internet gaming due to their inability to manage stress effectively. Conversely, those with strong emotion regulation skills, such as

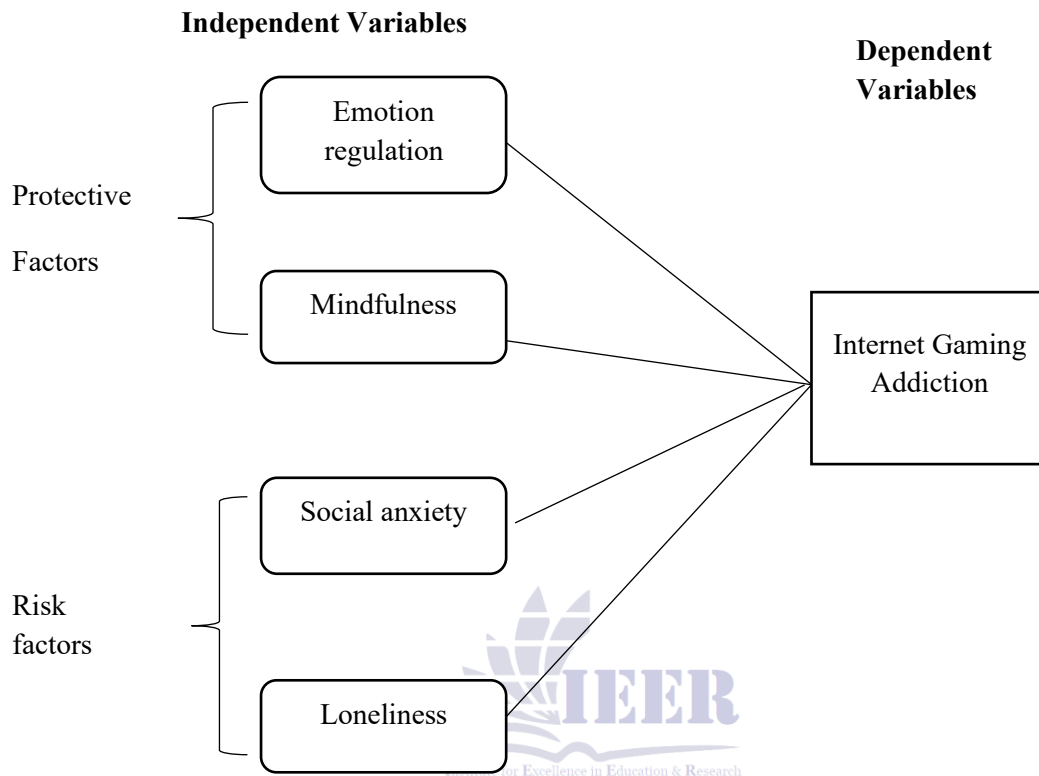
cognitive reappraisal, can manage loneliness and anxiety more constructively, reducing their reliance on gaming as a coping mechanism.

Self-Determination Theory emphasizes the importance of fulfilling psychological needs for relatedness, autonomy, and competence. Social anxiety can hinder the fulfillment of relatedness by driving avoidance of face-to-face interactions, leaving individuals feeling disconnected and isolated. In such cases, gaming may provide a low-risk virtual environment where individuals can seek social connection and validation, compensating for unmet needs (Chambers et al., 2009). However, excessive reliance on gaming to fulfill these needs can increase the risk of addiction. Mindfulness, a protective factor linked to both theories, supports autonomy and competence by fostering self-awareness and emotional regulation. Mindful individuals are better able to manage their emotions and take control of their actions, reducing dependence on gaming to meet psychological. Together, these theories highlight the critical interplay between emotional regulation and psychological needs in understanding both the risk and resilience factors associated with gaming addiction.

Conceptual Framework

Figure 1

Conceptual Framework of the Study



Rationale of the Study

Internet gaming addiction has emerged as a global concern, with its prevalence steadily increasing worldwide (De Pasquale et al., 2020). Like many other countries, Pakistan has a significant and growing online gaming population, with gaming zones in cities operating 24/7 and thousands of players engaging daily, as reported by game tracker databases. Despite this growing trend, research on internet gaming addiction within the Pakistani context remains sparse. Existing studies have primarily focused on its prevalence (Zahra et al., 2019), mental health implications (Khalid & Mukhtar, 2022), and effects on sleep quality (Zaman et al., 2022). However, these studies have not comprehensively explored the underlying risk and protective factors that neither influence gaming addiction, nor have they employed mixed-method

approaches to provide a nuanced understanding of these dynamics.

This study aims to address these gaps by integrating qualitative and quantitative methods to investigate both protective and risk factors associated with gaming addiction. By addressing these gaps, this study will contribute to the literature by offering a deeper understanding of the psychological and social dimensions of gaming addiction. The findings will provide therapists and psychologists with evidence-based insights for designing targeted interventions, focusing on mitigating risk factors and enhancing protective factors. Furthermore, this research will highlight specific factors that may serve as preventative measures, supporting individuals in avoiding the detrimental effects of gaming addiction. The integration of self-reported insights and mixed-method analysis will ensure a comprehensive framework for understanding and

addressing gaming addiction in the Pakistani context.

CHAPTER II METHOD

The following chapter entails the methodology of the present research to find the role of protective and risk factor on internet gaming addiction. The following chapter discusses objectives, hypothesis, research procedure and analysis of the study.

Phase 1: Exploring the risk and protective factors of internet gaming addiction among young adults by applying the qualitative method.

Objectives of the Study

Based on the literature mention in chapter 1, following objective of the research are formulated

1. To explore that emotion regulation, mindfulness, social anxiety and loneliness play role in internet gaming addiction among young adults.
2. To explore the lived experiences of individuals with internet gaming addiction, focusing on their personal narratives about these factors.

Research Question

1. Which factors influence the internet gaming behavior?
2. How do young adults perceive the relationship between their gaming behavior and emotional well-being?
3. What are the negative consequences of the internet gaming addiction?
4. How mindfulness play a vital role in internet gaming addiction?

Sample

Interviews were conducted with six informants identified as internet gaming addicts, comprising two females and four males, aged 20 to 24, all from Rawalpindi. Participants were selected through purposive sampling, with a requirement for bilingual proficiency in Urdu and English. Participants were selected for interview that scored high on the Problematic Gaming Questionnaire and willingly consented to take

part in the research. They were also expected to possess the ability to articulate their experiences and reflect on factors influencing internet gaming addiction.

Inclusion Criteria

Participants who got high score on Problematic online gaming questionnaire scale are included and are willing to participate in study and share their personal experiences. Participants who had given their consent to use their personal narratives as part of our study.

Exclusion Criteria

Participants who got low score on Problematic online gaming questionnaire scale are excluded.

Research Design

This mixed-method study will employ a sequential exploratory design to investigate risk and protective factors associated with internet gaming addiction. The research will be conducted in two phases: qualitative followed by quantitative. In the first phase, we will use Braun and Clarke's thematic analysis to identify key themes. In the second phase, the identified variables will be quantitatively analyzed to further validate and expand upon the findings from the qualitative phase.

Measures

The researchers had the requisite experience and skills to collect qualitative data effectively. Data were gathered from in-depth interview documents, with notes taken and conversations recorded throughout the interview process. Additional tools used in this phase included a voice recorder, note-taking materials, and an interview form outlining the guiding questions on internet gaming addiction.

Data analysis

All audio recordings of in-depth interviews were deciphered verbatim. After immersion into the data, the researcher identified similar themes from the transcribed text of interview then page by page initial codes were allotted. After that broader category emerged from the data

(Auerbach & Silverstein, 2003). The researchers' background and perspective can influence both the investigation process and the interpretation of findings (Malterud, 2001). Therefore, the authors employed reflexivity as a technique to mitigate the impact of any personal biases in the interpretation of interview responses. Data were analyzed using deductive thematic analysis by using the steps of data familiarization, coding, theme generation, theme definition and literature support.

Phase 2: Studying the risk and protective factors of internet gaming addiction among young adults by applying the quantitative method.

Objectives

1. To investigate the relationship between emotion regulation, mindfulness, loneliness and social anxiety.
2. To find demographics (gender) related differences of internet gaming addiction, emotion regulation, mindfulness, loneliness and social anxiety.

Hypotheses of the Study

Based on the objectives of the study the following hypotheses are formulated

1. Loneliness and social anxiety will be positively associated with gaming addiction among young adults.
2. Emotion regulation and mindfulness will show negative association with gaming addiction among young adults.
3. Loneliness and social anxiety are significant predictors of gaming addiction.

Sample

The study involved 400 participants, who were selected using purposive sampling. However, after excluding 55 incomplete questionnaires; the final sample size consisted of 345 valid responses. Data collection was carried out in various gaming zones in Rawalpindi and Islamabad, as well as from university students in these regions. The final sample was comprised of 78% males and 22% females, reflecting the demographic distribution of the participants. This approach ensured a diverse and representative sample,

allowing for a comprehensive analysis of gaming addiction and its associated factors among young adults.

Inclusion Criteria

Participants who engage in daily gaming and meet the criteria for gaming addiction, aged between 18 and 25 years, were included in the study who were willing to participate in study and were able to comprehend the questionnaires.

Exclusion Criteria

Participants who were not actively participate in gaming and were not gaming addicts. Participants who were under the age of 18 were excluded in the study.

Operational Definition

Internet gaming addiction

The symptoms of internet addiction include excessive and uncontrollable internet use, withdrawal symptoms, tolerance, and negative outcomes. It is also referred to as problematic internet use, internet addiction, or compulsive internet use (Kraut et al., 1998; Spada, 2014; Young, 1998).

This condition can manifest in various forms, including compulsive use of social media, online gaming, and browsing, leading to significant impairment in daily functioning. To measure internet gaming addiction online gaming questionnaire will be used (Demetrovics et al., 2012). Higher scores indicate a stronger tendency of problematic online gaming and low scores will indicate low tendency towards online gaming among young adults.

Emotion Regulation

The set of cognitive processes that affect emotional reactions is known as emotional regulation, or emotional self-regulation (Gross & John, 2003). The 10-item Emotion Regulation Questionnaire is a self-report instrument that evaluates how frequently people use two emotion regulation techniques: Cognitive reappraisal (6 items) and expressive suppression (4 items) are assessed using a 7-point Likert scale, where higher scores indicate greater use of a particular strategy,

and lower scores reflect less frequent use of that strategy.

Mindfulness

According to (Brown & Ryan, 2003), mindfulness is a meta-cognitive state in which people focus on their experiences in the present moment without passing judgment or making any assessments. The 5 item mindfulness attention awareness scale is a self report instrument that evaluates current state of mind which observes what is taking place. Responses are on 6 point likert scale, with higher scores reflect higher state mindfulness and low scores reflect low state.

Social Anxiety

Social anxiety is described as a cognitive and affective experience brought on by the fear of potential judgment from others (Henderson & Zimbardo, 2010). Social anxiety a 6-item measure that assesses the severity of symptoms of social anxiety. It is a self-report measure based on 5 point scale, high scores indicate high on social anxiety and low scores low social anxiety.

Loneliness

Loneliness is an emotion that can be alleviated through building trust in others and engaging in social interactions with individuals with whom one feels a sense of connection. (Nowland et al., 2017). 6 item revised UCLA loneliness scale indicates feeling of loneliness. It is a 4 point likert scale, high scores on it indicates high level of loneliness.

Instruments

Emotional Regulation Questionnaire (Gross & John, 2003)

The Emotion Regulation Questionnaire (ERQ) is a 10-item self-report measure designed to assess the frequency with which individuals employ two emotion regulation strategies: expressive suppression (4 items) and cognitive reappraisal (6 items). Each item is rated on a 7-point Likert scale. Higher scores indicate more frequent use of a particular emotion regulation strategy, while lower scores suggest less frequent use (Gross &

John, 2003). Scoring involves calculating the average of the scores for each subscale of cognitive reappraisal and expressive suppression. The internal consistency reliability was found to be acceptable to excellent for the ERQ, with cognitive reappraisal ($\alpha = .89-.90$) and expressive suppression ($\alpha = .76-.80$) scores (Gross & John, 2003).

Problematic Online Gaming Questionnaire (Demetrovics et al., 2012)

The Problematic Online Gaming Questionnaire (POGQ) is used to evaluate various aspects of problematic online gaming. The 18-item questionnaire measures six aspects: preoccupation, overuse, immersion, social isolation, interpersonal conflicts, and withdrawal (Demetrovics et al., 2012). Responses are given on a 5-point Likert scale (ranging from 1 = never to 5 = always), with higher scores indicating a greater tendency toward problematic online gaming. The six dimensions assessed are: preoccupation (2 items), immersion (4 items), withdrawal (4 items), overuse (3 items), interpersonal conflicts (2 items), and social isolation (3 items) (Demetrovics et al., 2012). The instrument demonstrated composite reliability (CR = 0.68–0.90) and average variance extracted (AVE = 0.50–0.75) (Lemmens et al., 2009).

RULS-6 Scale (Wongpakaran et al., 2020)

The Revised UCLA Loneliness Scale-6-Item Version (RULS-6; Wongpakaran et al., 2020) was adapted from the R-ULS (Russell et al., 1980) to assess loneliness.

The 6 item revised UCLA loneliness scale indicates feeling of loneliness. It is a 4 point likert scale, high scores on it indicates high feeling of loneliness. Cronbach's alpha of the RULS-6 was good (.83). test-retest reliability coefficient was 0.663.

Mindfulness Awareness Attention Scale (Brown et al., 2003)

The five item mindfulness attention awareness scale is a self-report instrument that evaluates current state of mind which observes what is taking place. Responses are on 6 point likert scale,

with higher scores reflect higher state mindfulness and low scores reflect low state.

Social Interaction and Anxiety Scale (Peters et al., 2012)

Each item on the six-item Social Interaction Anxiety Scale (SIAS) is scored on a 5-point Likert scale, which goes from 0 to 4 (not at all characteristic or true of me to extremely characteristic or true of me, for example). The original 20-item Social Interaction Anxiety Scale has been condensed into this form. Whereas lower scores imply lower levels of social anxiety, larger scores indicate higher levels.

Demographic Variables

The study collected several demographic variables, including gender, age, education level, number of hours of gaming, and number of months of gaming. These variables were chosen based on previous literature, which frequently explores similar demographics in relation to the study's topics. Gender was recorded on a dichotomous scale (male = 1, female = 2). Age was collected through an open-ended question, allowing participants to specify their exact age. To ensure comprehension, educational level was limited to individuals with at least an intermediate, graduate, or higher level of education (Fontanesi et al., 2024).

Procedure and Ethical Considerations

The data collection process for this research will commence with obtaining ethical approval from the Ethics Committee at Riphah University, adhering strictly to established ethical standards. Permission will be sought directly from the authors of each scale used in the study. Participants will be provided with informed consent forms to ensure they are fully aware of the study's purpose, procedures, and their rights. The privacy and confidentiality of participants will be rigorously protected by safeguarding their data.

To maintain the integrity of the research, the survey data will remain untampered and free from any manipulation. Each participant will receive a comprehensive booklet containing the

scales and explicit instructions on how to respond accurately. Data will be collected from colleges, universities, and gaming zones using a mixed-mode survey design, incorporating both paper surveys and online surveys via Google Forms.

Upon obtaining informed consent, data collection will proceed. The measures were administered in a structured sequence to ensure clarity and consistency. The order of administration was as follows: Participants first completed the consent form to confirm their voluntary participation and understanding of the study. Participants then provided their demographic information, including age, gender, educational background, and other relevant details. After that participants completed the problematic Online Gaming Questionnaire, Emotion Regulation Questionnaire, Loneliness Scale, Social Interaction Anxiety Scale and Mindfulness Attention Awareness Scale respectively. Participants will be acknowledged for their contributions to the study. Detailed information regarding the study's goals, potential consequences, and the voluntary nature of participation will be explicitly communicated to all participants. At the conclusion of the study, participants were thanked for their cooperation and participation. The results were derived following the completion of the statistical analysis.

Data Analysis

Data analysis in the present study was conducted using IBM SPSS Statistics for Windows, Version 25.0. First, the normality of the data was checked and outliers were removed. Descriptive statistics and Cronbach's alpha were computed for the Problematic Online Gaming Questionnaire, Emotion Regulation Questionnaire, Loneliness Scale, Social Interaction Anxiety Scale and the Mindfulness Attention Awareness Scale. Correlation analyses were then conducted for all variables. One-way analyses of variance (ANOVA) and t-tests were used to compare groups based on demographics.

CHAPTER III RESULTS

Phase 1

Effects of Problematic Gaming Behavior

Problematic gaming is defined as “When the excessive gaming starts interfering with the daily life functioning it became problematic gaming or addiction”.

“Shuru mein, mai sirf fun ke liye games khelta tha, lekin phir yeh meri aadat ban gayi, aur ab mai lagataar khelta rehta hoon. Mai kuch aur nahi karta aur kisi aur kaam ki fikr nahi karta”. Informant 1

Problematic internet gaming is regarded as a complex syndrome, encompassing cognitive, emotional, and behavioral symptoms.

Aaj kal har koi apne mobile phone ka istemal karta hai doosron se rabta karne ke liye, chahe woh games ke zariye ho ya kisi aur social media ke zariye. Agar aap ke paas kisi wajah se is ka access na ho kisi muddat ke liye, toh aap bilkul out of the loop mehsoos karte hain. Informant 4

Emotion Regulation

“Jab main pareshan mehsoos karta hoon, toh apne jazbat ko control karna mere liye bohot mushkil ho jata hai, is liye main games khelta hoon taake apna dimaag us pareshani se distract kar sakoon.” Informant 2

“Jab mein bohat zyada stressed hota hoon, to gaming meri madad karti hai ke mein sab kuch bhool jaon aur kuch der ke liye zone out kar loon. Yeh meri mind ke liye ek reset button ki tarah hoti hai. Lekin kabhi kabhi mujhe lagta hai ke mein waqt ka pata kho deta hoon, aur baad mein aur zyada stressed mehsoos karta hoon kyunki mein apni doosri zimmedariyan nazarandaz kar deta hoon.” Informant 5

“Main gaming ko balance karne ki koshish karta hoon, jaise exercise karna ya doston se baat karna. Mujhe lagta hai ke yeh cheezein emotions ko long run mein handle karne ke liye behtar hain, lekin gaming sabse easy option hai kyunki main isay kabhi bhi kar sakta hoon”. Informant 6

Feelings of Loneliness

Internal factors included loneliness and the tendency to distract oneself from problems. One participant shared that he excessively used the internet to alleviate his feelings of loneliness.

“Ek dafa, main akela mehsoos kar raha tha, toh maine ghanton tak games khele. Jab main khel raha tha, mery akelypan ka ehsaas kam ho gaya, aur mujhe laga ke main kisi jagah ka hissa hoon”. Informant 1

Participants indicated that they excessively used the internet as a means of alleviating their feelings of loneliness. For example, one participant spent the majority of his time engaging in online gaming.

“Mere parents kam hi ghar par rehte hain, is liye internet ka istemal karna meri akelapan ko kam karne ke liye acha hai... main aksar online games khelta hoon”. Informant 3

Mindfulness

Mindfulness promotes attentive awareness of both physical and emotional sensations while engaging in gaming. According to the participants:

“Mindfulness ne mujhe yeh pehchanne mein madad ki hai ke jab main apne jazbat se distract hone ke liye gaming ka istemal kar raha hoon. Ab, main koshish karta hoon ke ruk jaon aur apne aap se poochoon ke kya koi aur cheez hai jo mujhe deal karni chahiye, sirf game mein doobne ke bajaye”. Informant 3

“Ab bhi kabhi kabhi mein gaming ka sahara leta hoon stress se bachne ke liye, lekin mindfulness practice karne se mujhe yaad rehta hai ke gaming asal mein mera stress solve nahi karti. Mein ab yeh seekh raha hoon ke isay behtari se balance kaise karna hai aur relax karne ke liye doosre tareeqe dhoond raha hoon”. Informant 4

“Jab se maine mindfulness practice karni shuru ki hai, mujhe mehsoos hota hai ke ab main ghanton tak games khelne ki taraf itna nahi khincha chalta. Aisa lagta hai ke main zyada aware hoon jab thakan ya bechaini mehsoos karta hoon, is liye main jaldi ruk jaata hoon bajaye completely zone out karne ke.” Informant 5

Social Anxiety

People feel uncomfortable in front of others because of fear of judgments so to avoid this they prefer gaming.

“Main aksar real life mein logon ke aas paas bohot nervous mehsoos karta hoon, lekin game mein mujhe utna judge nahi kiya jata. Main bina kisi pressure ke chat ya khel sakta hoon, jo mere liye asaan bana deta hai”. Informant 1

When participants were unable to access the internet, they felt that something was missing or incomplete in their lives. This sense of emptiness stemmed from their existing addiction to internet gaming.

“Gaming meri escape hai. Jab mujhe lagta hai ke main itna anxious hoon ke bahar jaane ya logon se baat karne ka hosla nahi rakhta, toh main bas game pe log in kar leta hoon. Wahan mujhe zyada safe mehsoos hota hai, aur main woh saari awkwardness se bach

sakta hoon jo main aam taur par mehsoos karta hoon”. Informant 2

“Mujhe ehssaas hua hai ke jab mein gaming mein bohot zyada waqt guzarta hoon, to real life ke social situations ke baare mein aur zyada anxious mehsoos karta hoon, kyunki mein unka aadat nahi rehta. Phir bhi, mein gaming ki taraf wapas chala jata hoon kyunki woh meri liye familiar hai”. Informant 5

Table 1

Themes	Categories	Subthemes
1. Gaming Behavior	Gaming Patterns	Fun and entertainment Transition to habitual gaming Increased gaming frequency over time
	Gaming Motivation	Escaping stress and tension Coping with loneliness
2. Social Interaction	Impact on Relationships	Reduced interaction with friends and family Gaming prioritized over responsibilities
	Social Comfort and Anxiety	Discomfort in social gatherings Fear of judgment, Gaming as safe place Preference for online interactions
	Escape Mechanism	Using gaming to avoid stress and loneliness
3. Emotional Regulation	Mindfulness Awareness	Limited knowledge of mindfulness practices Openness to exploring mindfulness for stress management
	Psychological	Insecure relationships
4. Effects of problematic gaming	Desire for Balance	Interest in time management and mindfulness practices

		Recognition of the need for a more balanced lifestyle
5. Loneliness	Triggers of loneliness	Being alone, gaming as a solution
	Gaming as an escape	Sense of belonging

Phase 2

A test of common method variance is carried out because all the data come from answers to a single survey. The single-factor Harman test is utilized in this investigation, as it is Harman's single-factor test is one of the most widely used techniques to check for data inconsistency and to investigate the potential for common method variance in the current data. The outcome of the principal axis factoring, at a single factor was 14%. This result indicates that one factor is below the maximum acceptable threshold of 50% of the total variance. Implying that it is unlikely for the interpretation of the results to be complicated by the possibility of common method variance (Podsakoff et al., 2003).

Total 345 individuals with an effective response rate were included in our analysis after participants who were deemed ineligible were removed (N=32: Age, incomplete questionnaire;13). The data underwent a

descriptive analysis to investigate the fundamental features of the sample. It was discovered that 22% of the participants with internet gaming addiction were female, and 77.9 % of the participants were male.

The descriptive analysis was conducted on the data to explore the basic characteristics of sample. The basic characteristics of the sample were provided in Table 2.

Initially, the demographic characteristics were studied .A substantial majority of the study participants are male (77.9%), indicating a higher prevalence of males in the gaming population under study. This gender disparity may influence the gaming habits and preferences observed in the study. The mean age of participants is 22.09 years (± 2.68 years), predominantly falling within the young adult category (20-35 years) at 95.6%. This suggests that the gaming habits analyzed are mainly representative of young adults.

Table 2

Demographic Characteristics of Sample (N = 354)

Participant characteristics	N (%)	Mean (\pm SD)
Gender		
Male	269 (77.9)	
Female	76 (22.0)	
Age		22.28 (2.419)
Education level		
Matric	45 (13.0)	
Intermediate	133 (38.5)	
Graduate	148 (42.8)	

Post Graduate	19 (5.5)
No of hours of gaming	3.30 (1.654)
No of months of gaming	26.98 (25.5)

Note. n= 345

On average, participants game for 3.30 hours per day (±1.654 hours). The majority (87%) engage in gaming for 1-4 hours daily, indicating that moderate gaming is common among the study population. A minority spend 5-8 hours (11.01%) or 9-12 hours (1.4%) gaming daily, highlighting a small subset of more intensive gamers. The mean duration of gaming experience among participants is 26.98 months (±25.5 months). Most participants (92.7%) have been gaming for 1-60 months, suggesting that many are relatively new to gaming or have moderate experience. A smaller group (7.24%) has been gaming for 60-120 months, indicating long-term engagement with gaming.

The normality of the data was evaluated using the Shapiro-Wilk and Kolmogorov-Smirnov tests. All variables met the significance level for both tests. The Shapiro-Wilk test results were as follows: Problematic Online Gaming Questionnaire ($p = 0.200$), Emotion Regulation Questionnaire ($p =$

0.031), Loneliness ($p = 0.038$), Mindfulness ($p = 0.030$), and Social Interaction Anxiety Scale ($p = 0.000$). The Kolmogorov-Smirnov test results were: Problematic Online Gaming Questionnaire ($p = 0.049$), Emotion Regulation Questionnaire ($p = 0.002$), Loneliness ($p = 0.005$), Mindfulness Attention Awareness Scale ($p = 0.009$), and Social Interaction Anxiety Scale ($p = 0.000$). Further investigation of normality was conducted using histograms, kurtosis, skewness, and QQ plots. The Z-scores of skewness were as follows: Problematic Online Gaming Questionnaire (0.038), Emotion Regulation (2.17), Loneliness (-0.22), Mindfulness Attention Awareness Scale (-2.19), and Social Interaction Anxiety Scale (-6.57). The Z-scores of kurtosis were: Problematic Online Gaming Questionnaire (-1.91), Emotion Regulation Questionnaire (-1.33), Loneliness (-1.54), Mindfulness (0.24), and Social Interaction Anxiety Scale (2.66).

Table 3

Ranges, Means, and Standard Deviations for Primary Scales in Overall Sample

Scales	Mean	SD	Range		A	kurtosis	Skewness
			Actual	Potential			
POGQ	69.93	12.57	18 - 90	18- 90	.79	-.501	.005
ERQ	31.92	8.57	14- 64	10- 70	.63	-.348	.285
UCLA	15.18	4.07	6- 24	6- 24	.76	-.402	-.029
SIAS	14.17	4.56	0- 22	0 - 24	.70	.695	-.861
MAAS	12.30	4.50	0- 25	0 - 30	.79	.064	-.288

Note. POGQ, Problematic Online Gaming Questionnaire, ERQ, Emotional Regulation Questionnaire, UCLA ,Loneliness Scale, SIAS ,Social Interaction Anxiety Scale, MAAS, Mindfulness Attention Awareness Scale

Table 3 presents the descriptive statistics and reliability coefficients (α) for all measures included in this study. Internal consistency reliability was excellent for all scales, as indicated by Cronbach's alpha values ranging from 0.63 to 0.79. The Problematic Online Gaming Questionnaire and Mindfulness Attention

Awareness Scale demonstrated high reliability ($\alpha = 0.79$), suggesting strong internal consistency. While all other scales showed high consistency, the Emotion Regulation Scale exhibited acceptable internal consistency. The recommended cutoff score for the Problematic Online Gaming Questionnaire was 66, indicating

that 65% of the population ($N = 225$) exhibited signs of gaming addiction.

Subsequently, we conducted t -tests to investigate potential differences between male and female participants, as well as variations related to age

and the number of months spent gaming. To further explore the data, we performed a one-way ANOVA to examine the relationship between educational categories and the number of hours dedicated to gaming.

Table 4

Score of Independent Sample t Test on the Basis of Gender ($N = 345$)

Variable	Males		Females		$t(df)$	P	Cohen's D
	M	SD	M	SD			
IGA	69.78	7.64	64.1	9.84	5.29**(343)	.003	0.64
LO	15.85	3.67	14.37	5.01	2.83*** (343)	.000	0.33
MI	14.55	4.50	15.73	5.54	-1.89** (343)	.007	0.23
SA	12.52	4.29	11.21	3.97	2.38(343)	.682	--
ER	31.06	7.68	34.61	9.25	-3.38*(343)	.031	0.41

Note. SD = Standard deviation, M = Mean, IGA = Internet Gaming Addiction, LO = Loneliness, MI = Mindfulness, SA = Social Anxiety, ER = Emotion Regulation, d = Cohen's Effect Size, *** $p < .001$, ** $p < .01$, * $p < .05$

The Independent Samples Test results reveal significant differences in variables related to the study. For problematic online gaming questionnaire, Levene's Test indicated unequal variances ($F = 8.993$, $p = 0.003$). The t -test showed a highly significant difference in means ($t(343) = 5.293$, $p < 0.001$ with equal variances assumed; $t(100.079) = 4.595$, $p < 0.001$ with unequal variances), with a mean difference of 5.64222. For loneliness scale, significant variance inequality was noted ($F = 16.203$, $p < 0.001$). The t -test revealed significant mean differences ($t(343) = 2.832$, $p = 0.005$ with equal variances; $t(97.038) = 2.381$, $p = 0.019$ with unequal variances), with a mean difference of 1.47852. In mindfulness attention awareness scale, Levene's Test showed unequal variances ($F = 7.27$, $p = 0.007$). The t -

test did not indicate significant mean differences at the 0.05 level ($t(343) = -1.89$, $p = 0.059$ with equal variances; $t(102.66) = -1.684$, $p = 0.095$ with unequal variances), with a mean difference of -1.17. For social interaction anxiety scale, equal variances were assumed ($F = 0.16$, $p = 0.682$). The t -test showed significant mean differences ($t(343) = 2.38$, $p = 0.018$ with equal variances; $t(126.35) = 2.49$, $p = 0.014$ with unequal variances), with a mean difference of 1.31. Lastly, emotion regulation questionnaire showed significant variance inequality ($F = 4.70$, $p = 0.03$). The t -test indicated significant mean differences ($t(343) = -3.380$, $p = 0.001$ with equal variances; $t(103.99) = -3.04$, $p = 0.003$ with unequal variances), with a mean difference of -3.55.

Table 4

Bivariate Correlations between All the Study Variables ($N = 345$)

Variables	M	SD	1	2	3	4	5
POGQ	68.55	8.47	1	-	-	-	-
ERQ	31.87	8.19	-.49**	1	-	-	-
UCLA	15.55	4.05	.40**	-.42	1	-	-

MAAS	14.80	4.76	-.37**	.37*	-.31**	1	-
SIAS	12.24	4.25	.44**	.36	.23**	-.35**	1

Note. ** $p < .01$, POGQ, Problematic Online Gaming Questionnaire, ERQ, Emotional Regulation Questionnaire, UCLA, Loneliness Scale, SIAS, Social Interaction Anxiety Scale, MAAS, Mindfulness

Attention Awareness Scale

To examine the associations between all variables, we conducted Pearson correlation analyses. The correlation coefficients ranged from -0.49 to 0.44, indicating moderate to strong relationships between the variables. The Problematic Online Gaming Questionnaire (POGQ) and the Emotion Regulation Questionnaire (ERQ) demonstrated the strongest correlation at $r = -0.49$ ($p < 0.01$), indicating a moderate negative correlation. This suggests that higher levels of problematic online gaming are associated with lower emotion regulation difficulties. Higher levels of problematic online gaming were also associated with higher loneliness, lower mindfulness, and higher social interaction anxiety. Specifically, POGQ and the UCLA Loneliness Scale (UCLA) showed a moderate positive correlation at $r = 0.409$ ($p < 0.01$), suggesting that increased problematic gaming is related to higher loneliness. Additionally, the POGQ and the Social Interaction Anxiety Scale (SIAS) had a moderate positive correlation at $r = 0.441$ ($p < 0.01$), indicating that higher

problematic gaming is associated with greater social interaction anxiety. Furthermore, the ERQ and the UCLA exhibited a moderate negative correlation at $r = -0.427$ ($p < 0.01$), meaning that higher emotion regulation difficulties are related to greater loneliness.

After confirming the associations between all variables, we proceeded with regression analysis to evaluate the predictive ability of each independent variable on the dependent variable. Before conducting the regression analysis, we ensured that all assumptions for regression analysis were satisfied. Firstly, the assumption of normality was confirmed in the earlier stages of the study, indicating that the data were normally distributed with no outliers. Secondly, the assumption of linearity was verified by plotting Q-Q plots between the variables, which demonstrated a linear relationship. Lastly, the assumption of homoscedasticity was checked using residual plots. The residual plots indicated no funnel shape, and the data were aligned around the zero value, confirming homoscedasticity.

Table 6

Regression Analysis Result for Internet gaming Addiction

Predictors	B	SE	β	t	p	R ²
Constant	49.162	1.713		28.701	<.001	.293
LO	.674	.098	.323	6.906	<.001	
SIAS	.728	.093	.365	7.822	<.001	
Constant	68.413	3.382		20.231	<.001	.372
LO	.404	.101	.193	3.995	<.001	
SIAS	.501	.095	.252	5.267	<.001	
MAAS	-.217	.086	-.122	-2.514	.012	
ER	-.284	.053	-.275	-5.407	<.001	

Note. *** $p < .001$, N= 350, POGQ, Problematic Online Gaming Questionnaire, ERQ, Emotional Regulation Questionnaire, UCLA, Loneliness Scale, SIAS, Social Interaction Anxiety Scale, MAAS, Mindfulness Attention Awareness Scale

A hierarchical regression analysis was conducted to examine the influence of risk factors (loneliness and social anxiety) and protective factors (mindfulness and emotion regulation) on gaming disorder. In Step 1, loneliness and social anxiety were entered into the model, explaining 29.3% of the variance in gaming disorder ($R^2 = .29$). Both predictors were significant, with loneliness ($\beta = .32, p < .001$) and social anxiety ($\beta = .36, p < .001$) positively associated with gaming disorder.

In Step 2, mindfulness and emotion regulation were added to the model, increasing the explained variance to 37.2% ($R^2 = .37$). The addition of these variables significantly improved the model ($\Delta F(2,341) = 21.394, p < .001$). Mindfulness ($\beta = -.122, p = .012$) and emotion regulation ($\beta = -.275, p < .001$) were significant protective factors, negatively associated with gaming disorder. These findings indicate that risk factors contribute to an increase in gaming disorder symptoms, while protective factors reduce them, highlighting the distinct and complementary roles of these variables.

CHAPTER IV DISCUSSION

This study explores the relationships between loneliness, social anxiety, internet game addiction, mindfulness, and emotion regulation and the findings shows that the emotion regulation and mindfulness acts as a protective factor while loneliness and social anxiety acts as a risk factor then the second phase of the study looked into whether there may be gender differences in these relationships. According to the findings, there is a significant correlation between social anxiety and loneliness and the risk of becoming addicted to online gaming. As anticipated, there was a positive correlation between internet game addiction and loneliness and social anxiety, supporting two hypotheses and consistent with previous research. Research has repeatedly demonstrated that those who are addicted to online games experience higher levels of social anxiety and loneliness, and that those who have poorer emotional control and

mindfulness are more likely to become addicted to online games.

Literature indicates that internet addiction is linked to poorer emotional health, particularly among young adult males who are at the highest risk for video game addiction. This vulnerability may stem from factors such as flexible work and study hours associated with higher education, living independently for the first time, and increased autonomy (King et al., 2012; Young, 1998). The compensatory internet use theory posits that individuals may turn to the internet as a coping mechanism to manage negative emotions, such as loneliness (Kardefelt-Winther, 2014).

The Pearson correlation analysis demonstrated a significant positive relationship between social anxiety, loneliness, and internet gaming addiction. These findings suggest that individuals with higher levels of social anxiety and loneliness are more likely to engage in problematic gaming behaviors. This aligns with previous research indicating that internet game addiction is positively associated with social anxiety, depression, and loneliness (Jin et al., 2019). Additionally, a recent study reported that young adults addicted to video games exhibited significantly higher levels of depression and anxiety, along with an increased sense of social isolation. This indicates a strong connection between internet gaming addiction and mental health issues, likely stemming from the social isolation caused by excessive gaming. Such isolation disrupts normal social interactions and support networks, which are essential for maintaining psychological well-being, thus exacerbating feelings of depression and anxiety (Stockdale et al., 2018).

Conversely, the analysis demonstrated a negative correlation between internet gaming addiction and both mindfulness and emotion regulation. One study found that participants with higher levels of mindfulness reported lower instances of internet addiction and were less influenced by feelings of social exclusion. Furthermore, mindfulness was shown to negatively predict internet addiction in young people (Arslan, 2017).

One study looked at the potential impact of mindfulness in reducing the likelihood of developing an online addiction. There was a negative correlation found between Internet addiction and mindfulness. By improving self-control and reducing the likelihood of Internet addiction, mindfulness has been shown to have a dual mediating effect on the problem. This study is important because it supports the idea that self-control and mindfulness, two positive psychological traits, can lower stress levels, which may lessen the risk of developing an Internet addiction (Woo et al., 2019).

The literature indicates that 90% of studies have found a lower level of emotion regulation to be associated with higher reports of video gaming. These findings offer a comprehensive analysis of the relationship between Emotion Regulation and behavioral addictions, emphasizing the critical role that Emotion Regulation plays in these addictive behaviors (Marchica et al., 2019).

One of study objective was to look into the impact of internet gaming addiction on self-appraisal. Additionally, the moderating effect of gender on the association between university students' self-perception and internet gaming addiction was investigated. A sample of 300 students was gathered, and the findings showed that among university students, internet gaming addiction negatively predicted self-appraisal. Furthermore, the association between internet gaming disorder and self-appraisal was significantly moderated by gender. Males reported a higher level of internet gaming addiction than females, according to the independent sample t-test (Rasheed et al., 2021). Additionally, hierarchical regression analysis further substantiated these relationships by identifying social anxiety and loneliness as strong predictors of Internet gaming addiction. This suggests that as levels of social anxiety and loneliness increase, the propensity for Internet gaming addiction also rises (Amichai & Ben, 2003) discovered that those who experience loneliness already spend too much time online. (Lo et al., 2005) looked into how playing video games could affect social anxiety and the standard of interpersonal relationships. The findings

suggested that teens who play online games more frequently may experience a rise in social anxiety and a deterioration in the quality of their interpersonal relationships. Problematic Internet use can be caused by loneliness, but this relationship can work both ways, with each side acting as the cause or the effect (Kim et al., 2009). We performed a moderation analysis after our initial analysis to look at the relationship between gender-specific risk and protective factors for gaming addiction.

Our findings indicated that there were no significant differences in these factors between genders. However, a noteworthy potential moderation effect of gender on the relationship between social anxiety and problematic online gaming was observed. This suggests that gender may influence how social anxiety contributes to problematic gaming behaviors, necessitating further investigation with larger sample sizes or additional variables to better understand and clarify this relationship. Additionally, our findings align with those of (Aviv et al., 2015), who reported no significant differences between males and females regarding the level of Internet addiction. This consistency in results highlights the importance of considering gender as a potential moderating variable in future research to deepen our understanding of the nuances in gaming addiction and its related factors.

Limitations

First phase of our study was qualitative phase, which did not account for variability in gaming contexts. Different types of games for instance, massively multiplayer online games, single-player games and gaming platforms e.g., mobile, PC, console might elicit different experiences and motivations. These contextual differences were not deeply explored, which may have limited the depth of understanding of how specific gaming environments contribute to addiction in individuals.

Another limitation was Self-reported data in the interviews. This might be the limitation that participants may have unintentionally underreported or overemphasized certain behaviors, such as the extent of their gaming

addiction or the severity of their social anxiety, to present themselves in a more favorable light. Second phase of our study was cross-sectional and collected data using self-reported questionnaires. Data were not collected from any source other than the individual. The current study did not account for the effect of confounding variables like impulsivity of subject because Individuals with higher impulsivity may be more prone to engage in excessive gaming as a form of instant gratification, temperamental issues such as mood instability, emotional reactivity, and difficulty managing stress, family support and parental monitoring. Future research should incorporate a broader range of variables, including additional psychological factors, to gain a more understanding of internet gaming addiction. This approach is crucial as gaming addiction is influenced by multiple interrelated factors. Expanding the scope of variables in future studies will enhance the depth and accuracy of findings, providing more robust insights into the complex dynamics of gaming addiction. One limitation of this study is that it does not differentiate between specific types of gaming. The study includes a general population of gamers without categorizing or specifying the particular gaming activities in which participants were engaged. The study was conducted exclusively among the population of two cities, which limits its generalizability to other urban or rural areas. Additionally, there was an imbalance in the male-to-female ratio among participants, which may have influenced the findings. It is significant to note that the data collection process aimed to maintain the integrity of the responses and minimize any manipulation. This research was a sequential design, which restricts the ability to establish causal links between the study variables. To address this limitation, future investigations should consider adopting experimental designs to establish causal relationships or longitudinal designs to examine prospective relationships over time. These approaches will provide more robust insights into the dynamics of gaming addiction and related psychological factors.

Future Implications

The present study investigated the risk and protective factors associated with internet gaming addiction. The results indicated that social anxiety and loneliness are significant predictors of internet gaming addiction. Based on these findings, practitioners should prioritize investigating these factors when addressing internet gaming addiction. Understanding the roles of social anxiety and loneliness can help in developing targeted interventions and support mechanisms to mitigate the impact of these psychological issues on gaming behaviors. One advantage of the study was that the participants were regular and seasoned Internet users, which is a crucial prerequisite for a study on internet gaming addiction.

Present study will not only contribute to the overall literature but also to culturally relevant literature about this rapidly increasing issue. Mental health educators and practitioners should be aware of the negative effects caused by internet gaming addiction, as this is such a common phenomenon today.

In terms of practical implications, first, our study suggests that parents should also help their children develop healthy emotion regulation skills and cope with emotions in constructive ways. Additionally, they should monitor their children's internet usage and set appropriate limits and rules for them. By doing so, they can support their children's well-being and prevent them from developing problematic gaming habits. Moreover, our findings suggest that integrating regular mental health programs within colleges and universities could play a pivotal role. Policy making and community level awareness initiatives are highly needed to address this issue. These programs can equip young adults with essential social skills and effective strategies for managing internet use. Such initiatives are crucial for meeting individuals' psychological needs and reducing the likelihood of engaging in maladaptive internet behaviors.

Conclusion

The study on the role of protective and risk factors in internet gaming addiction among young adults highlights the significant

associations between social anxiety, loneliness, emotion regulation, mindfulness and gaming addiction. The findings indicate that individuals with higher levels of social anxiety are more subject to developing gaming addictions. Socially anxious individuals may use online gaming as a way to escape real-world social interactions, leading to a preference for online social interactions and an increased risk of gaming addiction. Loneliness is both a cause and consequence of gaming addiction. Lonely individuals may turn to online gaming as a means to temporarily alleviate their negative feelings and social deficiencies. However, excessive gaming does little to facilitate the development of real-life relationships, and can instead lead to the deterioration of existing social connections, further exacerbating loneliness. The relationships between social anxiety, loneliness, and gaming addiction are likely reciprocal in nature. Overall, the study emphasizes the importance of addressing social anxiety and loneliness as key risk factors for gaming addiction and emotion regulation and mindfulness as protective factors. Interventions targeting emotional regulation strategies, mindfulness, and the development of healthy social connections may be crucial in breaking this cycle and preventing the negative consequences of gaming addiction

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