UCP Journal of Humanities & Social Sciences
Vol. 2 (2), January - June 2024, 35-54

Examining the Impact of Childhood Experiences, Perceived Stress, and Coping Strategies on Internet Gaming Disorder in Adolescents

Warda Batool[*]
Dr. Rabia Iftikhar[**]

Abstract

Besides being a major leisure activity, online gaming also has its role in recreation and education purposes. But this has also been a leading cause of many psychological problems. The objective of the present research is to examine the impact of perceived stress, childhood experiences and coping strategies on adolescents with Internet Gaming Disorder. Correlational research design was used along with purposive sampling to gather data from boys (n=158) and girls (n= 98) of about 13-18 years of age. The participants must be utilizing at least 4-6 hours on internet gaming on daily basis. Perceived Stress Scale (Cohen S. K., 1983) *, Childhood Experiences Questionnaire (CEQ-58,* (Styła, 2018)*, Measure of Adolescents Coping Strategies scale (MACS)* (Sveinbjornsdottir, 2017) *and 10-item Internet Gaming Disorder Test (IGDT-10)* (Király, 2015)) *were used as measures for the research. The study revealed a noteworthy positive correlation between coping strategies, perceived stress, childhood experiences, and Internet Gaming Disorder (IGD). Negative childhood experiences were predictive of Internet Gaming Disorder (IGD). The study found that coping strategies played a significant mediating role in the association between childhood experiences, perceived stress, and Internet Gaming Disorder (IGD). There were no significant results observed regarding gender differences and Internet Gaming Disorder. Instead of facing stressful situations, some people find their escape in online gaming and shift their focus maladaptively from stressful situations to the game. This maladaptive shift to online games makes the person feel he/she still can control things and temporarily helps them to forget about the stressful event. The outcomes of this research could be used as a mode of teaching and inculcating healthy and effective coping in adolescents who believe that their time and energy should only be worthy if invested in game related difficulties.*

Keywords: Childhood experiences, Coping strategies, Internet Gaming Disorder (IGD), Negative childhood experiences, Perceived stress.

[*] MS Clinical Psychology, GC University, Lahore, Pakistan. Email: wardabatool096@gmail.com
[**] Assistant Professor, Clinical Psychology Unit, Department of Psychology, GC University, Lahore, Pakistan. Email: rubail1983@gmail.com

Introduction

Playing games online has not only become one of the major spare-time activities but also has a major role in education and recreation (Wittek, 2016). However, some vulnerable individuals start perceiving games more than a free time activity and take it to the level of addiction. Mental Health problems caused because of online gaming are not only being recognized but have also become a major health concern round the globe. The International Classification of Diseases (ICD) officially recognized IGD as a disorder in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) in May 2013. However, further research is needed to gain a deeper understanding of the condition (disorders, 2013) . Internet Gaming Disorder is mentioned in other mental disorders in DSM 5 TR also with the same diagnostic criteria as that of the DSM 5 (Association, 2022). A result concluded from 53 studies that IGD is 3.05% prevalent in general population and this prevalence rate is comparable to obsessive-compulsive buying and substance-related addictions (Stevens, 2021). Certain neurobiological and behavioral issues like relationship issues are linked to IGD (Jeong, 2011), reduced performance in work and education (Lemmens, 2011), inattention (Chan, 2006), aggression, seizures (Chuang, 2006), poor sleep quality (Dworak, 2012) and overall psychological well-being (Lemmens, 2011) etc. Hence, Internet Gaming Disorder has become a major social and personal issue that needs immediate attention. Hence, the predicting factors of IGD are important to identify so that it can be used to treat and prevent the symptoms of this disorder. This research aimed to investigate how perceived stress, childhood experiences and coping strategies contribute to the development of IGD.

Being recognized disorder in section III of DSM-5, (disorders, 2013), criteria for its diagnosis include withdrawal, preoccupation, loss of control, decreased interest in previous hobbies and activities, low tolerance, continuing to play despite knowing related problems, using game as a means of getting distracted from negative mood, and experiencing a loss of significant relationships, educational opportunities, or career prospects. This should be present for a minimum of a year, but diagnosis can be made earlier if the symptoms present are severe. ICD-11 describes IGD as Gaming Disorder (GD) and the criteria includes continued gaming activity characterized by losing control over games and prioritizing games over different daily life activities, irrespective of the bad consequences. Substantial dysfunction is caused in social, occupational, and other domains of life. Prolonged use of brain areas causes structural changes and neuroadaptation that results in addiction (Kuss, 2012). Moreover, some gaming addicts do show impairments in cognitive functioning (Kuss, 2012).

Understanding the prognostic and motivational factors of Internet Gaming Disorder is vital because research has shown that predicting factors of the sum of time spent on internet gaming are gaming environment, gamers, gaming platform (Burleigh, 2018). Apart from that, risk of Internet Gaming Disorder is reduced through higher physical activity (Liew, 2018). Low family cohesiveness and individualistic culture are also a risk factor of IGD (Adams, 2018).

Using cognitive and behavioral ways to cater the threatening situations or to deal with perceived internal or external stressful events is known as coping (Lazarus, 1984). According to (Lazarus, 1984) three main elements are involved in the process of coping: stressful event, cognitive reappraisal (perceiving the event as threat or not, as well as reconsidering the resources available to cope) and coping techniques. Problem focused, and emotion focused are two forms of coping mechanisms (Lazarus, 1984). Finding the means to eliminate the stressor to lessen its effect is problem focused coping. On the contrary, the efforts of reducing and minimizing the emotional burden that a stressful situation causes emotion-focused coping. Another coping mechanism was added by (Endler N. S., 1990) , called avoidant coping, in which the individual completely avoids stressful situations by getting involved in distracting behaviors. Brief-COPE scale describes fourteen coping strategies (Carver, 1997) , using instrumental support (taking help and advice of others), active coping (active behaviors to improve the situation), planning (strategies to cater with the problems), and positive reframing (considering positive sides of the situation) are some of the problem-focused strategies. However, venting (releasing the negative emotions), using emotional support (taking emotional assistance and comfort), humor (fun making), acceptance (accepting the reality), self-blame (holding self-accountability), and religion are some of the emotion-focused strategies. Distracting oneself, substance abuse, and behavioral disengagement are avoidant coping mechanisms. Some of the dysfunction coping strategies as declared by (Carver, 1997) include blaming oneself, disengaging behaviorally, denying, substance abuse, and venting.

Maladaptive coping is a major cause of IGD and most of the addictive behaviors (Lin P. C., 2021) . According to Brand et al., (2016), stress prone individuals, having maladaptive coping, are more inclined to mood-regulation and getting involved in excessive online gaming as they perceive gaming as a stress relieving act. Research conducted by (Lin P. C., 2021) showed that individuals with IGD have maladaptive coping, decreased problem-focused coping, and higher tendency to deal with the stress through online gaming. Escaping from the stressful situation through online gaming is the significant predictor of Internet Gaming Disorder among all gaming motivations (Griffiths, 2016). The

maladaptive and ineffective coping of any stressful event may lead a person to develop addictive behaviors. Despite conscious abstaining efforts off the addictive behaviors such as gaming, a small inconvenience can compel person to find solace in gaming because of the already fixated memories of reduced stress. Gaming induced perceived stress involving the person to win the game and not to lose is another reason of internet addiction (Brand, 2016).

Maladaptive way of dealing with the stress and finding relief in playing online games continuously is just synonymous to worsening and increasing the preexisting stress (Snodgrass, 2014) . This is because, when a person faces a stressor and instead of dealing with it, he gets involved in online gaming or something relieving for him, his stressor remains unattended and hence, the person learns this dysfunctional stress dealing. Stress is a principal prospect for Internet Gaming Disorder development because the person does not want anything causing him distress and playing online games is relieving (Kardefelt-Winther, 2014) and (Kwon, 2015) . Hence, the individual either ignores the stressor or deals with it maladaptively (Reinecke, 2009); (Snodgrass, 2014).

Parental rejection as childhood experience is positively but indirectly causing internet addiction (Throuvala, Janikian, Griffiths, Rennoldson, & Kuss, 2019) . (Liu, 2020) found that people having smartphone addiction have faced parental maltreatment and have negative childhood memories. Although it is still unclear that IGD is developed because of adverse childhood experiences, but childhood parental neglect has been found responsible for maladjusted adolescence and adulthood (Suh, 2020) . Neuroticism and negative behavioral issues, and maladaptive coping, being majorly responsible for higher smartphone addiction and developing Internet Gaming Disorder, are found in individuals who experienced parental rejection, neglect, and abuse. A systematic review on Internet Gaming Disorder conducted by (Paulus, Ohmann, von Gontard, & Popow, 2018) showed that Internet Gaming Disorder is caused by internal, external, and several social factors including lower socioeconomic status, communal ostracism, weaker control of parents, inconsistent and incompetent parenting.

The researches on Addiction of Social Media and IGD revealed that men are more prone to develop IGD (Bouna-Pyrrou, 2015); (Spilkova, 2017); (van den Eijnden, 2018). There is a clear difference in the likelihood of developing IGD between men and women. Men are more likely to develop IGD and spend more time on internet gaming than women do. Study (Coyne, 2020) considered male

gender as a prominent predisposing factor in development of IGD, but it doesn't imply that females are not prone to IGD.

Internet gaming along with Internet Gaming Disorder is growing along with the growing trend of technology in Pakistan. Hence, it is important to study how and why some vulnerable individuals consider it something ahead of a free-time activity and develop its addiction. Internet Gaming Disorder and the resulting psychological problems are not only being highly acknowledged round the globe but has also become a major health concern.

Objectives

- Examine the link between perceived stress and IGD.
- Examine the relation between childhood experiences and IGD.
- Find the maladaptive coping in adolescents with IGD.

Hypotheses

1. Childhood experiences, perceived stress, coping strategies, and Internet Gaming Disorder (IGD) exhibit a positive correlation with one another.
2. Negative Childhood experience is likely to be a significant predictor of Internet Gaming Disorder.
3. It is likely that coping strategies play a mediating role in the relationship between childhood experiences, perceived stress, and Internet Gaming Disorder (IGD).
4. 4. There is a strong likelihood that there will be a gender difference between boys and girls in Internet Gaming Disorder.

Method

Participants

Cross-sectional research design along with purposive sampling was used to gather data from boys (n=158) and girls (n= 98) of about 13-18 years of age. The participants must be utilizing at least 4-6 hours on internet gaming on daily basis. Data was collected from different private institutions, where the students from government and private schools and colleges were studying, because schools and colleges were closed because of the corona pandemic. The participants included students of 9^{th}, 10^{th}, first year and second year. The students who did not play online games were not included in the study.

Measures

Perceived Stress:

Perceived stress was measured by a 10-item self-report questionnaire, Perceived Stress Scale (Cohen S. , 1992). The thoughts and feelings of the individuals over the past month were assessed using a 4-point Likert-type scale (0= Never, 1= Almost never, 2= Sometimes, 3= Fairly Often, 4= Very Often). The Perceived Stress Scale, which consisted of 10 items, demonstrated good internal consistency with a Cronbach's alpha value and reliability exceeding 0.70.

Childhood Experiences: Childhood Experiences Questionnaire (CEQ-58), a 58-item self-report survey was administered to assess past positive and negative childhood experiences using a 5-point Likert scale (1= Never, 2= Rarely, 3= Sometimes, 4= Often, 5= Nearly always). The Childhood Experiences Questionnaire-58 (CEQ-58) included seven subscales (Styła, 2018). The overall internal consistency of the CEQ-58, measured by Cronbach's alpha, was high at 0.92, indicating strong reliability. However, it's worth noting that the subscale for environmental instability had a lower Cronbach's alpha value of 0.54, suggesting relatively weaker reliability for that specific aspect of the questionnaire.

Coping Strategies: Measure of Adolescents Coping Strategies scale (MACS) (Sveinbjornsdottir, 2017) A 34-item self-report questionnaire was employed to assess coping strategies used to deal with stressful events. Respondents rated their responses on a 4-point Likert-type scale (0= I did not use, 1= I used sometimes, 2= I used quite a bit, 3= I used almost all the time). The questionnaire encompassed two factors, each comprising five subscales: Adaptive Coping and maladaptive Coping. This instrument, known as the Measure of Adolescent Coping Strategies (MACS), is considered a reliable and valid measure of coping strategies used by adolescents to manage stress. It appears to effectively distinguish between adaptive and maladaptive coping approaches, providing valuable insights into how adolescents handle stressful situations (Sveinbjornsdottir, 2017).

Internet Gaming: Ten questioned IGD test, 3 point Likert scale, formulated on the DSM-5 criteria of IGD was utilized to assess Internet Gaming Disorder (IGD). The scale consisted of items that presented statements about video gaming, both online and offline, over the past 12 months. For example, a sample item is "Have you ever unsuccessfully tried to reduce the time spent on gaming?" To align with the dichotomous structure of the DSM-5, where the disorder is typically diagnosed as "yes" or "no," the scoring of items was modified as follows: A score of 0 (Never) and 1 (Sometimes) were both coded as 0 (No). A score of 2 (Often) was coded as 1 (Yes). Additionally, items 9 and

10 were combined into a single item. The total scores on this scale ranged from 0 to 9, with higher scores indicating a greater likelihood of Internet Gaming Disorder. The scale demonstrated good reliability, as indicated by a Cronbach's alpha value of 0.76, suggesting that it consistently measures the construct it was designed to assess.

Demographic Questionnaire: The study collected demographic information from participants, which included the following variables: age, gender, family system (e.g., nuclear family, extended family), social class or socioeconomic status, number of siblings, birth order, hours spent on online gaming, mode of online game play (e.g., solo, multiplayer), type and name of the online game(s) played, number of years of playing online games.

Procedure: The participants studied in various public and private institutions and data was gathered through private academies as the institutions were closed due to corona pandemic. After getting permission, the students of ninth, tenth, 1st and 2nd year were approached and were updated regarding the nature and purpose of the study. Besides, confidentiality and their right to withdraw from the study at any time was assured.

Statistical Analysis

Descriptive statistics calculated mean and frequencies of demographic and gaming related variables (annex). The relationship between the variables was calculated through Pearson Product Moment Correlation (annex). Comparison among male and females were conducted through t-test (annex). Regression analysis was done to see whether certain independent variables (predictors) can predict or explain variations in a dependent variable (outcome). The mediation analysis was also done using IBM SPSS Statistics 21.0 to explore the relationships between several variables. In this analysis, it was investigated that how childhood experiences and perceived stress (independent variables) influence Internet Gaming Disorder (dependent variable) with coping strategies as a mediator variable.

Results

Table 1: Multiple Linear Regression of Childhood Experience, Perceived Stress, Coping Strategies and Internet Gaming Disorder (N=256)

Variables	*B*	*SE*	*T*	*p*	*95%CI*
Constant	-.22	.65	-3.33	.740	[-1.49-1.06]
CEQ	.83	.19	4.45	.000	[.47-1.21]
PSS	.03	.02	1.78	.076	[-.00-.06]
MACS-S	.08	.03	2.75	.006	[.02-.14]
MACS-AC	-.01	.04	-.28	.781	[-.09-.05]
MACS-R	.05	.03	1.70	.090	[-.00-.11]
MACS-SS	-.04	.03	-1.58	.117	[-.08-.01]
MACS-SC	.05	.03	1.73	.085	[-.00-.10]

Note: *p<.05, **p<.01, MACS-AC= Measure of Adolescents Coping-Acting out, MACS-R= Measure of Adolescents Coping-Rumination, MACS-SS= Measure of Adolescents Coping-Social support, MACS-SC=Self-care, PSS=Perceived Stress Scale, CEQ=Childhood Experience Questionnaire

The table summarizes how childhood experiences, perceived stress, and coping strategies influence internet gaming disorder. The R-squared value of 0.15 indicates that these factors explain 15% of the variation in internet gaming disorder, with a significant F-value of 6.68 and p<.001. Specifically, childhood experiences positively predict internet gaming disorder (β= 0.83, p<.001), and stoicism as a coping strategy also significantly predicts internet gaming disorder (β= 0.08, p<.001)

Table 2: Association of Path' a' (Perceived Stress with Coping Strategies)

Internet Gaming Disorder (D.V)	Perceived Stress (I.V)

Variables	*B*	*SE*	*T(253)*	*p*
MACS-Stoicism	-.09	.04	-2.40	.017*
MACS-Acting out	.08	.03	2.83	.004**
MACS-Rumination	.17	.03	5.44	.000***
MACS-Social Support	.00	.04	.10	.919
MACS-Self-care	-.13	.04	-3.27	.001**

*Note: p****<.001, *R=Correlation, R^2=Adjusted R square, t=test statistics, B=standardized coefficient*, MACS=Measures of Adolescents Coping

In the first analysis, we examined the relationship between perceived stress (the independent variable) and various coping strategies (mediators). We found a significant indirect effect between perceived stress and MACS-Stoicism, MACS-Acting out, MACS-Rumination, and MACS-Self-care. Specifically, perceived stress positively influenced these coping strategies. However, the indirect effect was not significant for MACS-Social support.

Table 3: Association of Path' b' (Internet Gaming Disorder with Coping Strategies)

Perceived Stress (I.V)	**Internet Gaming Disorder (D.V)**			
Variables	*B*	*SE*	*T(253)*	*P*
MACS-Stoicism	.07	.03	2.16	.009**
MACS-Acting out	.06	.03	1.79	.075
MACS-Rumination	.08	.03	2.66	.008**

MACS-Social Support	.00	.02	.13	.893
MACS-Self-care	.06	.02	2.28	.02*

*Note: p****<.001, R=Correlation, R^2=Adjusted R square, t=test statistics, B=standardized coefficient*, MACS=Measures of Adolescents Coping

The second analysis tested the relationship between internet gaming disorder (the dependent variable) and different coping strategies (mediators). We found a significant indirect effect between internet gaming disorder and MACS-Stoicism, MACS-Rumination, and MACS-Self-care. This means that internet gaming disorder had an impact on these coping strategies. However, the indirect effects were not significant for MACS-Acting out and MACS-Social support.

Table 4: Association of Path' a' (Childhood Experience with Coping Strategies)

Internet Gaming Disorder (D.V)	**Childhood Experience (I.V)**			
Variables	*B*	*SE*	*T(253)*	*P*
MACS-Stoicism	-1.33	.41	-3.30	.001**
MACS-Acting out	1.82	.31	5.72	.000***
MACS-Rumination	1.07	.39	2.76	.006**
MACS-Social Support	.08	.49	.16	.872
MACS-Self-care	-.17	.46	-.38	.705

*Note: p****<.001, R=Correlation, R^2=Adjusted R square, t=test statistics, B=standardized coefficient*, MACS=Measures of Adolescents Coping

The first path, 'a' tested the relationship between childhood experiences (the independent variable) and various coping strategies (mediators). We found a significant indirect effect between childhood experiences and MACS-Stoicism, MACS-Acting out, and MACS-Rumination. This means that childhood

experiences influenced these coping strategies. However, the indirect effects were not significant for MACS-Social support and MACS-Self-care.

Table 5: Association of Path' b' (Internet Gaming Disorder with Coping Strategies)

Childhood Experience (I.V)	**Internet Gaming Disorder (D.V)**			
Variables	*B*	*SE*	*T(253)*	*p*
MACS-Stoicism	.09	.03	3.33	.001**
MACS-Acting out	.02	.03	.69	.484
MACS-Rumination	.08	.03	2.69	.007**
MACS-Social Support	.00	.02	.10	.915
MACS-Self-care	.04	.02	1.87	.061

*Note: p****<.001, *R=Correlation, R^2=Adjusted R square, t=test statistics, B=standardized coefficient*, MACS=Measures of Adolescents Coping

The second analysis, we explored the relationship between internet gaming disorder (the dependent variable) and different coping strategies (mediators). We found a significant indirect effect between internet gaming disorder and MACS-Stoicism and MACS-Rumination. This means that internet gaming disorder influenced these coping strategies. However, the indirect effects were not significant for MACS-Acting out, MACS-Social support, and MACS-Self-care

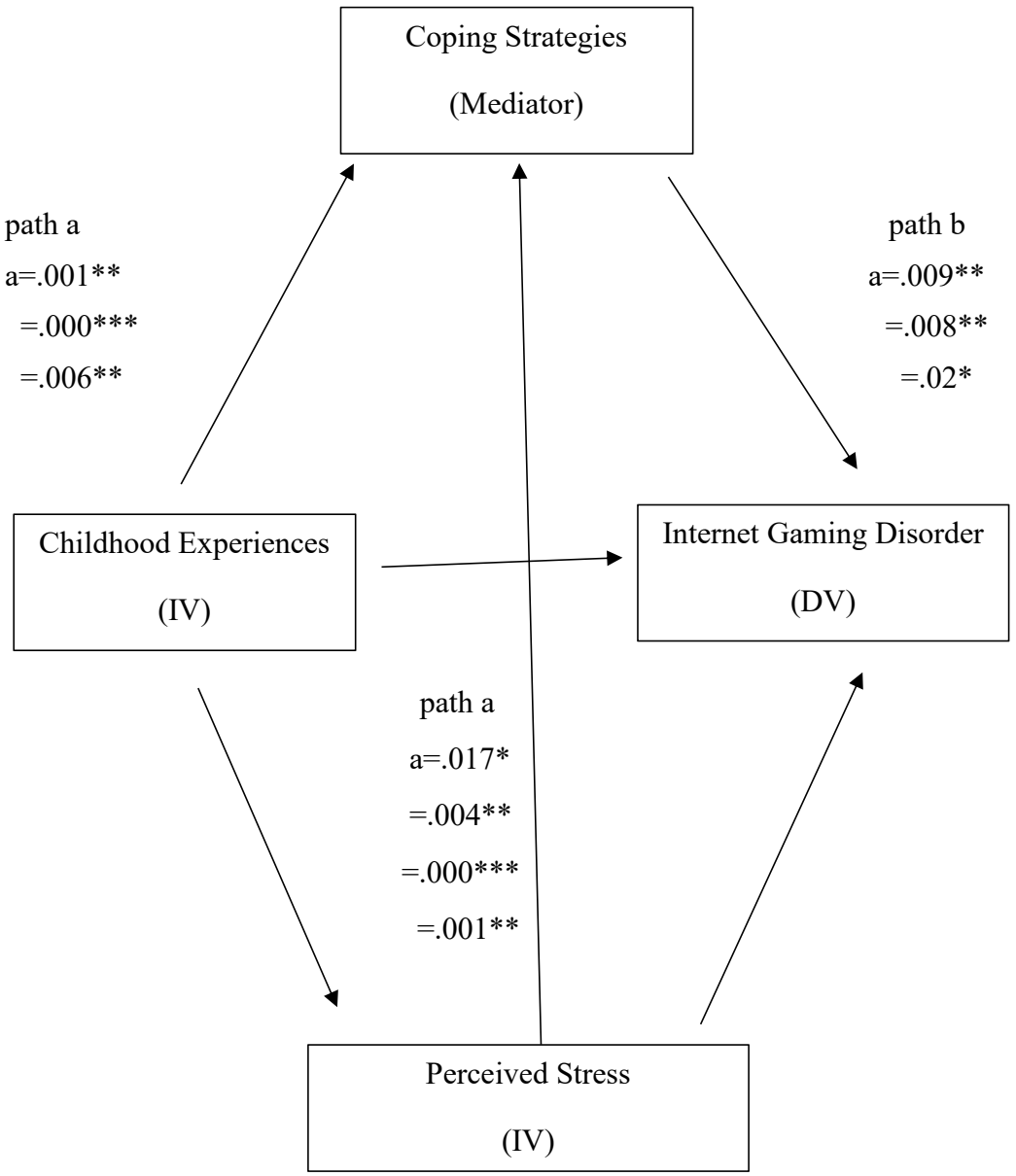

Figure 1: Emerged model of study

The result of process analysis showed that coping strategies (stoicism, acting out, rumination, self-care) mediated between perceived stress (path a, a= .017**, .004**, .000***, p<.001), and Internet Gaming disorder. Coping strategies (stoicism, acting out, rumination) mediated between childhood experiences (path a, a= .001**, .000***, .006**, p<.001) and internet gaming disorder. Coping strategies (stoicism, rumination, self-care) showed indirect effect on internet gaming disorder (path b, a=.009**, .008**, .02*, p<001).

Discussion

The advancing technology in Pakistan has also given rise to online gaming trend in adolescent boys and girls. Adolescents nowadays play online games to avoid and escape stressful situations, not actually doing anything to reduce the stress caused due to the problem but find a relief in the games and completely ignoring the stressful event. They get to meet their virtual friends and community through online gaming platforms and consider themselves a part of the action going on in the game. Instead of effectively dealing with the stressor at hand, the individuals shift their focus to becoming part of the game, learning new tricks to play and different versions of the game, and scoring higher ranks in the games. They find their solace in the game and in this way maladaptively handle the stressful situation.

Online games have negative and adverse effects apart from recreational aspects. The negative consequences of IGD include increased aggression, impulsivity, perceived stress, anxiety, depression, dysfunctional coping, reduced work and educational performance, and limitations in social and personal life. By examining these factors, the research sought to better understand the complex interplay between these variables and IGD in adolescents. The study sought to examine the correlation between childhood experiences, perceived stress, coping strategies in adolescents, and how these factors relate to the presence of IGD.

Table 1 and 2 (supplementary material) clearly demonstrated the correlation between study variables and the correlation between study variables and demographic variables. The study definitively identified significant correlations between perceived stress, childhood experiences, coping strategies, and Internet Gaming Disorder (IGD).

There exists a positive correlation between childhood experiences, perceived stress, coping strategies, and Internet Gaming Disorder (IGD) (hypothesis 1).

(Throuvala, Janikian, Griffiths, Rennoldson, & Kuss, 2019) conducted a study stating that the experiences with parents in early life do influence the personality in later life and development of IGD. This study revealed a positive correlation between childhood experiences and IGD. The research by (Yu, Mao, & Wu, 2018) founded that IGD and perceived stress have a positive relation. (Lin, et al., 2021) concluded that individuals used games as a means of coping. Hence, coping through gaming and IGD are positively correlated. Coping by games involves a dysfunctional coping strategy towards real-life stressful situations, hence, a positive correlation was seen between Internet Gaming Disorder (IGD) and coping mechanisms.

Internet Gaming Disorder is likely to be predicted by negative childhood experiences (hypothesis 2). This research concluded that traumatic childhood experience significantly predicted IGD. (Grajewski & Dragan, 2020) concluded that gaming disorder is predicted by childhood traumas and negative experiences of childhood. The findings revealed that IGD is predicted by traumatic childhood experiences.

Hypothesis 3 stated that childhood experience, perceived stress, and internet gaming disorder are likely to be mediated by coping strategies. This is even evident in the results of the current study. (Lin P. C., 2021) conducted and found that coping strategies mediated stress, depression, and resilience.

As per hypothesis 4, there gender differences are likely to be present in internet gaming disorder. But current study revealed non-significant differences between boys and girls, and IGD. The researches on Addiction of Social Media and IGD revealed that men have higher tendency of IGD (Bouna-Pyrrou, 2015) ; (Spilkova, 2017) (van den Eijnden, 2018) . Men are generally more likely to develop IGD and spend more time on internet gaming as compared to females (Chang, 2018). (Coyne, 2020) considered male gender as a prominent predisposing factor in development of IGD, but this doesn't imply that women cannot develop IGD. Therefore, this hypothesis gets nullified.

Online gaming becomes an addiction when people do not deal with their stressors effectively instead, they want an escape from the reality. By doing this, they temporarily distract themselves from the actual problem and find their relief and control on situations in online game. The extractions and results of this study could be beneficial in teaching healthy and effective coping mechanisms to adolescents and help them learn that their game related problems are not much important. They could be taught that they need to face adversity because only then they would be able to find the solution. Adolescents could be taught that a problem would not solve itself, but its them who need to address

the problem through adaptive coping. They need to learn that avoiding the problem would only worsen it and that they need to work on their gaming dependency.

Implications

Instead of dealing with the stress, individuals get involved in gaming to take a break from their stressful situations. Online gaming allows them to feel control in their hand and forget the adversity. The study findings can be used to teach adolescents about the healthier ways of dealing with the stress. Making them learn new coping styles because ignoring the problem would not make it disappear completely. Eventually they will learn to face the challenges and reduce their reliance on online games.

Limitations and Suggestions

- Due to the time constraints, this study had smaller sample size. It can be improved in future studies for better understanding.
- Different study variables such as resilience and self-esteem can also be studied along with the study variables.
- The study variables can also be studied qualitatively.

Supplementary Material

You can find the supplementary material for this article at the end of the issue.

References

Adams, B. L., Stavropoulos, V., Burleigh, T. L., Liew, L. W., Beard, C. L., & Griffiths, M. D. (2018). Internet gaming disorder behaviors in emergent adulthood: A pilot study examining the interplay between anxiety and family cohesion. *International Journal of Mental Health and Addiction,* 1–17. https://doi.org/10.1007/s11469- 018-9873-0.

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787

Bouna-Pyrrou, P., Mühle, C., Kornhuber, J., & Lenz, B. (2015). Internet gaming disorder, social network disorder and laterality: handedness relates to

pathological use of social networks. Journal of Neural Transmission, 122(8), 1187-1196. doi: 10.1007/s00702-014-1361-5

Brand, M., Young, K. S., Laier, C., Wölfling, K., & Potenza, M. N. (2016). Integrating psychological and neurobiological considerations regarding the development and maintenance of specific Internet-use disorders: An Interaction of Person-Affect Cognition-Execution (I-PACE) model. *Neuroscience & Biobehavioral Reviews*, *71*, 252-266.http://dx.doi.org/doi:10.1016/j.neubiorev.2016.08.033

Burleigh, T. L., Stavropoulos, V., Liew, L. W., Adams, B. L., & Griffiths, M. D. (2018). Depression, internet gaming disorder, and the moderating effect of the gamer-avatar relationship: An exploratory longitudinal study. *International Journal of Mental Health and Addiction*, *16*, 102-124.

Carver, C. S. (1997). You want to measure coping but your protocol' too long: Consider the brief cope. *International Journal of Behavioral Medicine*,*4* (1), 92-100. https://doi.org/10.1207/s15327558ijbm0401_6

Chan, P. A., & Rabinowitz, T. (2006). A cross-sectional analysis of video games and attention deficit hyperactivity disorder symptoms in adolescents. *Annals of General Psychiatry*, *5* (1), 1-10.DOI:10.1186/1744-859X-5-16

Chuang, Y. C. (2006). Massively multiplayer online role-playing game-induced seizures: A neglected health problem in Internet addiction. *CyberPsychology & Behavior,* *9*(4), 451–456.DOI:10.1089/cpb.2006.9.451

Cohen, S. (1992). Stress, social support, and disorder. In H. O. F. Veiel, & U. Baumann (Eds.), The meaning and measurement of social support (pp. 109–124). New York: Hemisphere Press.

Coyne, S. M., Stockdale, L. A., Warburton, W., Gentile, D. A., Yang, C., & Merrill, B. M. (2020). Pathological video game symptoms from adolescence to emerging adulthood: A 6-year longitudinal study of trajectories, predictors, and outcomes. *Developmental psychology*, *56*(7), 1385.

Coyne SM, Stockdale LA, Warburton W, Gentile DA, Yang C, Merrill BM. Pathological video game symptoms from adolescence to emerging adulthood: a 6-year longitudinal study of trajectories, predictors, and

outcomes. Dev Psychol. 2020;56(7):1385–96. https://doi.org/10.1037/dev0000939

Dworak, M., Schierl, T., Bruns, T., & Strüder, H. K. (2007). Impact of singular excessive computer game and television exposure on sleep patterns and memory Kuss, D. J., & Griffiths, M. D. (2012). Internet and gaming addiction: a systematic literature review of neuroimaging studies. *Brain sciences*, *2*(3), 347-374. DOI:10.3390/brainsci2030347

Endler N. S., Parker J. D. A. (1990). Multidimensional assessment of coping: A critical evaluation. *Journal of Personality and Social Psychology,* 58, 844–854. DOI: 10.1037/0022-3514.58.5.844.

Ferguson, C. J., Coulson, M., & Barnett, J. (2011). A meta-analysis of pathological gaming prevalence and comorbidity with mental health, academic and social problems. *Journal of Psychiatric Research,* 45, 1573– 1578.

Griffiths, M. D., Van Rooij, A. J., Kardefelt-Winther, D., Starcevic, V., King, O., Pallesen, S., ... & Demetrovics, Z. (2016). Working towards an international consensus on criteria for assessing Internet gaming disorder: A critical commentary on Petry et al., (2014). *Addiction (Abingdon, England)*, *111* (1), 167. DOI: 10.1111/add.13057

Jeong, E. J., & Kim, D. H. (2011). Social activities, self-efficacy, game attitudes, and game addiction. *Cyberpsychology, Behavior and Social Networking, 14*(4), 213– 221. DOI:10.1089/cyber.2009.0289508

Kardefelt-Winther, D. (2014). Problematizing excessive online gaming and its psychological predictors. Computers in Human Behavior, 31, 118–122. https://doi.org/10.1016/j.chb.2013.10.017

Király, .O., Sleczka, P., Pontes, H. M., Urbán, R., Griffiths, M. D., & Demetrovics, Z. (2015). Validation of the Ten-Item Internet Gaming Disorder Test (IGDT-10) and evaluation of the nine DSM-5 Internet Gaming Disorder criteria. Addictive Behaviors, 64, 253-260. doi: 10.1016/j.addbeh.2015.11.005

Kuss, D. J., & Griffiths, M. D. (2012). Online gaming addiction in children and adolescents: A review of empirical research. *Journal of behavioral addictions*, *1*(1), 3-22.

Kwon, S. J. (2015). The effect of stress on gaming addiction among Korean and Thai high school students. Social Science and Policy

Lazarus, R. S., & Folkman, S. (1984). Stress, coping and adaptation. New York: Springer.

Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2011). Psychosocial causes and consequences of pathological gaming. *Computers in Human Behavior, 27*(1), 144–152. DOI: 10.1016/j.chb.2010.07.015

Liew, L. W., Stavropoulos, V., Adams, B. L., Burleigh, T. L., & Griffiths, M. D. (2018). Internet gaming disorder: The interplay between physical activity and user–avatar relationship. *Behaviour & Information Technology,*117.https://doi.org/10.1080/0144929X.2018.1464599.

Lin, P. C., Yen, J. Y., Lin, H. C., Chou, W. P., Liu, T. L., & Ko, C. H. (2021). Coping, resilience and perceived stress in individuals with internet gaming disorder in Taiwan. *International Journal of Environmental Research and Public Health*, *18*(4), 1771. https://doi.org/10.3390/ijerph18041771

Liu, F., Zhang, Z., & Chen, L. (2020). Mediating effect of neuroticism and negative coping style in relation to childhood psychological maltreatment and smartphone addiction among college students in China. Child Abuse & Neglect, 106, Article 104531.

Pai-Cheng Lin;Ju-Yu Yen;Huang-Chi Lin;Wei-Po Chou;Tai-Ling Liu;Chih-Hung Ko; (2021). *Coping, Resilience, and Perceived Stress in Individuals with Internet Gaming Disorder in Taiwan . International Journal of Environmental Research and Public Health, (), –* . doi:10.3390/ijerph18041771

Paulus, Frank W; Ohmann, Susanne; von Gontard, Alexander; Popow, Christian (2018). *Internet gaming disorder in children and adolescents: a systematic review. Developmental Medicine & Child Neurology, (), –.* doi:10.1111/dmcn.13754

Reinecke, L. (2009). Games and recovery: The use of video and computer games to recuperate from stress and strain. Journal of Media Psychology, 21(3), 126–142. https://doi.org/10.1027/1864-1105. 21.3.126

Snodgrass, J. G., Lacy, M. G., Dengah, H. F., II, Eisenhauer, S., Batchelder, G., & Cookson, R. J. (2014). A vacation from your mind: Problematic online gaming is a stress response. Computers in Human Behavior, 38, 248–260. doi:10.1016/j. Chb.2014.06.004

Spilkova, J., Chomynova, P., & Csemy, L. (2017). Predictors of excessive use of social media and excessive online gaming in Czech teenagers. Journal

of Behavioral Addictions, 6(4), 611-619. doi: 705 10.1556/2006.6.2017.064

Stevens, M. W., Dorstyn, D., Delfabbro, P. H., & King, D. L. (2021). Global prevalence of gaming disorder: A systematic review and meta-analysis. *Australian & New Zealand Journal of Psychiatry*, *55*(6), 553-568. DOI: 10.1177/0004867420962851

Styła, R., & Makoveychuk, O. (2018). Psychometric properties of childhood experiences questionnaire (CEQ-58) used to assess the intensity of traumatic experiences from childhood and adolescence–Preliminary elaboration. *Advances in Psychiatry and Neurology/Postępy Psychiatrii i Neurologii*, *27*(1), 15-30.

Suh, B., & Luthar, S. S. (2020). Parental aggravation may tell more about a child's mental/ behavioral health than adverse childhood experiences: Using the 2016 national survey of children's health. Child Abuse & Neglect, 101, Article 104330.

Throuvala, M. A., Janikian, M., Griffiths, M. D., Rennoldson, M., & Kuss, D. J. (2019). The role of family and personality traits in Internet gaming disorder: A mediation model combining cognitive and attachment perspectives. Journal of Behavioral Addictions, 8(1), 48–62.

Throuvala, Melina A.; Janikian, Mari; Griffiths, Mark D.; Rennoldson, Mike; Kuss, Daria J. (2019). *The role of family and personality traits in Internet gaming disorder: A mediation model combining cognitive and attachment perspectives. Journal of Behavioral Addictions, (), 1–15.* doi:10.1556/2006.8.2019.05

van den Eijnden, R., Koning, I., Doornwaard, S., van Gurp, F., & Ter Bogt, T. (2018). The impact of heavy and disordered use of games and social media on adolescents' psychological, social, and school functioning. Journal of Behavioral Addictions, 7(3), 697-706. doi: 10.1556/2006.7.2018.65

Weinstein, A., & Lejoyeux, M. (2010). Internet addiction or excessive internet use. *The American Journal of Drug and Alcohol Abuse, 36,* 277–283. https://doi.org/10.3109/00952990.2010.491880

Wittek, C.T., Finserås, T.R., Pallesen, S., Mentzoni, R.A., Hanss, D., Griffiths, M.D., & Molde, H. (2016). Prevalence and predictors of video game addiction: A study based on a national representative sample of gamers.

International Journal of Mental Health and Addiction, *14* (5), 672-686. https://doi.org/10.1007/s11469- 015-9592-8

World Health Organization. (2018). *International Statistical Classification of Diseases and Related Health Problems: Alphabetical index* (Vol. 11). World Health Organization.

Yu, Shu; Mao, Sijie; Wu, Anise M.S. (2018). *The interplay among stress, frustration tolerance, mindfulness, and social support in Internet gaming disorder symptoms among Chinese working adults. Asia-Pacific Psychiatry, (), e12319–*. doi:10.1111/appy.12319