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Parenting styles, psychological need and game genre in internet gaming disorder

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ABSTRACT

Internet gaming disorder (IGD) is a growing concern among adolescents. This study examines the impact of different parenting styles on IGD, focusing on the mediating role of psychological need satisfaction. Using a cross-sectional correlational design with mediation analysis, this research investigates indirect effects to understand how parenting styles influence IGD. The study involved 300 participants and analyzed three main parenting styles: authoritative (firm but supportive), authoritarian (strict and controlling), and permissive (lenient). Findings indicate that authoritative parenting reduces IGD by supporting the fulfillment of basic psychological needs, such as autonomy, competence, and connection, as outlined in self-determination theory (SDT). Conversely, authoritarian parenting is associated with higher IGD, as it restricts these psychological needs in real life, leading adolescents to seek fulfillment through excessive gaming, particularly in genres like battle royale. permissive parenting did not show a significant effect on IGD. Additionally, the study revealed that boys are more likely than girls to exhibit higher IGD and find greater psychological need satisfaction in gaming. These results highlight the importance of parenting styles and psychological needs in understanding IGD among adolescents.

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1. INTRODUCTION

Internet gaming disorder (IGD) has become a common way for teenagers in India to cope with stress, especially during the COVID-19 lockdown onwards. As more students are given mobile phones in high school, access to online gaming has greatly increased [1]. The rate of IGD among Indian teenagers is 3.5%, which is a growing concern as internet gaming becomes more widespread [2], [3]. A recent review of 16 studies found that the overall rate of IGD in teenagers is 4.6%, with boys having a much higher rate (6.8%) than girls (1.3%) [4], [5]. According to a KPMG report, over one-third of Indian gamers play multiplayer games, showing the rising popularity and risks of excessive gaming among young people. Tencent's PUBG changed the mobile gaming scene in India, but the Indian government banned PUBG Mobile due to ongoing tensions with China. This was the third time the game was banned, following previous government actions. Other popular multiplayer games in India include Clash of Clans, Minecraft, and Free Fire. The online gaming sector in India is expected to grow by over two-fold to $9.1 billion by 2029 [6].

Gaming, when done in moderation, has several positive effects. It can improve thinking skills like problem-solving, critical thinking, and planning. It also helps with hand-eye coordination and fine motor skills. Multiplayer games encourage social interaction, teamwork, and communication, while gaming in

general provides stress relief and helps players deal with challenges. Educational games help with learning, and creative games boost imagination. Gaming can also improve focus and attention. However, these benefits need to be balanced with the risks of playing too much [7]. Excessive gaming, especially when it becomes compulsive, can harm personal, social, academic, and work life. Internet gaming disorder (IGD) is a serious problem with both mental and physical consequences. It's recognized by the DSM-5 and ICD-11, and it's linked to mental health issues like anxiety, depression, and social isolation. People who play too much often struggle to cope with real-world problems. Physically, long gaming sessions can cause poor posture, sleep problems, and a sedentary lifestyle, increasing the risk of health issues like obesity [8]. In school or at work, people with IGD decrease their performance drop because they prioritize gaming over responsibilities [9]. Socially, IGD can lead to withdrawal from in-person interactions, harming relationships, and leading to loneliness [10], [11]. One of the biggest challenges in dealing with IGD is that online games are designed to be very engaging, making it hard for players to control their gaming. With easy access to games on the internet and mobile devices, the risk of addiction is especially high among teenagers.

Studies have shown that cognitive behavioral therapy (CBT) can effectively reduce gaming time and improve emotional regulation by fostering healthier coping mechanisms [12]. Parent psychoeducation programs have also demonstrated efficacy by equipping caregivers with strategies to set boundaries and support healthier gaming habits [13]. Additionally, mindfulness-based interventions have gained traction, as they enhance self-awareness and reduce compulsive gaming tendencies [14]. Multimodal treatment programs that combine therapy, psychoeducation, and lifestyle modifications are increasingly recommended to address the multifaceted nature of IGD.

The basic psychological need theory [15], [16] offers a crucial framework for understanding IGD among adolescents, positing that excessive gaming may serve as a maladaptive strategy to fulfill the psychological needs of autonomy, relatedness, and competence. When adolescents face frustration in meeting these needs in real life, such as through poor relationships or academic struggles, they may turn to gaming for superficial satisfaction, which can exacerbate IGD. Parenting styles also play a significant role in shaping IGD risk. Authoritarian parents, through rigid control, may drive adolescents to gaming as a form of rebellion, while permissive parents may fail to provide the structure needed to prevent excessive gaming [17], [18]. Authoritative parenting, which balances warmth and control, is associated with healthier outcomes and reduced IGD risk by supporting adolescents' needs in real life. Other studies echo this, highlighting the importance of parental influence and psychological need fulfillment. Another study found that parental monitoring promotes healthier online behaviors, while emphasizing the role of family involvement in preventing gaming addiction. linked unmet psychological needs to IGD, and explored how autonomy-supportive parenting reduced IGD symptoms. Studies showed that adolescents with supportive family environments were less likely to develop problematic gaming behaviors [19], [20].

Basic psychological needs such as autonomy, competence, and relatedness can undermine an individual's self-control, which in turn exacerbates problematic gaming behaviors. Essentially, when individuals are unable to meet their fundamental needs in daily life, their ability to regulate emotions and behaviors weakens, making them more susceptible to excessive gaming [21]. Another study further explores the role of psychological need satisfaction in IGD but introduces additional factors: responsibility and meaning in life. It demonstrates that these constructs mediate the relationship between unmet psychological needs and online gaming addiction. Specifically, individuals who have a sense of responsibility and purpose in life are better able to cope with frustrations related to their unmet needs, thereby reducing the likelihood of turning to gaming as a maladaptive strategy [22], [23].

This study aims to examine how different parenting styles influence the development of IGD in adolescents, focusing on the mediating role of psychological needs. It also seeks to explore gender differences in psychological need satisfaction and IGD behaviors, along with the association between game genres and addiction severity. By addressing these dimensions, this research hopes to provide actionable insights for parents, educators, and mental health professionals to design tailored interventions for preventing and managing IGD effectively.

2. METHOD

In this study, adolescents aged 16-19 years were recruited from diverse pre-university colleges in Kerala to ensure a representative sample. Using a stratified random sampling method, the researchers distributed the IGD-20 Scale to 2,400 students, identifying those with scores above 50 as potential participants. This cutoff ensured the inclusion of individuals with varying degrees of IGD, categorized as mild (50-59), moderate (60-69), and severe (70+) which is shown in Table 1. After obtaining informed consent from participants and their guardians, the sample was further divided by gender. From each stratum of male and female students, a simple random selection process was applied, yielding 150 male and 150 female adolescents, resulting in a balanced total of 300 participants. The study established clear inclusion and

exclusion criteria to maintain sample consistency. The inclusion criteria required participants to be within the 16-19 age range, enrolled in pre-university colleges or community centers, and have an IGD score above 50 on the IGD-20 scale, ensuring only those with IGD symptoms participated. Exclusion criteria eliminated adolescents with previous IGD interventions, as well as those with severe psychological disorders, to prevent these factors from confounding the relationship between parenting styles and psychological need satisfaction. This criteria-based approach allowed for a focused examination of IGD and its associations. The study employed a cross-sectional correlational design with mediation analysis to explore indirect effects, specifically whether psychological need satisfaction explains (or mediates) the relationship between different parenting styles and IGD, as illustrated in Figure 1.

The study hypotheses have been identified as the following:

- H1: Psychological need significantly mediates the relationship between parenting style and IGD.
- H2: There will be less IGD in authoritative parenting compared to other two parenting style among adolescents.
- H3: There will be a significant difference in IGD and psychological needs among male and female adolescents
- H4: There will be a significant association between game genre and IGD.

The basic psychological need satisfaction in general scale (BPNSG) assesses how well individuals feel their psychological needs for autonomy, competence, and relatedness are met. It has 21 items, with seven items for each domain, rated on a 7-point Likert scale from 1 (not true at all) to 7 (very true). Higher scores reflect greater satisfaction of psychological needs, and the scale shows high reliability with Cronbach's alpha above 0.80 [24]. The internet gaming disorder 20 Test (IGD-20) is a 20-item scale that evaluates six aspects of gaming addiction based on DSM-5 criteria. Participants rate items like "I often lose sleep because of long gaming sessions" on a 5-point scale from 1 (strongly agree) to 5 (strongly disagree). A score of 71 or more indicates a potential IGD diagnosis. The IGD-20 has strong validity and reliability with a Cronbach's alpha of 0.88 [25]. The parental authority questionnaire (PAQ) measures parenting styles (authoritarian, authoritative, permissive) using 30 items. Each subscale has a score range of 10 to 30, with total scores ranging from 30 to 90. The PAQ is reliable (Cronbach's alpha between 0.74 and 0.87) and provides insights into parenting from the child's perspective [26].

Table 1. Sample distribution based on intensity of addiction

IGD Severity	Male (n = 150)	Male percentage (%)	Female (n = 150)	Female percentage (%)	Total (n = 300)	Total percentage (%)
Mild	20	13.33%	80	53.33%	100	33.33%
Moderate	65	43.33%	40	26.67%	105	35.00%
Severe	65	43.33%	30	20.00%	95	31.67%
Total	150	100%	150	100%	300	100%

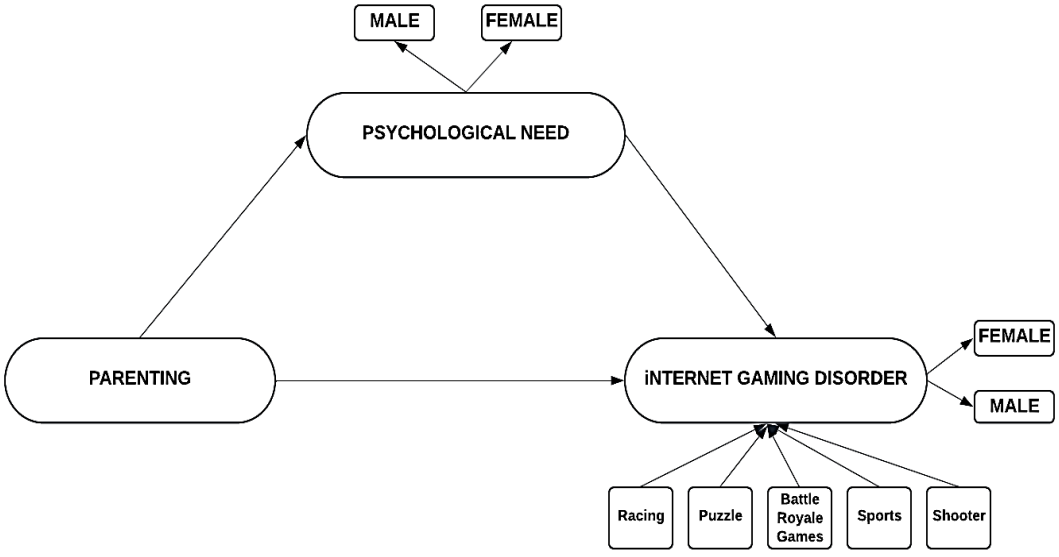

Figure 1. Conceptual framework

3. RESULTS AND DISCUSSION

The mediation Table 2 reveals that psychological need satisfaction significantly mediates the relationship between parenting styles and IGD that authoritative parenting is associated with a reduction in IGD through this mediation, with a significant negative effect (β = -2.7, p = 0.04). This suggests that fulfilling psychological needs is an important pathway through which authoritative parenting reduces IGD. Conversely, authoritarian parenting is linked to an increase in IGD, with a significant positive mediation effect (β = 2.1, p = 0.019), indicating that unmet psychological needs may explain the harmful impact of authoritarian parenting on IGD. However, no significant mediation effect was found for permissive parenting (β = 1, p = 0.508), suggesting that psychological need satisfaction does not play a meaningful role in the relationship between permissive parenting and IGD. Overall, these results underscore the importance of psychological need satisfaction in understanding how different parenting styles influence IGD, particularly for authoritative and authoritarian parenting styles. H1: Psychological need significantly mediates the relationship between parenting style and IGD accepted.

Table 3 presents the results of a one-way ANOVA examining differences in IGD scores among adolescents based on their parenting styles. The analysis reveals a significant effect of parenting style on IGD scores ($F = 13$, $p<0.001$). Adolescents raised with an authoritarian parenting style had the highest mean IGD score (M = 77, SD = 13.8), followed by those with permissive parents (M = 69.5, SD = 23.6). Adolescents with authoritative parents had the lowest mean IGD score (M = 55, SD = 19.5). H2: There will be less IGD in authoritative parenting compared to other two parenting style among adolescents.

Table 4 highlights significant gender differences across all study variables, including IGD and psychological need satisfaction. males scored significantly higher on IGD (M = 71.3, SD = 21.7) compared to females (M = 60.8, SD = 19.7), with a t-value of 2.26 and p = 0.027, indicating that males are more prone to IGD than females. Psychological need satisfaction was also significantly higher in males (M = 62.8, SD = 18.3) than in females (M = 55.4, SD = 16.5), with a t-value of 2.1 and p = 0.038, suggesting males report greater psychological need satisfaction. H3: There will be a significant difference in IGD and psychological needs among male and female adolescents.

Table 5 presents the association between game genre and the level of addiction, categorized as mild, moderate, and severe. The χ^2 value of 28.1 with a p-value of less than 0.001 indicates a significant relationship between the game genre and the severity of addiction. Notably, battle royale games show the highest proportion of severe addiction (65%), whereas genres like racing and puzzle are more common among mild and moderate levels. Puzzle games are predominant in the mild category (44%). This suggests that certain genres, especially battle royale games, are associated with a higher risk of severe addiction. H4: There will be a significant association between game genre and IGD.

Figure 2 shows that battle royale games are strongly linked to severe IGD, with the highest scores in this category. Moderate IGD also has high scores for this genre, while mild IGD is lower. Puzzle games are more popular with players in the mild IGD category. In contrast, racing, sports, and shooter games have lower IGD scores across all levels, showing a weaker connection to gaming disorder. Overall, battle royale games have the strongest link to severe IGD; while racing and sports games have the least.

Table 2. Regression analysis for mediation of psychological need satisfaction between parenting style and IGD

Mediation	B	SE	CI lower	CI upper	z-value	p-value
Authoritative → IGD (with mediation)	-2.7	1.3	0.16	5.24	2.08	0.04
Authoritarian → IGD (with mediation)	2.1	1.25	0.35	4.55	1.68	0.019
Permissive → IGD (with mediation)	1	1.52	1.99	4	0.66	0.508

Table 3. One-way analysis of variance of IGD score in adolescents by parenting styles

Variable	Parenting style	N	Mean	SD	SE	F	p
IGD	Permissive	120	69.5	23.6	5.27		
	Authoritative	95	55	19.5	3.29	13	<.001
	Authoritarian	85	77	13.8	2.76		

Table 4. Gender differences in IGD and psychological need

Variable	Group	N	Mean	SD	SE	t-value	p
IGD	Female	150	60.8	19.7	2.98	2.26	0.027
	Male	150	71.3	21.7	3.62		
Psychological need	Female	150	55.4	16.5	2.34	2.1	0.038
	Male	150	62.8	18.3	2.88		

Table 5. Association between game genre and level of addiction

Game genre	Mild (n = 100)	Moderate (n = 100)	Severe (n = 100)	χ^2	p
Racing	10	20	3		
Puzzle	44	30	8		
Battle royale games	12	33	65	28.1	<.001
Sports	16	9	8		
Shooter	18	13	11		
Total	100	105	95		

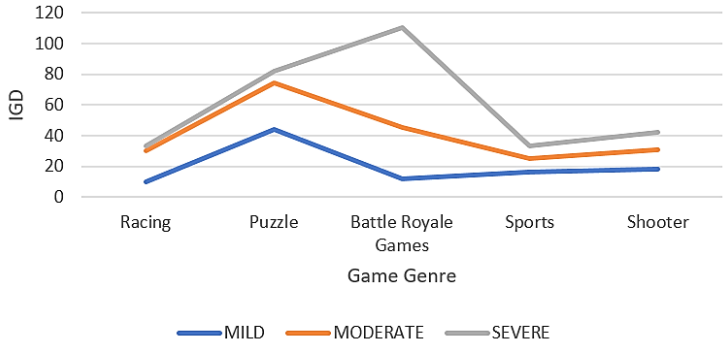

Figure 2. Association between game genre and IGD

3.1. Discussion

The results show that authoritative parenting is negatively associated with IGD through the mediation of psychological need satisfaction. This aligns with self-determination theory (SDT) by which emphasizes the importance of satisfying psychological needs autonomy, competence, and relatedness for healthy psychological functioning. Authoritative parenting, characterized by warmth, structure, and support for autonomy, is known to promote these needs, which in turn may protect against maladaptive behaviors like IGD. This finding is consistent with research by Zhu and Chen [27] which found that children raised with authoritative parenting styles tend to exhibit lower levels of problematic internet use due to better emotional regulation and self-control.

Conversely, the study found that authoritarian parenting is positively associated with IGD through the mediation of psychological need satisfaction. Authoritarian parenting, marked by high demands and low responsiveness, likely hampers the fulfillment of basic psychological needs, as posited by SDT. This can lead to compensatory behaviors like excessive gaming, where adolescents might seek autonomy, competence, or social connection in virtual environments to compensate for the lack of need fulfillment in real life. Supporting this, studies by [28], [29] have shown that harsh and controlling parenting styles are associated with higher levels of internet addiction and other problematic behaviors due to increased psychological distress and reduced self-efficacy.

Interestingly, permissive parenting did not show a significant mediation effect through psychological need satisfaction on IGD. This may indicate that permissive parenting, characterized by a lack of structure and control, neither strongly supports nor hinders the fulfillment of psychological needs (autonomy, relatedness, and competency) in a way that directly influences IGD. This result contrasts with some studies, such as those by [30], [31] which suggested that permissive parenting could lead to greater internet addiction due to a lack of boundaries.

There is a strong association between IGD and specific game genres, particularly battle royale games which are multiplayer online games. Connecting with other addicts in these games may exacerbate problem. This observation aligns with previous research, reinforcing the idea that these genres possess specific characteristics that make them more prone to triggering addictive behaviors [32], [33]. The features of battle royale games identified as contributing to addiction are diverse. The immersive virtual worlds, compelling narratives, and extensive social interactions create a sense of belonging and engagement, potentially leading to prolonged play. Additionally, reward systems, competitive elements, and continuous updates act as incentives, triggering pleasure centers. That way, unmet psychological needs autonomy, relatedness, competency satisfy through this virtual world, and they become addicted to this.

The finding that males exhibit higher levels of IGD compared to females aligns with previous research suggesting that males are more susceptible to gaming disorders [34]-[36]. This could be due to

gender differences in gaming preferences and socialization practices, with males more likely to engage in excessive gaming as a form of social interaction or stress relief. Males report greater psychological need satisfaction. Battle royale games often fulfill intrinsic needs like autonomy, competence, and multiplayer games create a sense of community, enabling males to form social bonds and enhance relatedness. These factors, along with gender-specific differences in deriving satisfaction, make gaming particularly fulfilling for males.

4. CONCLUSION

This study highlights the complex relationship between parenting styles and IGD, mediated by psychological need satisfaction. Authoritative parenting, which fosters autonomy, competence, and relatedness, serves as a protective factor against IGD by providing adolescents with the opportunity to experience these needs in the real world. When these needs are unmet, mainly male adolescents may turn to the virtual world, particularly through highly immersive and addictive games like battle royale, which are designed to satisfy autonomy, relatedness, and competence. So, we can get an insight that while making the therapy it is important to consider their parenting and environment is provide opportunity to meet their psychological need in real life which can be the one of the main factors leads to IGD.

However, the study has certain limitations. First, its cross-sectional design limits the ability to make causal inferences about the relationship between parenting styles, psychological needs, and IGD. Longitudinal studies would provide a clearer understanding of how parenting and need satisfaction influence IGD development over time. Further studies should investigate the significant differences in parenting styles for male and female adolescents to understand why males exhibit higher psychological needs. This inquiry could explore whether unmet psychological needs drive males to engage more in battle royale games as a means of fulfilling these needs.

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Palak Kanwar		✓				✓	✓			✓		✓		

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

DATA AVAILABILITY

Data availability is not applicable to this paper as no new data were created or analyzed in this study.

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