

Unveiling Bias: Discriminatory Practices And Gendered Experiences Of Female Adolescents In Online Gaming

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Abstract

As the world of online gaming expands, there are various challenges that have been addressed by researchers to overcome the complexities faced by the individuals involved. The number of female gamers have substantially increased in the last few years with a number of adolescent girls considering online gaming as a recreational activity. This has brought with it a number of challenges including the fixing of different levels of gender-based discrimination in the online gaming community. This study has focused on understanding these experiences and the impact that it is equal to calls on the gaming disorder levels of adolescent girls especially. The quantitative approach undertaken in the study here is able to generate many interesting results that can help in the literature and allow everyone to understand more about gender discrimination in online gaming. The 600 girls enquired in the study have been able to provide responses that helped in arriving at the conclusion of the study. The relation between the gender based discrimination and gaming disorder levels using a regression model shows a significant association. There is around 9% of variance caused on the gaming disorder levels by every such experience. Although the gaming disorder levels are low at present, with such experiences, the chances of it to go higher would be more.

Keywords- Adolescents; Gender; Online; Gaming; Discrimination

1. Introduction

The online gaming world as a source of entertainment has increased exponentially in the past few years (Clement, 2024). It is globally recognised at the present times with players coming in from different countries (McLean & Griffiths, 2019). Although these increasing numbers of players include both genders, the online gaming communities are often found to be male dominated and stereotyped for its female players. This has led to the creation of problems for many female players who reported a number of challenges in enjoying their online gaming experiences.

Gender discrimination is a crucial subject which has been undertaken by various researchers in the current literature (Lu et al., 2022; Owalla et al., 2021; Priess et al., 2009; Suseno & Abbott, 2021). It has been included in aspects such as entrepreneurship, education, workplace discrimination to name a few. In case of online gaming, the instances of gender discrimination occurs in the form of sexual harassment, verbal abuse and even subtle forms of experiences (Selkie et al., 2015; Vo et al., 2021). These can range from being very minimal to a serious situation where the outcome might result in mental health issues including anxiety and depression.

The stage of adolescence is a critical phase in case of every individual. For females, the adolescent phase comes with a number of changes such as emotional changes, socialisation issues, self-identity reflection all while undergoing physical changes as well (Resurrección et al., 2014; Sanders, 2013; Yusuf et al., 2022). The level of vulnerability that exists at this stage can be easily impacted by the level of gender based discrimination they face even in the area of their entertainment and relaxation. The study here has realised the importance of addressing all these issues all together and has integrated them in the form of the following research questions.

The research questions would be investigated as a part of arriving at the results of the study-

RQ1: What is the gaming disorder level among adolescent girls in India who are involved in online gaming?

RQ2: What are the factors that explain the gender based discrimination faced by adolescent girls in online gaming?

RQ3: How does gender based discrimination impact gaming disorder level among adolescent girls?

The study would enquire these questions by following a structured pattern which is discussed in the next section of the study.

2. Review of Literature

The adolescent stage of children has been investigated from different perspectives along with gaming. The internet addiction and gaming disorder are found to be quite critical when it comes to adolescents. It can emerge due to the complications of decision making, mood fluctuation, lack of social skills and a proper family background (Paulus et al., 2018). These characteristics are very prominent in case of adolescents and pose a series of difficult situations. The online

addiction in the adolescent stage leads to young gamers falling prey into bullying which can intensify with the added addiction levels (Zhao et al., 2020). The cognitive functionality is a problematic area in adolescents which is a scientific issue (Schettler et al., 2022). This can heighten the problem as often not being able to take the right step at the right time might not be possible. It is often referred to as problematic gaming in literature and can be highly associated with adolescents involved in online gaming. The psychological analogy of difficulty in gaming disorders must also be considered critically. The personality traits exhibited by the adolescent gamers can impact their addiction patterns and relate to the increased levels of addiction (González-Bueso et al., 2020).

The female gamers often are exposed to different forms of bullying and discrimination. This occurs due to a number of reasons that makes the prevalence of this form easy. One of the most influential factors that highly regulates the occurrence of such behaviour in online gaming space is the anonymity of the players (Keipi & Oksanen, 2014). The creation of a virtual reality in the gaming community allows them to be anonymous and still be able to actively participate in it. This provides a level of security to extend gender based discrimination to the women in the community. It is contrary to face-to-face interactions in the real world, where it is mandatory that individuals would be held accountable for their actions (McLean & Griffiths, 2019). The absence of any form of visual recognition makes the situation worse (Hidayat et al., 2022). These gamers sense the lack of accountability as they are forging their names online and use it as a pass to subject women to unnecessary stereotyping (Li et al., 2021). The online gaming situation is quite intense and competitive and the stereotyping of it being a male - dominated forum makes it even worse (Weber et al., 2019; Zsila et al., 2019). Due to the competitive nature of the environment, female gamers often receive gender based comments on their performance parameters (Kordyaka et al., 2023). The peer influence is quite high in the gaming world due to the online nature and multiplayer platforms associated with it (Weber et al., 2019). Bullies use gender-based insults, threats, and intimidation tactics to dominate and control them (Fox & Tang, 2017). This cyberbullying can severely affect the mental health and psychological well-being of female players, leading to anxiety, depression, and social isolation. As a result, many female gamers feel detached and are reluctant to fully participate in online gaming communities (Yıldırım, 2022). This marginalization impacts their sense of safety, belonging, and enjoyment in these communities. Female gamers often experience high levels of stress and anxiety during online interactions, constantly fearing harassment or discrimination based on their gender (L. S. Kaye et al., 2022). The normalization of gender-based bias within gaming culture has created a risky and unpleasant environment for female gamers.

As a result of such bullying behaviour, whether it is due to peer pressure or intense competition in the games, there is an impact of it on the mental well-being of the female gamers causing a significant alteration in their personal lives as well (Adinolf & Turkey, 2018).

From the review conducted here it is quite evident that the challenges faced in the online gaming communities by female players exist at different levels. These are researched from time to time but the focus on female adolescent gamers specifically are limited in nature. When talking about female gamers, it is particularly important to address those who are in the initial and growing stages of their lives. This would help them to take actions at the right time and shape their mental well-being at an early stage so that it does not cause maximum impact.

The study here has set up the research questions and through them the gaming disorder levels and its influence based on gender based discrimination would be investigated. The next chapter would talk about the research framework followed to arrive at the results of the study.

3. Research Methodology

The purpose of this study is to understand the situation of online gamers from the perspective of various online discrimination that they undergo. The study is an attempt to explore how these instances of gender based experiences cause a difference in their gaming disorder levels. The approach undertaken in this study is quantitative in nature. There is a research framework designed which is based on rigorous practices to achieve the best set of results from the study.

As mentioned earlier, the population of the study includes adolescent girls who are active online gamers. The final sample is derived from this population and includes a number of criteria. These are as follows-

1. The girls must be in the age group of 13 to 19 years.
2. They are studying in either schools or colleges located in the Delhi NCR area.
3. They are at present actively involved in online gaming.

The primary set of data would be collected using a judgement sampling method and follows the above three conditions for inclusion. A sample size of 600 is considered for the study as it fulfills the minimum sample size requirement by (Krejcie & Morgan, 1970) of 384 in an infinite population.

A structured questionnaire has been used as the survey instrument. The secondary sources of data mostly from journal articles and books are used to design the questionnaire for the collection of data. The study would use a number of statistical tools to deduce the results from the data set collected. It includes the use of principal component analysis (PCA), multiple linear regression along with t-test and ANOVA.

A detailed discussion on the statistical analyses undertaken are provided in the upcoming section.

4. Data Analysis and Interpretation

The main idea in this study is to understand the level of gender based discrimination faced by adolescent girls who are involved in online gaming. In order to do so, a total of 600 adolescent girls are investigated using a structured questionnaire.

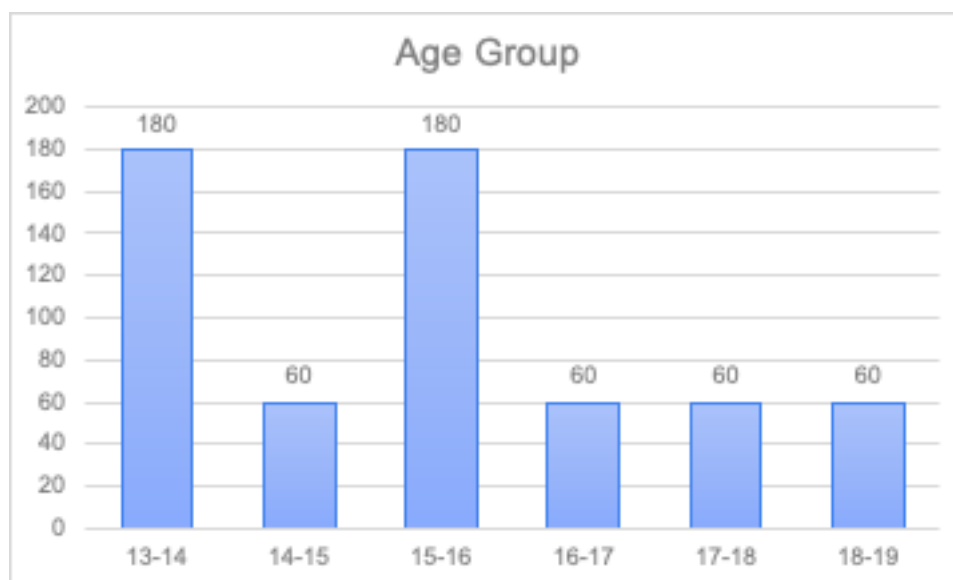
There are two scales that have been enquired primarily through the study conducted here. The first scale is to understand the gaming disorder levels that are observed in the girls. This scale would be analysed based on the demographic segregation of the girls based on their age group and years of gaming experience. The second scale enquires about the discriminating behaviour experienced by the girls and would again be analysed based on mean score analysis and PCA. Finally, in order to understand the level of impact caused by these discriminatory experiences on their gaming disorder levels, a multiple linear regression would be conducted.

The set of analysis conducted here would be able to portray a clear picture about the situation of the adolescent girls and the probable impact that can occur in their mental well-being from such gaming experiences.

The demographic representation of the respondents are presented with respect to two factors – the age group division within 13 to 19 years and the years of gaming experience held by the respondents. The data are as follows-

Frequencies of Age (in years)

Age (in years)	Counts	% of Total	Cumulative %
13-14	180	30.0 %	30.0 %
14-15	60	10.0 %	40.0 %
15-16	180	30.0 %	70.0 %
16-17	60	10.0 %	80.0 %
17-18	60	10.0 %	90.0 %
18-19	60	10.0 %	100.0 %



The majority lie in the age group of 13 to 14 years and 15 to 16 years with a composition of 30% each. The remaining groups include 10% each of the respondents. It shows that the samples cover each category of respondent and would be effective in conducting the future course of the study.

Frequencies of Years of Gaming

Years of Gaming	Counts	% of Total	Cumulative %
1-3 years	180	30.0 %	30.0 %
Less than 1 year	240	40.0 %	70.0 %

Frequencies of Years of Gaming

Years of Gaming	Counts	% of Total	Cumulative %
More than 3 years	180	30.0 %	100.0 %



This demographic has been investigated to have an idea about the duration since when the respondents are involved in gaming. It is seen from the numbers above that majority i.e., 40% of the girls have a total experience of less than 1 year. The remaining two categories equally divide 30% of the respondents into 1-3 years and more than 3 years. As the age of these respondents are young, it is evident that the majority would either have an experience of less than 1 year or from 1 to 3 years.

The detailed enquiry on these two sets of demographics would be done in the further course of this study.

The gaming disorder among the girls is investigated with the help of an 11 items 5 Point Likert Type Scale. This scale is known to be used in the literature across many studies of similar nature. The mean scores generated for each item in the scale after considering the responses from 600 girls are shown below.

Descriptives

	N	Missing	Mean	Median	SD	Minimum	Maximum
I feel preoccupied with my gaming behaviour	600	0	3.01	4.00	1.154	1	4
I think about previous gaming activity or anticipate the next gaming session	600	0	3.35	3.00	1.162	1	5
I think gaming has become the dominant activity in my daily life	600	0	2.46	2.00	1.073	1	4
I feel more irritability, anxiety or even sadness when I try to either reduce or stop my gaming activity	600	0	2.25	2.00	1.418	1	5

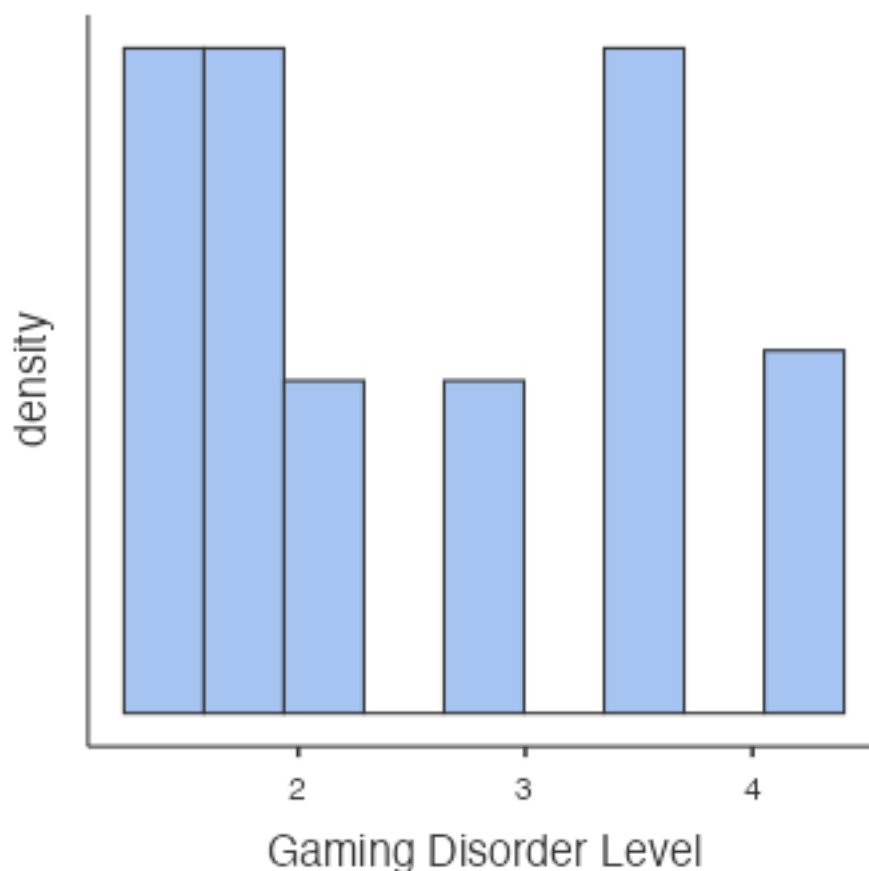
Descriptives

	N	Missin g	Mea n	Media n	SD	Minimu m	Maximum
I feel the need to spend increasing amount of time engaged gaming in order to achieve satisfaction or pleasure	600	0	2.13	2.00	1.007	1	4
I systematically fail when trying to control or cease my gaming activity	600	0	2.02	2.00	0.960	1	4
I have lost interest in previous hobbies & other entertainment activities as a result of my engagement with the game	600	0	3.13	3.00	1.295	1	5
I continued my gaming activity despite knowing it was causing problems between me & other people	600	0	2.02	2.00	0.960	1	4
I deceived my family members, therapists, or others because the amount of my gaming activity	600	0	3.13	3.00	1.295	1	5
I play in order to temporarily escape or relieve a negative mood (e.g., helplessness, guilt, anxiety)	600	0	2.34	2.00	0.941	1	4
I have jeopardized or lost an important relationship or educational opportunity because of my gaming activity	600	0	2.34	2.00	1.152	1	4

It is evident from the table above that there are no missing values reported in the dataset and this generates an idea on gaming disorder levels from all sets of data. The list of mean scores shows that the highest score reported is at 3.35 and lowest is at 2.02. The highest score is in relevance to the respondents highly agreeing about thinking about their previous gaming session or the upcoming one. The other items where a score of more than 3 is observed includes losing interest in old hobbies and other modes of entertainment due to their involvement in gaming. The respondents have also highly agreed to have deceived either their family members, friends or families due to gaming and finding themselves to be preoccupied due to their interest in gaming. This behaviour shows that the impact of gaming is high in these areas of the girls where their behaviour is seen to be regulated with an indulgence in the gaming activities. The lowest score in the list of items is about failing to control their gaming activities and for the item measuring their behaviour towards continuing gaming even after knowing people around them have a problem with it. This indicates that majorly the respondents are able to control their gaming behaviour which is a good sign.

Descriptives

	N	Mean	Median	SD	Minimum	Maximum
Gaming Disorder Level	600	2.56	2.27	0.971	1.36	4.18



The final mean score across the 11 items in the scale is at 2.56 which is comparatively lower. The plot shows that the values mostly ranged below 2 for the 600 respondents. This is a positive sign and it reflects on the fact that the gaming disorder is observed to be at the minimum level for the majority of the respondents. In order to know more about the gaming disorder levels, its association with the two demographic variables are made. As in case of age and gaming experience, the number of categories are more than 2, One Way ANOVA is used for the purpose of the study.

Age Group

	χ^2	df	p
Gaming Disorder Level	264	5	< .001

The first ANOVA conducted for the age group shows a p-value of less than 0.05. This indicates that there is significant difference in the gaming disorder level mean scores based on the age of the respondent. In order to investigate further, post hoc analysis is conducted where pairwise comparisons are done to identify the exact levels where the difference is observed.

Pairwise comparisons - Gaming Disorder Level

		W	p
13-14	14-15	17.765	< .001
13-14	15-16	0.979	0.983
13-14	16-17	-17.765	< .001

Pairwise comparisons - Gaming Disorder Level

		W	p
13-14	17-18	5.922	< .001
13-14	18-19	5.922	< .001
14-15	15-16	0.753	0.995
14-15	16-17	-16.186	< .001
14-15	17-18	-16.186	< .001
14-15	18-19	-16.186	< .001
15-16	16-17	-17.323	< .001
15-16	17-18	-0.753	0.995
15-16	18-19	-0.753	0.995
16-17	17-18	16.186	< .001
16-17	18-19	16.186	< .001
17-18	18-19	16.186	< .001

The table above shows that for the majority of the pairs, the p-value is less than 0.05 that shows the presence of a statistically significant difference based on age group. However, the pairs where no such difference is observed includes the 15-16 years of respondents with other age groups. This shows that the respondents in the 15 to 16 years category have gaming disorder levels which are independent of their age group.

Years of Gaming Experience

	χ^2	df	p
Gaming Disorder Level	9.31	2	0.010

Pairwise comparisons - Gaming Disorder Level

		W	p
1-3 years	Less than 1 year	-2.74	0.128
1-3 years	More than 3 years	3.41	0.042
Less than 1 year	More than 3 years	3.41	0.042

In case of the years of experience the respondents hold in gaming, with a p-value of less than 0.05, the mean score difference is found to be statistically significant. The pairwise comparisons show that there is no significant difference found between the respondents having gaming experience of 1-3 years and less than 1 year. But when it comes to more than 3 years there is a significant mean score difference observed. This shows that when the respondents have a gaming experience of more than 3 years, their gaming disorder levels are different from those having lesser years of experience. This is a novel finding and should be investigated further for more details on the same.

The gaming disorder levels in the respondents are able to generate a number of interesting findings. Now, let's look into the gender based discrimination experiences that are reported by the respondents and their association with different factors.

There are 13 items in the scale that is used to measure the discriminatory behaviour exhibited by the online gamers towards these girls. The descriptives are as follows-

Descriptives

	N	Missing	Mean	Median	SD	Minimum	Maximum
I have experienced discrimination harassment based on my gender while gaming	600	0	2.78	3.00	1.129	1	5
I have experienced verbal harassment based on my gender while gaming	600	0	3.00	3.00	1.150	1	5
Gender differences impact the way players interact with each other in online gaming communities.	600	0	3.00	3.00	0.939	2	5
My gender influences my gaming experiences.	600	0	3.78	4.00	0.913	2	5
I feel pressure to conform to gender norms while gaming	600	0	2.66	2.00	0.941	2	5
Video game marketing often targets specific genders.	600	0	3.57	3.00	1.169	2	5
I avoid female avatars	600	0	3.57	3.00	1.169	2	5
I try to pass as male	600	0	3.21	3.00	1.135	2	5
I use gender neutral user name	600	0	3.33	3.00	1.050	2	5
I avoid talking to others while playing	600	0	2.66	2.00	0.941	2	5
I avoid voice chat	600	0	3.45	3.00	1.063	2	5
I try to forget any such discrimination	600	0	3.77	4.00	1.029	2	5
I report harasser immediately	600	0	3.35	3.00	1.338	2	5

In this case as well there are no missing values and provides the overall opinion of all the respondents enquired. The highest mean score here is at 3.78 which shows the high level of agreement about the gender of the girls influencing their gaming experiences. It is closely followed by a score of 3.77 which also shows the high level of agreement about trying to forget about the existence of such a discrimination. There are many other items which have a mean score of more than 3 and represents agreeing highly about instances such as video game marketers target only a specific gender, the girls using a gender neutral name and trying to pass on as a male. The lowest score is at 2.66 for two items which represent they feel pressured to conform to the gender norms in gaming and avoid talking to others when gaming. An analysis of the gender based experiences faced by the respondents shows that the presence of such gender based discrimination is highly agreed by the majority but there are few who get affected and conform to such norms in their online gaming activities.

In order to know more about these discrimination, a PCA is conducted to extract the underlying factors. The Bartlett's test and KMO is also reported to understand the sampling adequacy levels as well.

Bartlett's Test of Sphericity

χ^2	df	p
Inf	78	< .001

KMO Measure of Sampling Adequacy

	MSA
Overall	0.752
I have experienced discrimination harassment based on my gender while gaming	0.800
I have experienced verbal harassment based on my gender while gaming	0.785
Gender differences impact the way players interact with each other in online gaming communities.	0.535
My gender influences my gaming experiences.	0.621
I feel pressure to conform to gender norms while gaming	0.801
Video game marketing often targets specific genders.	0.778
I avoid female avatars	0.596
I try to pass as male	0.865
I use gender neutral user name	0.799
I avoid talking to others while playing	0.819
I avoid voice chat	0.677
I try to forget any such discrimination	0.825
I report harasser immediately	0.770

The overall KMO value stands at 0.752 and the p-value at Bartlett's test is less than 0.05. This fulfils all the conditions of sampling adequacy and considers the study to move ahead with other statistical analyses.

Component Loadings

	Component			Uniqueness
	1	2	3	
I have experienced discrimination harassment based on my gender while gaming			0.719	0.1847
I have experienced verbal harassment based on my gender while gaming			0.876	0.1200
Gender differences impact the way players interact with each other in online gaming communities.			0.867	0.0973
My gender influences my gaming experiences.	0.933			0.0308
I feel pressure to conform to gender norms while gaming	0.748			0.0661
Video game marketing often targets specific genders.	0.925			0.0319
I avoid female avatars		0.852		0.1593
I try to pass as male		0.904		0.0640
I use gender neutral user name		0.833		0.2018
I avoid talking to others while playing		0.748		0.0661
I avoid voice chat		0.951		0.0291
I try to forget any such discrimination		0.745		0.0699

Component Loadings

	Component			Uniqueness
	1	2	3	
I report harasser immediately		0.525		0.1812

Note. 'varimax' rotation was used

The above PCA included the varimax rotation to be able to maximise the factor loadings. As the sample size is more than 200, according to (Hair et al., 2006), the accepted factor loading is taken to be 0.4. Here, the table shows that there are three factors which have eigenvalues of more than 1 and all of the items have factor loadings of more than 0.4. Based on the above table, the description of the factors extracted are provided below.

Factor	Number of Items	Description
Discrimination Encounters	3	It represents the exposure of the respondents to different gender based experiences in their gaming activities
Perceived Influence	3	This factor talks about the influence caused by such discrimination on them and their gaming experiences
Coping Strategies	7	This factor is used to represent the different methods they employ in their online gaming activities to overcome such gender based discrimination

Descriptives

	N	Mean	Median	SD	Minimum	Maximum
Discrimination Encounters	600	2.93	3.00	0.854	1.33	4.33
Perceived Influence	600	3.34	3.33	0.783	2.33	5.00
Coping Strategies	600	3.33	3.29	0.664	2.57	5.00

The mean score analysis of the three factors extracted shows that the mean scores for perceived influence and coping strategies are almost equal with 3.34 and 3.33. This shows that the influence of gender based experiences are high and the level at which coping strategies are implemented are also high. This means that the discrimination encounter levels might be low but the influence caused by any such incident is high and the implementation of coping strategies is high even though they might not be subjected to constant discrimination encounters.

To further understand these three factors on discrimination, the One Way ANOVA is initiated where the two demographic variables of age group and gaming experience are considered.

Age Group			
	χ^2	df	p
Discrimination Encounters	222	5	< .001
Perceived Influence	413	5	< .001
Coping Strategies	359	5	< .001

The above table shows that there is a p-value of less than 0.05 seen for the three variables. This shows that the mean scores with respect to each of the three factors are significantly different based on the age group of the respondents. To analyse further, pairwise comparisons are conducted below.

Pairwise comparisons - Discrimination Encounters

		W	p
13-14	14-15	5.92	< .001
13-14	15-16	7.72	< .001
13-14	16-17	5.92	< .001
13-14	17-18	5.92	< .001
13-14	18-19	-5.92	< .001
14-15	15-16	-20.15	< .001
14-15	16-17	-16.19	< .001
14-15	17-18	-16.19	< .001
14-15	18-19	-16.19	< .001
15-16	16-17	-16.19	< .001
15-16	17-18	-16.19	< .001
15-16	18-19	-20.15	< .001
16-17	17-18	-20.15	< .001
16-17	18-19	-16.19	< .001
17-18	18-19	-16.19	< .001

In the variable of discrimination encounters, the difference is observed in case of all the age groups.

Pairwise comparisons - Perceived Influence

		W	p
13-14	14-15	-18.726	< .001
13-14	15-16	1.003	0.981
13-14	16-17	18.726	< .001
13-14	17-18	18.726	< .001
13-14	18-19	-13.241	< .001
14-15	15-16	10.291	< .001
14-15	16-17	16.186	< .001
14-15	17-18	16.186	< .001
14-15	18-19	16.186	< .001
15-16	16-17	17.323	< .001
15-16	17-18	17.323	< .001
15-16	18-19	-0.753	0.995
16-17	17-18	-16.186	< .001
16-17	18-19	-16.186	< .001
17-18	18-19	-16.186	< .001

For perceived influence, there are two pairs where the p-value is found to be more than 0.05 and this includes the age group of 15-16 years as the common element.

Pairwise comparisons - Coping Strategies

		W	p
13-14	14-15	-12.484	< .001

Pairwise comparisons - Coping Strategies

		W	p
13-14	15-16	-3.019	0.269
13-14	16-17	17.765	< .001
13-14	17-18	17.765	< .001
13-14	18-19	-5.922	< .001
14-15	15-16	0.753	0.995
14-15	16-17	16.186	< .001
14-15	17-18	16.186	< .001
14-15	18-19	16.186	< .001
15-16	16-17	17.323	< .001
15-16	17-18	17.323	< .001
15-16	18-19	-0.753	0.995
16-17	17-18	-16.186	< .001
16-17	18-19	-16.186	< .001
17-18	18-19	-16.186	< .001

A similar case is found to be applied in case of coping strategies as well where it is the age group of 15-16 years that shows differences in mean scores with other age groups.

Years of Gaming

	χ^2	df	p
Discrimination Encounters	252	2	< .001
Perceived Influence	109	2	< .001
Coping Strategies	155	2	< .001

With respect to the years of gaming, it is seen that the mean score difference in each of the three variables are significant. This represents the presence of a difference in opinion about the three factors based on the years of experience held by the respondents.

Pairwise comparisons - Discrimination Encounters

		W	p
1-3 years	Less than 1 year	-19.20	< .001
1-3 years	More than 3 years	-8.83	< .001
Less than 1 year	More than 3 years	19.71	< .001

Pairwise comparisons - Perceived Influence

		W	p
1-3 years	Less than 1 year	14.12	< .001
1-3 years	More than 3 years	11.62	< .001
Less than 1 year	More than 3 years	-2.44	0.196

Pairwise comparisons - Coping Strategies

		W	p
1-3 years	Less than 1 year	19.48	< .001
1-3 years	More than 3 years	8.90	< .001
Less than 1 year	More than 3 years	-5.45	< .001

The pairwise comparisons show some interesting results. While for the factors of Discrimination Encounters and Coping Strategies, the mean score difference is seen to be significant across all the three years of gaming experience, for perceived influence, this difference is found to be insignificant between experiences of less than 1 year and more than 3 years. This shows that the role of the demographics are quite important when considering the gender based discrimination faced by adolescent girls in the online gaming community. Lastly, to generate an idea about how these gender based experiences impact on the gaming disorder levels of the girls, a multiple linear regression is conducted below.

Model Fit Measures

Model	R	R²	Adjusted R²	Overall Model Test			
				F	df1	df2	p
1	0.313	0.0981	0.0936	21.6	3	596	< .001

Model Coefficients - Gaming Disorder Level

Predictor	Estimate	SE	t	p
Intercept	4.262	0.2378	17.92	< .001
Discrimination Encounters	-0.271	0.0477	-5.70	< .001
Perceived Influence	-0.530	0.1316	-4.03	< .001
Coping Strategies	0.259	0.1528	1.70	0.090

The regression model generated shows a p-value of less than 0.05. This means that the model generated is statistically significant in nature. The variance expressed with the adjusted R² value shows that with a unit change in the factors of gender based experience there can be a change of 0.0936 or 9.36% in the gaming disorder levels. While this variance is not that high and represents a minimum impact of the gender based experiences on the disorder caused from gaming. The analysis of the three factors independently in the next table shows that only two out of the three factors have a significant impact. It is the discrimination encounters and perceived influence that have a negative but significant impact on gaming disorder levels. The estimates show that perceived influence has a comparatively higher level of impact compared to discrimination encounters. For the coping strategies, there is no impact on the gaming disorder levels observed. This section of the study has been able to highlight a number of important findings by focusing on the relationship shared by both. In the next section a detailed discussion on the same is put forward.

5. Discussion

As the world of online gaming expands, there are various challenges that have been addressed by researchers to overcome the complexities faced by the individuals involved. The number of female gamers have substantially increased in the last few years with a number of adolescent girls considering online gaming as a recreational activity. This has brought with it a number of challenges including the fixing of different levels of gender-based discrimination in the online gaming community. This study has focused on understanding these experiences and the impact that it is equal to calls on the gaming disorder levels of adolescent girls especially. The quantitative approach undertaken in the study here is able to generate many interesting results that can help in the literature and allow everyone to understand more about gender discrimination in online gaming. The 600 girls enquired in the study have been able to provide responses that helped in arriving at the conclusion of the study.

The gaming disorder levels have been specified to be essential for examination especially among gamers who are in their formative years such as adolescent stage. The understanding of the gaming disorder levels in these girls has shown that although the levels are comparatively lower there are chances for converting it into higher levels as there is a high mean score observed about the reminiscence of the girls about their past or future gaming sessions. This is in concordance with the study provided by (Gan et al., 2023; Kuss & Griffiths, 2012a, 2012b) and understands the similar form of gaming disorder levels for adolescents. The interesting result that is found here is that the gaming disorder levels deviate in case of majority of the age groups but when it comes to the 15-16 years age of girls, there is no significant mean score difference observed. The age group of 15-16 years often represent a transition taken from school level to the higher secondary levels. This might bring about a difference in statistical understanding and needs to be investigated further. In the case of gaming experience, it is seen that the respondents who have a gaming experience of more than 3 years exhibit a difference in their gaming disorder levels. This means that once the girls have acquired a stability in their gaming experience, their disorder levels can be quite different from others having less than 3 years of experience. The gaming disorder levels have exhibited interesting results and can be beneficial to add to the studies provided by.

The investigation of gender-based discrimination practices in online gaming activities is another interesting aspect. The use of many statistical tools have allowed us to understand various perspectives associated with it and generate a holistic idea on it. Firstly, the items in the scale are subjected to PCA from which three underlying factors are extracted. The nature of the items allowed the researcher to segregate it based on the discrimination encountered, perceived influence caused and the coping strategies applied. The scale is able to concentrate on different parameters and further analyses have generated interesting results. The analysis shows that there are discrimination encounters faced by the majority of the respondents which is similar to the results provided by (Cote, 2017; L. K. Kaye & Pennington, 2016). There are also high levels of influence observed on the girls based on the discrimination encounters observed as also stated by (Darvin et al., 2020; Nguyen et al., 2022). Then the coping strategies are found to be applied by the majority of the respondents. These strategies and their frequency of application is found to be in line with the results provided by . The analysis of these factors shows that the girls are experiencing discrimination in the online gaming communities which has a significant impact on them while they are constantly applying coping strategies to make these experiences less impactful. The analysis of the situation indicates that although online gaming is adopted by adolescent girls for entertainment, they are subjected to such experiences which makes it difficult for them.

The relation between the gender based discrimination and gaming disorder levels using a regression model shows a significant association. This result is according to those provided by (Lopez-Fernandez et al., 2019; Müller et al., 2015; Schivinski et al., 2018) and mentions about the less but statistically significant impact caused. There is around 9% of variance caused on the gaming disorder levels by every such experience. Although the gaming disorder levels are low at present, with such experiences, the chances of it to go higher would be more.

6. Conclusion and Future Research Directions

The online gaming community is known to be complex and especially it is more when there are female gamers involved. Although the challenges exhibited to the female gamers are adjusted or coped up by experienced gamers, for gamers who are in their formative years such as adolescents, the situation can often become more serious. The impact can be in the form of increased mental health issues leading up to anxiety and depression. In order to avoid such issues, the study here has covered two essential aspects- the present gaming disorder levels in the girls and how it is impacted by the gender based discrimination they experience in the online gaming communities. The results have shown that there is a need to regulate the gender based experiences in online gaming so that the impact that it is capable of in gaming disorder levels. It can be done by providing awareness sessions in the online gaming community, how such experiences can impact on adolescent girls especially in their mental health experiences. The need to raise such programs for adolescent girls as well can be helpful. This would make them more informed and help them to get over such extreme experiences.

The study has also brought with it a number of future research directions. Firstly, the age group of 15-16 years is found to be significant in various aspects. There can be specific research focusing this group of gamer adolescent girls can be conducted. A more thorough comparative analysis made through this age group with the others. The next set of studies can understand other factors coworking in the environment of adolescent girls in finding out their approach in coping strategies and gaming disorder levels. In this regard, qualitative studies can also generate better results.

References

1. Adinolf, S., & Turkay, S. (2018). Toxic Behaviors in Esports Games. *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts*, 365–372. <https://doi.org/10.1145/3270316.3271545>
2. Clement, J. (2024, March 26). *U.S. children daily time on gaming apps 2019-2023*. Statista.
3. Cote, A. C. (2017). "I Can Defend Myself." *Games and Culture*, 12(2), 136–155. <https://doi.org/10.1177/1555412015587603>

4. Darvin, L., Vooris, R., & Mahoney, T. (2020). The playing experiences of esports participants: An analysis of treatment discrimination and hostility in esports environments. *Journal of Athlete Development and Experience*, 2(1). <https://doi.org/10.25035/jade.02.01.03>
5. Fox, J., & Tang, W. Y. (2017). Women's experiences with general and sexual harassment in online video games: Rumination, organizational responsiveness, withdrawal, and coping strategies. *New Media & Society*, 19(8), 1290–1307. <https://doi.org/10.1177/1461444816635778>
6. Gan, X., Qin, K.-N., Xiang, G.-X., & Jin, X. (2023). The relationship between parental neglect and cyberbullying perpetration among Chinese adolescent: The sequential role of cyberbullying victimization and internet gaming disorder. *Frontiers in Public Health*, 11. <https://doi.org/10.3389/fpubh.2023.1128123>
7. González-Bueso, V., Santamaría, J., Oliveras, I., Fernández, D., Montero, E., Baño, M., Jiménez-Murcia, S., del Pino-Gutiérrez, A., & Ribas, J. (2020). Internet Gaming Disorder Clustering Based on Personality Traits in Adolescents, and Its Relation with Comorbid Psychological Symptoms. *International Journal of Environmental Research and Public Health*, 17(5), 1516. <https://doi.org/10.3390/ijerph17051516>
8. Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate Data Analysis* (6th ed.). Pearson Prentice Hall.
9. Hidayat, Z., PERMATASARI, C. B., & MANI, L. (2022). CYBER VIOLENCE AND BULLYING IN ONLINE GAME ADDICTION: A PHENOMENOLOGICAL STUDY. *Journal of Theoretical and Applied Information Technology*, 100(5).
10. Kaye, L. K., & Pennington, C. R. (2016). “Girls can’t play”: The effects of stereotype threat on females’ gaming performance. *Computers in Human Behavior*, 59, 202–209. <https://doi.org/10.1016/j.chb.2016.02.020>
11. Kaye, L. S., Hellsten, L. M., McIntyre, L. J., & Hendry, B. P. (2022). ‘There’s a fine line between trash-talking and cyberbullying’: a qualitative exploration of youth perspectives of online gaming culture. *International Review of Sociology*, 32(3), 426–442. <https://doi.org/10.1080/03906701.2022.2133407>
12. Keipi, T., & Oksanen, A. (2014). Self-exploration, anonymity and risks in the online setting: analysis of narratives by 14–18-year olds. *Journal of Youth Studies*, 17(8), 1097–1113. <https://doi.org/10.1080/13676261.2014.881988>
13. Kordyaka, B., Laato, S., Jahn, K., Hamari, J., & Niehaves, B. (2023). The Cycle of Toxicity: Exploring Relationships between Personality and Player Roles in Toxic Behavior in Multiplayer Online Battle Arena Games. *Proceedings of the ACM on Human-Computer Interaction*, 7(CHI PLAY), 611–641. <https://doi.org/10.1145/3611043>
14. Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. Educational and Psychological Measurement. Small-Sample Techniques. *The NEA Research Bulletin*, 38.
15. Kuss, D. J., & Griffiths, M. D. (2012a). Internet Gaming Addiction: A Systematic Review of Empirical Research. *International Journal of Mental Health and Addiction*, 10(2), 278–296. <https://doi.org/10.1007/s11469-011-9318-5>
16. Kuss, D. J., & Griffiths, M. D. (2012b). Internet Gaming Addiction: A Systematic Review of Empirical Research. *International Journal of Mental Health and Addiction*, 10(2), 278–296. <https://doi.org/10.1007/s11469-011-9318-5>
17. Li, Q., Luo, Y., Hao, Z., Smith, B., Guo, Y., & Tyrone, C. (2021). RETRACTED ARTICLE: Risk Factors of Cyberbullying Perpetration Among School-Aged Children Across 41 Countries: a Perspective of Routine Activity Theory. *International Journal of Bullying Prevention*, 3(3), 168–180. <https://doi.org/10.1007/s42380-020-00071-6>
18. Lopez-Fernandez, O., Williams, A. J., Griffiths, M. D., & Kuss, D. J. (2019). Female Gaming, Gaming Addiction, and the Role of Women Within Gaming Culture: A Narrative Literature Review. *Frontiers in Psychiatry*, 10. <https://doi.org/10.3389/fpsy.2019.00454>
19. Lu, D., He, Y., & Tan, Y. (2022). Gender, Socioeconomic Status, Cultural Differences, Education, Family Size and Procrastination: A Sociodemographic Meta-Analysis. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.719425>
20. McLean, L., & Griffiths, M. D. (2019). Female Gamers’ Experience of Online Harassment and Social Support in Online Gaming: A Qualitative Study. *International Journal of Mental Health and Addiction*, 17(4), 970–994. <https://doi.org/10.1007/s11469-018-9962-0>
21. Müller, K. W., Janikian, M., Dreier, M., Wölfling, K., Beutel, M. E., Tzavara, C., Richardson, C., & Tsitsika, A. (2015). Regular gaming behavior and internet gaming disorder in European adolescents: results from a cross-national representative survey of prevalence, predictors, and psychopathological correlates. *European Child & Adolescent Psychiatry*, 24(5), 565–574. <https://doi.org/10.1007/s00787-014-0611-2>
22. Nguyen, S. H., Sun, Q., & Williams, D. (2022). How do we make the virtual world a better place? Social discrimination in online gaming, sense of community, and well-being. *Telematics and Informatics*, 66, 101747. <https://doi.org/10.1016/j.tele.2021.101747>
23. Owalla, B., Nyanzu, E., & Vorley, T. (2021). Intersections of gender, ethnicity, place and innovation: Mapping the diversity of women-led SMEs in the United Kingdom. *International Small Business Journal: Researching Entrepreneurship*, 39(7), 681–706. <https://doi.org/10.1177/0266242620981877>
24. Paulus, F. W., Ohmann, S., von Gontard, A., & Popow, C. (2018). Internet gaming disorder in children and adolescents: a systematic review. *Developmental Medicine & Child Neurology*, 60(7), 645–659. <https://doi.org/10.1111/dmcn.13754>

25. Priess, H. A., Lindberg, S. M., & Hyde, J. S. (2009). Adolescent Gender-Role Identity and Mental Health: Gender Intensification Revisited. *Child Development*, 80(5), 1531–1544. <https://doi.org/10.1111/j.1467-8624.2009.01349.x>
26. Resurrección, D. M., Salguero, J. M., & Ruiz-Aranda, D. (2014). Emotional intelligence and psychological maladjustment in adolescence: A systematic review. *Journal of Adolescence*, 37(4), 461–472. <https://doi.org/10.1016/j.adolescence.2014.03.012>
27. Sanders, R. A. (2013). Adolescent Psychosocial, Social, and Cognitive Development. *Pediatrics in Review*, 34(8), 354–359. <https://doi.org/10.1542/pir.34-8-354>
28. Schettler, L., Thomasius, R., & Paschke, K. (2022). Neural correlates of problematic gaming in adolescents: A systematic review of structural and functional magnetic resonance imaging studies. *Addiction Biology*, 27(1). <https://doi.org/10.1111/adb.13093>
29. Schivinski, B., Brzozowska-Woś, M., Buchanan, E. M., Griffiths, M. D., & Pontes, H. M. (2018). Psychometric assessment of the Internet Gaming Disorder diagnostic criteria: An Item Response Theory study. *Addictive Behaviors Reports*, 8, 176–184. <https://doi.org/10.1016/j.abrep.2018.06.004>
30. Selkie, E. M., Kota, R., Chan, Y.-F., & Moreno, M. (2015). Cyberbullying, Depression, and Problem Alcohol Use in Female College Students: A Multisite Study. *Cyberpsychology, Behavior, and Social Networking*, 18(2), 79–86. <https://doi.org/10.1089/cyber.2014.0371>
31. Suseno, Y., & Abbott, L. (2021). Women entrepreneurs' digital social innovation: Linking gender, entrepreneurship, social innovation and information systems. *Information Systems Journal*, 31(5), 717–744. <https://doi.org/10.1111/isj.12327>
32. Vo, H. H.-P., Trung Tran, H., & Luu, S. T. (2021). Automatically Detecting Cyberbullying Comments on Online Game Forums. *2021 RIVF International Conference on Computing and Communication Technologies (RIVF)*, 1–5. <https://doi.org/10.1109/RIVF51545.2021.9642116>
33. Weber, M., Koehler, C., & Schnauber-Stockmann, A. (2019). Why Should I Help You? Man Up! Bystanders' Gender Stereotypic Perceptions of a Cyberbullying Incident. *Deviant Behavior*, 40(5), 585–601. <https://doi.org/10.1080/01639625.2018.1431183>
34. Yildirim, N. (2022). The Bullying Game: Sexism Based Toxic Language Analysis on Online Games Chat Logs by Text Mining. *Journal of International Women's Studies*, 24(3).
35. Yusuf, Ah., Rachmawati, P. D., & Rachmawati, D. (2022). The correlation of Internet addiction towards adolescents' social interaction. *International Journal of Adolescent Medicine and Health*, 34(5), 351–355. <https://doi.org/10.1515/ijamh-2020-0110>
36. Zhao, H., Li, X., Zhou, J., Nie, Q., & Zhou, J. (2020). The relationship between bullying victimization and online game addiction among Chinese early adolescents: The potential role of meaning in life and gender differences. *Children and Youth Services Review*, 116, 105261. <https://doi.org/10.1016/j.childyouth.2020.105261>
37. Zsila, Á., Urbán, R., Griffiths, M. D., & Demetrovics, Z. (2019). Gender Differences in the Association Between Cyberbullying Victimization and Perpetration: The Role of Anger Rumination and Traditional Bullying Experiences. *International Journal of Mental Health and Addiction*, 17(5), 1252–1267. <https://doi.org/10.1007/s11469-018-9893-9>