GAMING DISORDER AND PARANOIA: INVESTIGATING IDEATIONS AMONG FEMALE ADOLESCENTS IN ONLINE GAMING COMMUNITIES

Richa Yadav[1*]

[1*]Research scholar in department of social sciences at Jaipur National University, Jaipur
Email ID – itsmericha09@gmail.com

*Corresponding author: Richa Yadav
*Research scholar in department of social sciences at Jaipur National University, Jaipur
Email ID – itsmericha09@gmail.com

Abstract
The role of online gaming is quite significant at the present time. Although researchers in the past has made many efforts to understand various aspects of it, the literature about the same focusing on women gamers has been lacking. The study here understood the gap and carried out this extensive quantitative study to make several interesting highlights. The results are understood by investigating 300 school going and 300 college going girls who are actively involved in the world of online gaming. The gaming disorder levels is the first aspect that is measured across these girls followed by their mental health components. The world of gaming has been stereotyped as male dominated and hence the number of studies focusing on women gamers are limited. This study enquired the situation of female gamers at an early stage i.e., adolescence and investigated in detail about it. The results have shown the areas of mental well-being such as self-esteem, self-identity and psychological well-being where these girls need help and focus. Further, the role of the type of educational institute is quite elaborately discussed here. The need to understand the root cause of behavioural influences in areas such as online gaming is the need to the hour and the study here is able to generate interesting results in association to the same.

Keywords- Gaming; Disorder; Psychological; Girls; School; College

1. Introduction
Online gaming has become one of the most common recreational activities undertaken by individuals at all ages. Recently, it's popularity among children specially those who are at their adolescent or teenage level is found to be very high. According to (Clement, 2024), in the year 2023 children including teenagers in the United States of America spent 140 minutes on an average playing online games. It is seen that children often involved in different forms of online gaming rather than engaging themselves in outdoor activities. This has made online give me their most preferred form of recreation but brings with it several challenges (Sanders, 2016). The form of online gaming is inclusive of a number of different aspects which no longer makes it only a platform for gaming. It allows the children to meet different people across the world as a part of the gaming community and undertake some of their behavioural aspects into their formulated stage (Pratiwi & Karneli, 2020). While it is easier for adults to understand the difference and create their own identity, the growing stage four children especially in their adolescent years the underlying knowledge can be difficult. The

adolescence stage is one of the most crucial period and involves different changes that occur in the physical and psychological being of an individual (Calero et al., 2018; Faric et al., 2019; Ying Ying et al., 2020). It is considered to be emotionally challenging when the children try to find their position in the world with an identity of their own (Nguyen et al., 2022; Priess et al., 2009). There are many studies that have tried to capture the emotional challenges undergone by adolescence, however the need to understand it in relevance to different aspects available in the modern technology world is essential.

The world of gaming is often referred to be male centric and the literature talking about it restricts too male respondents mostly (McLean & Griffiths, 2019). This poses a challenge as not much is known about the demographic of female gamers who fall in the age group of adolescence. The number of female gamers in the present times has drastically increased and this also involves girls in the age group of 13 to 19 who are not investigated much in academic research. The intention of the study is to provide a comprehensive overview about the girls who are involved in gaming and associate their psychological well-being by identifying the disorders attained from gaming. The study recognise this two aspects which are quite crucial and has not been effectively addressed as yet. This includes the study of female gamers and particularly those who are in their formative years and fall in their adolescent stages. The main attempt of the study is to provide a psychological analyses of this category of gamers to be able to better understand the situation. The study here would attempt to resolve the following research questions.

RQ1: Do adolescent girls generate high levels of gaming disorder from their online gaming experiences?

RQ2: How does the gaming disorder levels fluctuate based on the essential mental health attributes of these adolescent girls?

RQ3: Does the type of institution they attend have any differentiating levels on the gaming disorder levels?

The research questions would be attempted for understanding and analysis through the upcoming sections of the research.

2. Review of Literature

The world of online gaming has incorporated adolescence as one of its major chunk of participants while leaving a chance of race with their behavioural aspects. The online gaming zone although it's considered as an effective medium of providing entertainment and recreation to such children, comes with a number of challenges with that. The primary challenge that occurs in the online gaming zone is the exposure of the children to different people across the world (Tsui & Cheng, 2021). The world of online gaming is known to have different forms of bullying and the adolescence involved can often be a victim to it. The forms of bullying differ from each community but research has suggested that verbal abuse can often be one of the highly used forms of bullying in the zone (Kaye et al., 2022; Prasetyaningtyas & Prayogo, 2021; Xiang et al., 2022). The situation could be either a child being a bullying victim or be themselves converted into one of the bullies by looking into the behavioural conduct of their other team members. Apart from verbal abuse, the form of cyber bullying involved in online gaming community is involved stalking or discriminating the other members (Stepanova et al., 2021; Xiang et al., 2022). While this is only one part of the challenge that the formative years of an adolescent gamer might involve, there are other psychological impact that the online gaming community and its behavioural forms can have on the gamers. It does seem that adolescents who are a part of online gaming community is often are suffering from psychological difficulties such as anxiety and depression(Akbari et al., 2021). It can be associated to the gaming motives or one's own personality traits but it should not be removed from the considerations of an adolescent behaviour.

The word gaming disorder has become quite prevalent in the literature of online gaming and its impact is found to be quite high in terms of adolescent gamers. The gaming behaviour can often turn into addiction which makes it difficult for the adolescence to keep away from it and engage in other activities of their lives (Kaimara et al., 2022; Karunanayake et al., 2020; Pavlopoulou et al., 2022). It can entirely impact on their future well-being as they are unable to concentrate on activities which can help them to build a good future. The amount of time spent on a gaming platform can generate

different levels of depressive symptoms leading up to serious conditions among children (Liu et al., 2021). Researchers also focused on other attributes that can lead towards gaming disorders and it also includes parenting styles and the involvement of parents in the children's life (Chen et al., 2020). In certain cases the detachment of the children from their parents can result in generating higher amount of time on such platforms which eventually affect their mental well-being.

The psychological impact caused by online gaming platforms on children is quite serious and needs to be considered more effectively for better resolution. One aspect of online gaming to be addressed quite seriously is the focus from gender specific issues. As the number of female gamers have increased substantially in the past few years, it is essential to address the gender specific difficulties that also occurs in the gaming zone and leads on to impact the mental well-being of the gamers. The female gamers face different challenges while trying to use online gaming for their entertainment purposes. The cases of bullying are even more serious in case of female gamers where they are also subjected to sexual harassment making it far more psychologically challenging (Huang et al., 2019; Rehman, 2017). The case of sexual harassment are accompanied by other challenges such as facing global abuse are being used for purpose of the other. The literature in this aspect is quite limited and needs to be broadened especially looking into the changing landscape of female gamers. The study here tries to integrate the understanding about female gamers who are in the category of adolescence and understand their mental well-being and gaming disorder levels.

The review conducted here shows that the association of gaming disorder has largely been focused into different categories of gamers but its understanding with respect to female adolescents are comparatively lower. Further, the association of the type of institute these girls attend to has not been analysed thoroughly. Therefore, the following objectives are set up for the purpose of the study.

1. To examine the impact of gaming disorder on the identities, mental health, and paranoid ideation experiences of female adolescents in online gaming communities.
2. To draw a comparative analysis in these levels based on the type of institute that they are attending. In the next section the detailed method followed to arrive at the results of the study are discussed.

3. **Research Methodology**
The methods and materials used for conducting a study is of utmost importance as it can exhibit the levels of error and biasness resulted. In this case a descriptive nature of study is conducted where a quantitative approach has been undertaken. The methodological approach generated here is quite rigorous and the process followed is provided below.

Sampling Population
The study here is based on a specific group of respondents and it includes adolescent girls as the population of the study. The age group for the respondents is specified between 13 to 19 years of age.

Sampling Method
The process of selecting the final group of respondents include considering a non-probabilistic method. Here, the judgement sampling method is followed to select the final group of respondents. The criteria considered for the selection is as follows-
1. Female adolescents between the ages of 13 and 19 who engage in online gaming.
2. Participants will be recruited from diverse gaming platforms and communities to ensure a representative sample.
3. Females residing in the areas of Delhi-NCR region, India belonging to all socio-economic classes will be targeted.

Sample Size
A total oof 600 respondents has been considered for the purpose of the study. The datasets include 300 responses from girls who are studying in any school in Delhi-NCR and another 300 responses are from girls studying in colleges located in the region.

Research Instrument
The data required for the study would be collected using a structured questionnaire which has been prepared from existing literature. The questionnaire includes items mostly in the 5 Point Likert Type Scale and consist of scales used to measure the set objectives of the study.

Statistical Approach
The purpose of the study here is to draw a comparative analysis of the datasets from the girls in the gaming community studying in a college and school. To address the comparative analysis, correlation analysis would be used to access the points of commonality and difference between the two groups. Other than that principal component analysis (PCA) along with descriptive analysis using mean scores has been used for the purpose of the study.
The detailed statistical analysis conducted is explained in the next section.

4. Data Analysis and Interpretation
As mentioned above there are a total of 600 responses collected for the purpose of the study. There are a total of two scales being employed in order to arrive at the results of the study.
The two scales include – one understanding the gaming disorder among the adolescent girls studying in two different types of institutions and the second scale is about gauging the psychological levels of the respondents while being engaged in gaming communities.
The first scale used is that of Gaming Disorder and it includes a total of 11 items. The scale to understand the mental well-being of the respondents includes 36 items. The process to be followed in analysing these datasets is to divide into sub-sections investigating each category of the respondents. But before that a demographic understanding about the respondents is provided below.

Frequencies of Type of Institution

Type of Institution	Counts	% of Total	Cumulative %
College	300	50.0 %	50.0 %
School	300	50.0 %	100.0 %

Firstly as mentioned above, the study includes a total of 600 girls who are equally divided among the current educational institutes of a school and college. This consideration is taken to arrive at a holistic overlook into the situation and determine how these girls are affected based on the type of institution they are in.

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 %

 It is evident that the girls in the age group of 13 to 16 are a part of school as it is the only option. In case of girls between 16 to 19, they can either be a part of a school or a college. Taking into consideration the above point, it is seen that 30% girls are in the age group of 13-14 years followed by another 30% in the category of 15-16 years. The remaining groups include 10% each of the

respondents. It shows that the samples consider 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 %
More than 3 years	180	30.0 %	100.0 %

The online gaming experience has also been investigated among the respondents to understand better about them. 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.

4.1 Understanding School Going Respondents

As the main purpose of the study is to draw a comparative analysis, here two sections are created to understand the two scales in detail. Firstly, the responses from the school going girls are investigated here.

The gaming disorder among the respondents are measured using an 11 items scale and descriptive analysis are as follows-

Descriptives

	N	Mean	Median	SD	Minimum	Maximum
I feel preoccupied with my gaming behaviour	300	2.80	2.00	0.981	2	4
I think about previous gaming activity or anticipate the next gaming session	300	3.40	3.00	1.499	1	5
I think gaming has become the dominant activity in my daily life	300	2.60	2.00	0.801	2	4
I feel more irritability, anxiety or even sadness when I try to either reduce or stop my gaming activity	300	2.20	2.00	1.472	1	5
I feel the need to spend increasing amount of time engaged gaming in order to achieve satisfaction or pleasure	300	2.20	2.00	1.168	1	4
I systematically fail when trying to control or cease my gaming activity	300	2.20	2.00	1.168	1	4
I have lost interest in previous hobbies & other entertainment activities as a result of my engagement with the game	300	3.00	3.00	1.417	1	5
I continued my gaming activity despite knowing it was causing problems between me & other people	300	2.20	2.00	1.168	1	4
I deceived my family members, therapists, or others because the amount of my gaming activity	300	3.00	3.00	1.417	1	5

Descriptives

	N	Mean	Median	SD	Minimum	Maximum
I play in order to temporarily escape or relieve a negative mood (e.g., helplessness, guilt, anxiety)	300	2.40	2.00	0.491	2	3
I have jeopardized or lost an important relationship or educational opportunity because of my gaming activity	300	2.20	2.00	1.168	1	4

The above table is an overall representation of the gaming disorder level of the girls in school. It is seen that mean scores shown here are not quite high which is a good sign. It represents that the disorder among the girls involved in gaming is not that high. The scores depict the lowest value at 2.20. It is interesting to note that this value is shared by five out of 11 items in the scale. The items that exhibit this score indicates the low level of agreement by the girls on having a feeling of anxiety, irritability or sadness if they are unable to reduce or stop their gaming. They also show low amount of agreement about the need to spend more time in gaming for pleasure. The next item with this score is to show the failure to control their gaming behaviour. The low score is also observed in case of agreement among the girls on continuing gaming even though they know it to cause problems to others. Lastly, they do not highly agree about jeopardising a relationship due to gaming.

The highest mean score is at 3.40 which is much higher than all the other scores observed in the items. It is with respect to having an agreement on waiting for the next gaming session or keep thinking about the past gaming activity. The analysis of the descriptives here in case of school going gamers is that the gaming disorder level is estimated low. Here, they do not exhibit any high level of anxiety about gaming but it is evident that they do anticipate and wait for their gaming sessions eagerly.

As the gaming disorder scale clearly shows the status of the girls in school, the mental well-being scale is analysed below. The scale consists of a total of 36 items and to extract the underlying factors with respect to it, a PCA is conducted with varimax rotation. This method allows to maximise the factor loadings and generate a loading of more than 0.4 to comprise to a particular factor. Moreover, the Bartlett's test with KMO is conducted to measure the sampling adequacy of the items.

Component Loadings

	Component				
	1	2	3	4	Uniqueness
On the whole, I am satisfied with myself.	0.930				0.07762
At times I think I am no good at all.	0.848				0.04223
I feel that I have a number of good qualities.	0.930				0.07762
I am able to do things as well as most other people	0.941				0.00112
I feel I do not have much to be proud of.	0.848				0.04223
I certainly feel useless at times.	0.540				0.08321
I feel that I'm a person of worth, at least on an equal plane with others	0.778				0.05068
I wish I could have more respect for myself.	0.699				0.47794
All in all, I am inclined to feel that I am a failure.	0.869				0.20144
I take a positive attitude toward myself.	0.778				0.05068
My age accurately reflects who I am		0.901			0.02488
I have a positive view of myself.		0.941			0.00112

Component Loadings

	Component				
	1	**2**	**3**	**4**	**Uniqueness**
I am confident in my abilities		0.862			0.00604
I feel accepted by my friends.		0.901			0.02488
I am proud of my cultural or ethnic heritage.		0.567			0.01605
I am satisfied with my physical appearance.		0.941			0.00112
I feel pressure to look a certain way.		0.901			0.02488
I compare my appearance to others.		0.986			6.76e-4
My interests and hobbies reflect who I am.		0.567			0.01605
I feel pressure to conform to certain interests or activities.		0.869			0.20144
My interests and hobbies make me unique.		0.886			0.02340
I have clear goals for my future.		0.840			7.39e-5
I like most parts of my personality			0.795		0.11187
I am good at managing the responsibilities of my daily life			0.812		0.02855
I have warm and trusting relationships with others			0.778		0.00148
I had experiences that challenged me to grow and become a better person			0.986		6.76e-4
I am confident to express my own ideas and opinions			0.683		0.03763
I have a sense of direction in my life			0.803		0.31433
I often feel happy about my life			0.930		0.07762
I am interested in my life			0.869		0.00324
Overall I am satisfied with my life			0.784		0.36319
I feel others are to blame for most of my troubles				0.421	0.82259
I feel that most people cannot be trusted				0.978	0.04303
I feel that I am watched or talked about by others				0.456	0.87251
Others are not giving me proper credit for my achievements				0.978	0.04303
I feel that people will take advantage of me if I let them				0.738	0.45576

Note. 'varimax' rotation was used

The table above clearly shows that a total of four distinct factors are there in the scale measuring mental well-being of the girls. Based on the characteristics of the factors they are defined as follows –

1. Self-Esteem – This factor consists of 10 items and is associated to the understanding about the girls level of contentment and satisfaction with themselves. It reflects on the levels at which they think they are useful and has a positive attitude towards themselves.

2. Self-Identity – The second factor includes 12 items and it reflects on the idea held by the respondent about being themselves. It enquires about the levels at which they are satisfied with the appearance , the hobbies and interests that they have and the eye of society about their being.

3. Psychological well-being- This variable has nine items and talks about how the girls are acquainted with their own personalities. The level of trust that they have about their mental well-being through a happy and confident approach in life is enquired about here.

4. Paranoid Ideation – The last factor has 5 items and talks about the level of paranoia that they have with respect to others noticing them in the society.

All the five factors are quite important when understanding the mental well-being especially of adolescent girls. The overall KMO generated stand at 0.766 and the p-value from Bartlett's test is less than 0.05 generating an optimum sampling adequacy level. To determine the level at which these four aspects lay with the school girls, the mean score analysis is done.

Descriptives

	N	Mean	Median	SD	Minimum	Maximum
Self-Esteem	300	2.92	2.80	0.454	2.50	3.80
Self-Identity	300	3.12	3.25	0.679	2.25	3.92
Psychological well-being	300	2.98	3.11	0.560	2.22	3.67
Paranoid Ideation	300	2.83	2.80	0.523	2.00	3.80

This table shows that out of the four factors estimated to determine the mental health abilities of the girls involved in gaming from school. The mean scores above shows that the highest level of agreement of the girls is with respect to the factor of self-identity with 3.12. This shows that the girls despite being involved in online gaming, their self-identity levels are higher than other four variables. The lowest is with respect to paranoid ideation. This also shows that the girls belonging to school do not generate high levels of mental health issues after being a part of the online gaming community.

Now as the two scales and the items are being investigated and analysed for the school girls involved in gaming, the next section include conducting a correlation analysis to understand if these items of mental health are related to the gaming disorder levels exhibited by the respondents.

Correlation Matrix

		Self-Esteem	Self-Identity	Psychological well-being	Paranoid Ideation	Gaming Disorder
Self-Esteem	Pearson's r	—				
	p-value	—				
Self-Identity	Pearson's r	0.442	—			
	p-value	< .001	—			
Psychological well-being	Pearson's r	0.378	0.832	—		
	p-value	< .001	< .001	—		
Paranoid Ideation	Pearson's r	-0.002	0.002	-0.000	—	
	p-value	0.975	0.976	0.994	—	

Now as the two scales and the items are being investigated and analysed for the school girls involved in gaming, the next section include conducting a correlation analysis to understand if these items of mental health are related to the gaming disorder levels exhibited by the respondents.

Correlation Matrix

		Self-Esteem	Self-Identity	Psychological well-being	Paranoid Ideation	Gaming Disorder
Gaming Disorder	Pearson's r	-0.399	-0.899	-0.865	-0.004	—
	p-value	< .001	< .001	< .001	0.944	—

The correlation matrix above investigates not only the relationship between the four factors of mental health but also includes the association with the gaming disorder aspects.

The analysis of the correlation matrix shows that the factor of paranoid ideation is not statistically associated with any of the four factors. While in case of gaming disorder it is seen that with p-values of less than 0.05, the three factors of self-esteem, self-identity and psychological well-being are significantly but negatively related to gaming disorder. The correlation coefficient generate shows that in case of gaming disorder, psychological well-being and self-identity are strongly correlated. This means that with an increase in gaming disorder levels, the psychological well-being would be strongly negatively impacted. Similarly in case of self-identity levels as well. For self-esteem, the association is moderately associated in a negative direction. In case of paranoid ideation no such influence is observed.

4.2 Understanding College Going Respondents
The above section have shown the association generated using the responses from the girls going to school. Now to draw a comparative analysis, the study here would go forward and conduct a similar method of investigation using the responses from the girls studying in the colleges of NCR.
The descriptives below shows the gaming disorder levels among this set of respondents.

Descriptives

	N	Mean	Median	SD	Minimum	Maximum
I feel preoccupied with my gaming behaviour	300	3.40	4.00	1.202	1	4
I think about previous gaming activity or anticipate the next gaming session	300	3.60	3.00	0.801	3	5
I think gaming has become the dominant activity in my daily life	300	2.60	3.00	1.359	1	4
I feel more irritability, anxiety or even sadness when I try to either reduce or stop my gaming activity	300	2.80	3.00	1.603	1	5
I feel the need to spend increasing amount of time engaged gaming in order to achieve satisfaction or pleasure	300	2.40	2.00	1.022	1	4
I systematically fail when trying to control or cease my gaming activity	300	2.20	2.00	0.981	1	4

Descriptives

	N	Mean	Median	SD	Minimum	Maximum
I have lost interest in previous hobbies & other entertainment activities as a result of my engagement with the game	300	3.60	3.00	1.202	2	5
I continued my gaming activity despite knowing it was causing problems between me & other people	300	2.20	2.00	0.981	1	4
I deceived my family members, therapists, or others because the amount of my gaming activity	300	3.60	3.00	1.202	2	5
I play in order to temporarily escape or relieve a negative mood (e.g., helplessness, guilt, anxiety)	300	2.40	3.00	1.202	1	4
I have jeopardized or lost an important relationship or educational opportunity because of my gaming activity	300	2.60	3.00	1.022	1	4

The descriptive analysis above shows that the mean scores generated exhibits a similar pattern but with few changes in the values. The highest mean score here is at 3.60 which is found for two items. The first one is about the agreement on thinking about the next or previous gaming sessions and the second one is about deceiving family members, therapists and other associates because of the gaming activities they are involved in. The lowest score is at 2.20 and is used to represent two aspects. One that the girls continue on gaming despite knowing that it is causing them problem and the next is failing to control the gaming desires. The two types of educational institutes does seem to have created a difference in gaming disorder levels with the opinions being different for most items.

In order to understand the next scale of 36 items for mental health evaluation, the PCA method is followed. Here, the overall KMO is found to be at 0.778 and the Bartlett's test has a p-value of less than 0.05. The results from the PCA are as follows-

Component Loadings

	Component				Uniqueness
	1	2	3	4	
On the whole, I am satisfied with myself.	0.568				2.89e-5
At times I think I am no good at all.	0.965				2.42e-5
I feel that I have a number of good qualities.	0.469				2.95e-5
I am able to do things as well as most other people	0.833				8.25e-6
I feel I do not have much to be proud of.	0.965				2.42e-5
I certainly feel useless at times.	0.783				6.94e-5
I feel that I'm a person of worth, at least on an equal plane with others	0.578				2.46e-4
I wish I could have more respect for myself.	0.744				3.37e-4
All in all, I am inclined to feel that I am a failure.	0.981				3.44e-5
I take a positive attitude toward myself.	0.578				2.46e-4

Component Loadings

	Component				Uniqueness
	1	**2**	**3**	**4**	**Uniqueness**
My age accurately reflects who I am		0.634			5.61e-5
I have a positive view of myself.		0.833			8.25e-6
I am confident in my abilities		0.833			8.25e-6
I feel accepted by my friends.		0.869			2.16e-5
I am proud of my cultural or ethnic heritage.		0.877			1.61e-5
I am satisfied with my physical appearance.		0.833			8.25e-6
I feel pressure to look a certain way.		0.869			2.16e-5
I compare my appearance to others.		0.783			6.94e-5
My interests and hobbies reflect who I am.		0.877			1.61e-5
I feel pressure to conform to certain interests or activities.		0.981			3.44e-5
My interests and hobbies make me unique.		0.712			6.29e-5
I have clear goals for my future.				0.792	2.89e-4
I like most parts of my personality				0.648	1.42e-4
I am good at managing the responsibilities of my daily life				0.927	5.92e-4
I have warm and trusting relationships with others				0.949	8.85e-5
I had experiences that challenged me to grow and become a better person				0.793	9.37e-6
I am confident to express my own ideas and opinions				0.902	1.88e-5
I have a sense of direction in my life				0.981	3.44e-5
I often feel happy about my life				0.586	3.33e-5
I am interested in my life				0.416	1.28e-4
Overall I am satisfied with my life				0.798	9.37e-6
I feel others are to blame for most of my troubles			0.430		0.999
I feel that most people cannot be trusted			0.511		0.999
I feel that I am watched or talked about by others			0.683		0.999
Others are not giving me proper credit for my achievements			0.670		0.999
I feel that people will take advantage of me if I let them			0.565		0.999

Note. 'varimax' rotation was used

It is evident from the table above that there are four factors extracted from the items and they resemble the pattern exhibited by the previous group of respondents. Hereby, to understand more about these four factors, the mean score analysis is shown below.

Descriptives

	N	Mean	Median	SD	Minimum	Maximum
Self-Esteem	300	2.62	2.70	0.520	2.00	3.40
Self-Identity	300	2.82	2.42	0.711	2.00	3.75
Psychological well-being	300	2.80	2.56	0.552	2.11	3.56
Paranoid Ideation	300	2.82	2.80	0.518	2.00	3.80

It is interesting to note that all the mean scores in case of girls in college are below the range of 3. The highest mean score with 2.82 is for self-identity and paranoid ideation It is followed by psychological well-being at 2.80 and self-esteem is the lowest at 2.62. This shows a difference in the levels in comparison to the previous scores.

Now, to understand the association of these factors with gaming disorder levels, the correlation matrix is provided below.

Correlation Matrix

		Self-Esteem	Self-Identity	Psychological well-being	Paranoid Ideation	Gaming Disorder
Self-Esteem	Pearson's r	—				
	p-value	—				
Self-Identity	Pearson's r	0.905	—			
	p-value	< .001	—			
Psychological well-being	Pearson's r	0.853	0.915	—		
	p-value	< .001	< .001	—		
Paranoid Ideation	Pearson's r	0.003	0.004	-0.001	—	
	p-value	0.964	0.949	0.984	—	
Gaming Disorder	Pearson's r	-0.440	-0.742	-0.802	0.000	—
	p-value	< .001	< .001	< .001	0.997	—

The matrix above however, exhibits a similar result. Here the association of gaming disorder level of the girls in college with self-esteem, self-identity and psychological well-being are significant with a p-value of less than 0.05. But when it comes to paranoid ideation, the same is found to be not significantly associated. The negative association of gaming disorder with self-identity and psychological well-being is strong but for self-esteem it is at a moderate level.

This analysis shows the relationship between gaming disorder levels and mental health components to be negatively related and paranoid ideation is not found to be related significantly to the gaming disorder levels generated by the girls.

The correlation graph below gives an idea about the association established in case of both college and school gamers in the considered factors of the study.
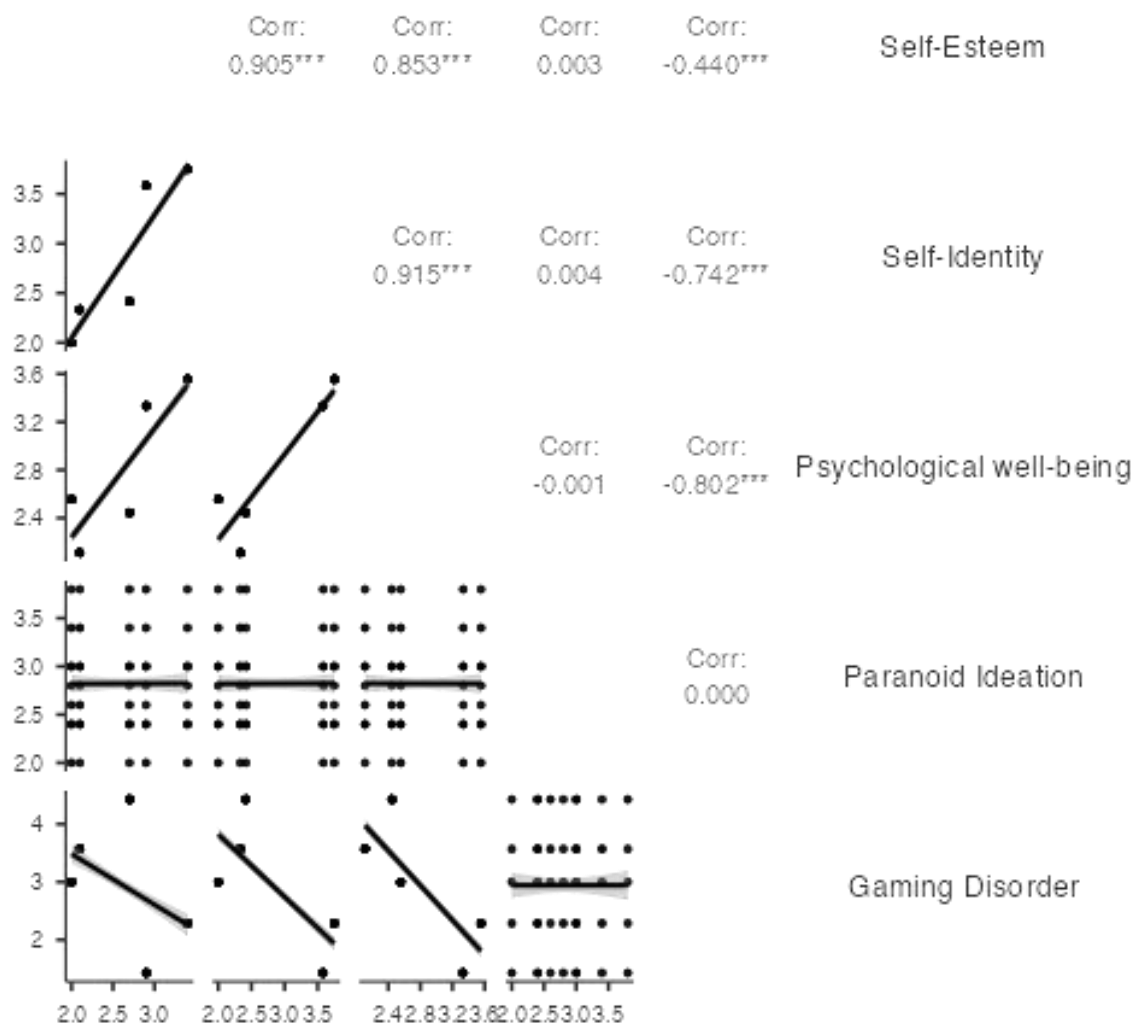
This section has shown how the differences occur when the girls involved in online gaming are studying in a school or in a college. This reveals the difference that can be made by the institution along with highlighting several other insights. A detailed comparative analysis is provided in the next section.

5. Discussion
The role of online gaming is quite significant at the present time. Although researchers in the past has made many efforts to understand various aspects of it, the literature about the same focusing on women gamers has been lacking. The study here understood the gap and carried out this extensive quantitative study to make several interesting highlights. The main aim of the study has been to conduct a comparative analysis among girls involved in online gaming in the adolescent category but based on the type of institute they are attending. The age group considered includes the admission of students in either schools or colleges. The type of institute often determine several psychological levels of the respondents and can have different levels of impact on the respondents thought process. As the study involves a psychological enquiring of the girls involved in online gaming, the inclusion of such a division criteria can generate interesting results that would help in the future course of research.

The results are understood by investigating 300 school going and 300 college going girls who are actively involved in the world of online gaming. The gaming disorder levels is the first aspect that is measured across these girls. The gaming disorder levels involves the understanding the lives of the respondents and how it is impacted by their habit of gaming. The scores derived from the responses showed that for school going girls, the score of gaming disorder is lower as compared to college girls. The highest mean scores however is found to be for the same item which states the constant reminiscence of the respondents about their previous or upcoming game. This generates the idea that either in college or schools, the girls involved in gaming online continuously thrive to lean towards their gaming experiences. This is in concordance with the findings by (BEKİR et al., 2022; Gan et al., 2023; Nwanosike et al., 2022) who also stated a similar result. The differences are observed in the levels where the school girls are found to score low on other aspects such jeopardising their relationships due to gaming, avoiding parents and friends due to their interest for gaming and feeling preoccupies due to gaming. This suggests that looking into the gaming disorder levels, although it is low in both cases, the girls studying in college generate higher scores and have a higher chance of generating gaming disorder in the future.

The mental health of the girls are investigated across four parameters which are quite crucial when knowing about their behavioural approaches. The self-esteem, self-identity, psychological well-being and paranoid ideation levels. These are essential components of one's mental well-being and the results show a state of difference in the girls based on their institute. It is seen that in case of school girls, the mean scores on these parameters are comparatively high which means a better state of mental health. But in case of college girls, the scores are comparatively lower showing that out of the two cases, college girls have lower scores on mental well-being. While self-identity agreement levels are high, in case of college girls the paranoid ideation levels are also at a similar level. This reflects on the higher concern for girls in online gaming and studying in college. The correlation matrix however shows similar results and generates the negative association between the constructs of self-esteem, self-identity and psychological well-being with gaming disorder levels. These results are similar to those provided by (Hilvert-Bruce & Neill, 2020; Nwanosike et al., 2022; Xiang et al., 2022) who also mentions that there is a negative impact of gaming disorders caused on these mental health aspects of the gamers.

The results significantly understands the behaviour of the adolescent girls involved in online gaming and extends the literature conducted by researchers such as (McLean & Griffiths, 2019; Sanders, 2016; Wang et al., 2017). The investigation on the type of institute is a novel effort and can be effective in utilising several interesting insights in the future.

6. Conclusion and Future Outlook

The online gaming world is suggested to be very addictive and mentally tiring by several researchers in their studies. These studies highlighted about the mental difficulties faced by gamers while trying to cope up with the real world. The world of gaming has been stereotyped as male dominated and hence the number of studies focusing on women gamers are limited. This study enquired the situation of female gamers at an early stage i.e., adolescence and investigated in detail about it. The results have shown the areas of mental well-being where these girls need help and focus. Further, the role of the type of educational institute is quite elaborately discussed here. The need to understand the root cause of behavioural influences in areas such as online gaming is the need to the hour and the study here is able to generate interesting results in association to the same.

In order to keep up the research in the future, the role of not only the type of educational institute but its other elements such as the composition of the class, discipline undertaken and future aspirations in education can be understood in detail. Also the inclusion of qualitative interviews to understand the situation better would be beneficial in this regard.

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