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EXPLORING GENDER AND AGE DISPARITIES IN MOBILE GAMING HABITS AMONG SECONDARY SCHOOL STUDENTS

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Abstract

The present research study aimed to examining gender and age differences in mobile gaming habits of secondary school students in Punjab. The mobile gaming habits and patterns involve frequency, preferences and time spent on mobile game play. The research employed a sample of 1200 students selected through stratified random sampling, with 55.5% identifying as male and 44.5% as female. Data collection instruments included a self-constructed Mobile Gaming Habits Scale and a Biographic-Demographic Information Form. The results of the study indicate substantial distinctions between male and female students across various dimensions of mobile gaming habits, including withdrawal, obsession, mood modification, and malfunction. However, no significant differences were observed concerning age. 90.9% of school students use mobile for playing digital games and more than one-third 37% of school students play action games on mobile. Males predominantly engage in multiplayer gaming mode, displaying a preference for action, role-playing, and sports game genres. Conversely, females exhibit a predilection for single-player gaming mode, gravitating towards puzzle game genres. These findings contribute to a deeper understanding of the relationship between gender, age, and mobile gaming behaviours among secondary school students. Such insights are valuable for educators, parents, and researchers aiming to address potential concerns related to excessive mobile gaming and its impact on adolescents.

Keywords: *Mobile Gaming Habits, Gender Difference, Age, Secondary School Students.*

Introduction:

The 21st century stands as an era characterized by the dominance of science and technology. In addition to the invaluable gift of life, these advancements stand out as one of the greatest blessings bestowed upon humanity by a higher power. They have nurtured the growth of civilizations, arts, and sciences alike, becoming an integral part of our world. In the contemporary landscape, living without the influence of science and technology has become an impractical proposition. Recent years have borne witness to technological progress that has achieved an astonishing level of integration into every aspect of human existence, even permeating daily routines (Paulus et al., 2018). One of the areas profoundly impacted by this technological wave is education, which has undergone a revolutionary transformation (Raja and Nagasubramani, 2018). The utilization of technology has infused the teaching and learning journey with an element of enjoyment, stimulation, and intrigue (Costley, 2014).

In the current epoch, characterized by the dominance of technology, it is evident that we are living in an era where children are inherently accustomed to the digital

realm. From the earliest stages of infancy to the teenage years, youngsters display a remarkable aptitude for navigating the technological landscape, utilizing a diverse array of gadgets for purposes ranging from entertainment and social interaction to education, communication, and convenience. Over the past couple of decades, there has been an explosive surge in new technologies, encompassing devices like cell phones, MP3 players, digital video discs, and personal digital assistants (Mutisya, 2013). These innovations have been readily embraced by children, resulting in the development of an expanded lexicon, instant messaging, blogging, and sources of amusement. Mobile gaming is one of those engaging entertainment technologies that continue to absorb teenagers and people of all ages.

Mobile Gaming:

A game is a voluntary interactive activity, in which one or more players follow rules that limit their behaviour, enacting an artificial conflict which finish in a quantifiable outcome (Zimmerman, 2004). With the fast and speedy development of mobile technology and wireless network many functions of desktop or personal computers have been moved to mobile devices like I-pad and smartphone, which is especially the case for game applications (Wang et al., 2019). Mobile games are one of the prominent features of mobile phone. Mobile games are basically the applications in mobile phones that provides enjoyment to the users. A mobile game is a kind of video game which is played on the cell phones, tablets, feature phone, smart phone, smart watch, PDA (Personal digital assistant), e-readers and advanced calculator. Any digital game which can be played on portable device is mobile game. These are the games that are usually available inside the mobile phone software, which allows the phone users to play adventures and entertaining games at their leisure times. These games are tiny in terms of size, cost and depth as compared to another forms of gaming like computer and console games. Mobile games are one of the most accessible form of entertainment in this modern era of technology and becoming fast growing and popular section of game industry (Qingwei and Ting, 2011).

History of Mobile Games:

The mobile game history began in 1997 when Nokia released a new Snake game that could be played by using mobile phones. This game straight away took the world by storm and has become the popular and most played worldwide game in more than 350 million devices (Wright, 2008). In 1999, there was a new trend of mobile game which based on WAP, and there was also an SMS game. In 2001, with the development of the mobile phone specifications, the games had played on the coloured screen with a better graphic support and had been able to be downloaded. In 2003, Nokia introduced N-Gage and online game with the same platform. Until now this platform has supported 3D platform with the better quality. Mobile gaming in the period of 2001–2006 could ultimately be summed up by the fortunes of one handset in particular.

Fig.1: History of Mobile Games

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From 2007–2008, Steve Jobs and the rest of the team at Apple helped to drive mobile gaming to the next level by offering developers the more advanced structure which makes mobile gaming industry better and profitable. After the release of iphone and the launch of app store, the number of addictive games were developed such as Angry birds in 2009 which was the first commercial successful mobile game, temple run in 2011, candy crush in 2012, flappy birds in 2014 and many more. After than the world of mobile games is changing with regular flow of new releases flooding the various app stores. Pokemon go game was the first ever biggest hit that became madness in summer of 2016 and reached the massive success of 1.2 billion in revenue. One of most popular, adventures and action mobile game is PUBG which is widely spread in these days. It was launched on smartphones on March 2018.This game is played by the all individuals of different developmental stages and both male and female are not spared. The individuals who regularly play this game are addicted and has cause ill-effects (D,Souza et al., 2019).

The year 2020 witnessed the launch of a variety of new mobile games for android and iOS. With increasing access to affordable broadband, mobile and greater choice in smartphones across different prices, the mobile gaming industry has seen an uprising in the last few years. The size of India's mobile gaming market is expected to increase 500 million digitally native users of aged 15 to 35 (Economic times, Oct 5, 2021). Among all the emerging markets, India is the largest in terms of downloads with over 2.8 billion game downloads in the first half of 2018 (Das, 2019). A survey was conducted in January 2019, specific time period of 2016-2018 on one thousand thirteen respondents and data was released that India had about 201 million users of mobile games across the country in 2016 and it will be reached about 370 million users by the year 2022, which shows the considerable growth of mobile game users.

Mobile Gaming Habits:

Mobile gaming habits developed among adolescents to a great extent during and after media boom: the mobile games become the favourite activities of the children across the globe. Today's adolescents are markedly different from the one that their parents experienced as adolescents, mainly due to advancement in technology. A generation ago, the various gadgets the internet, play station, XBOX, smartphones, text messaging, email, and IPODS were unheard of by adolescents. Today, they become the chief components of the lives of adolescents. It is estimated that the average adolescent spends about 46 minutes a day using the internet (Gross, et al., 2002) and 20–60 minutes a day playing video games (Marshall, et al., 2006).

Mobile gaming addiction or habits or disorder is the will of the individuals to play mobile games for a sufficient long time. The routine schedule of the individuals, their academic performance and their relations with the family and peers are disturbed due to excessive gaming habits (Dsouza and Dolma, 2019). The individuals suffering from gaming habits use the virtual fantasy world to contact with the real people through the internet, as the substitution for real life human connection, which are unable to achieve normally. Some suffering from gaming habits may develop an emotional attachment to online friends and activities they create on their mobile screen. They also socialize and exchange ideas through games because some games require a large number of players to log on same time, for long duration of time, to complete a game task. Gamers may be feeling an obligation and duty towards other gamers. This may further the individual's justification of his sense of relationships with other gamers that are otherwise strangers.

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Reviews of Related Literature:

Mobile gaming represents the most popular form of gaming but has received less research as compared to console and computer gaming (Yee et al., 2006). Parents across the globe are increasingly concerned about their children online and offline gaming habits. They are sure that there is problem but counsellors unfamiliar with online game addiction don't understand how seductive they can be (Young, 2010). Past researches on mobile game habits among adolescents discovered consistent link to increased level of aggression, mood disorders, anxiety, suicide, sleep disturbance, hypertension, headache and lack of involvement in social activities (Kaplan, 2017; Yarasani et al., 2018; D'Souza and Dolma, 2019). Mobile gaming is a dominant form of gaming, recognised for game characteristics and its portability that motivate continuous play and spending (Syvertsen et al., 2022). Due to increase awareness that mobile gaming habit is a legitimate concern, efforts to explain why and how children are deeply involved in these games have become important research issue.

Research on mobile gaming habit literature reports both positive and negative effects on players. Gamers have been found to better performer as comparison to non-gamers on a number of visual and spatial tasks, problem solving, fosters interaction with friends outside of schools, demonstrating faster visual reaction times and improved target localization, higher attention ability, management of resources and mental rotation (Boot et al., 2008; Raja, 2019). Moreover, games may be productive educational tools and games relieves from boredom and stress of the individuals (Bowman and Tamborini, 2012). In the face of positive effects of playing mobiles games for students, there are also negative effects. Gaming addiction may lead to many physical and psychological negative effects on individuals, especially adolescents (Yarasani et al.,

2018; D'Souza and Dolma, 2019). Dename (2014), pointed out that video games can take priority over families, friends, jobs, school and often becomes life-consuming. In this regard, video games then become a need, and the individual feels it is part of his or her survival, right next to eating or sleeping. It has been pointed out that mobile game which children play at home is an educational distraction and also leads to social isolation. This isolation may influence on one's social behaviour, and may experience difficulty in establishing or maintaining relationships, especially within the immediate family (Sabella, 2010).

Females are more inclined towards social interaction through games so are more addicted to video game than males (Li, 2007; DaCosta and Seok, 2020; Syvertsen et al., 2022). On the contrary, no gender difference was found in regard to mobile gaming addiction among students (Mustafa et al., 2020; Rajathi and Ravisankar, 2022; Tariq and Majeed, 2022). Males are more prone to play mobiles games and demonstrates high addictive behaviour as compared to females (Goswami and Singh, 2017; Yalcin et al., 2017; Apisitwasana et al., 2018; Kaur, 2018; Wang et al., 2019; Kaur, 2022). Keeping in mind this, it can be concluded that results showed inconsistency between the gender and mobile gaming habits.

Regarding age did not show any significant effect on video gaming habits of students (Dsouza and Dolma, 2019; Basha, 2021; Rajathi and Ravisankar, 2022). In contrast of this video gaming habits and age were positively correlated. As the age goes up, (age ranged from 12-20 years) the gaming habits increases (Dacosta and Seok, 2018; Donati et al., 2021; Husna et al., 2022). Hence there are inconsistencies found in results. Most of the studies were undertaken in abroad. Only few studies were undertaken in India.

Most of the literature reviewed is related to abroad and some belong to Indian studies but no study was found

which examined the mobile gaming habits of school students of Punjab. Moreover, it is also found that the effect of gaming addiction has been investigated with one question in general but no extensive study has been conducted in this field. On the basis of inconsistencies found, it was thought worthwhile to study mobile gaming habits among school students of Punjab. Keeping in mind this gap for the research, the investigator focuses on this problem.

Objectives:

1. To study mobile gaming habits of students on the basis of gender.
2. To study mobile gaming habits of students on the basis of age.

Hypotheses of Study:

1. There is no significant difference in the mobile gaming habits of students on the basis of gender.
2. There is no significant difference in the mobile gaming habits of students on the basis of age.

Method and Procedure: The population of the study

was ninth grade students studying in various government and private schools affiliated to Punjab school education board. The sampling area was selected from twenty-two districts of Punjab on the basis of their literacy rate. In order to draw the representative sample, six districts, Jalandhar and Ludhiana (high literacy), Patiala and Fazilka (average literacy) and Shri Muktsar Sahib and Barnala (low literacy) were selected through stratified random sampling technique out of total 22 districts in Punjab. Stratified random sampling technique was used to draw a total sample of 1200 students giving due weightage to gender and locale of students studying in ninth standard in both government and private schools in the state of Punjab.

Analysis and Interpretation: The frequency distribution of school students on three socio-demographic variables namely gender (boys and girls) and age (13, 14, 15 and 16 years) is shown in the table 1.

Table 1: Frequency Distribution of School Students on Socio-Demographic Variables

Socio-Demographic Variables	N	Percentage
Gender		
Boys	666	55.5
Girls	534	44.5
Age		
13 years	129	10.8
14 years	372	31.0
15 years	483	40.3
16 years	216	18.0

Table 1 indicates that the total sample of 1200 school students consisted of 666 (55.5%) boys and 534 (44.5%) girls. On the basis of age group, 129 (10.8%) students were of 13 years of age, 372 (31%) were of 14 years, 483 (40.3%) were of 15 years whereas remaining 216 (18%) were of 15 years of age. Further 774 (64.5%) students were from nuclear family and rest 426 (35.5%) were from joint family.

Table: 2 Daily Time Spent on Playing Mobile Games by School Students

S. No.	Time Spent on playing Mobile Games	N=1200	%age
1.	Less than 1 hour	61	5.1
2.	1 hour	756	63.0
3.	2 hour	238	19.8
4.	More than 2 hours	145	12.1

Table 2 reveals that 63% of school students spend 1hour on playing mobile games whereas 19.8% of school students spend more than 2 hours on mobile games every day. Further 12.1% of school students spend more than 2 hours on playing mobile games every day and only 5.1% students reported to play less than 1 hour daily on playing games.
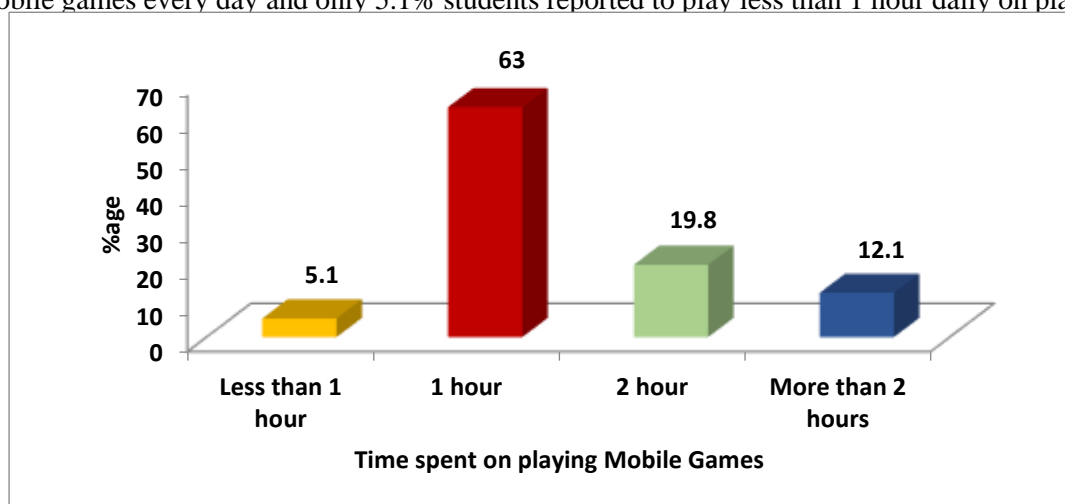

Fig.1: Time Spent on Playing Mobile Games by School Student

Table 3: Gender Differences in Time Spent on Playing Mobile Games by School Students

S. No.	Time Spent on Mobile Games	Boys	%age	Girls	%age	d_f	Chi-square
1.	Less than 1 hour	32	4.8%	29	5.4%		
2.	1 hour	415	62.3%	341	63.9%		
3.	2 hour	138	20.7%	100	18.7%	3	0.94[NS]
4.	More than 2 hours	81	12.2%	64	12.0%		
5.	Total	666	100.0%	534	100.0%		

NS Not significant at 0.05 level

Table 3 shows that the chi-square value for testing significance of gender difference in time spent on playing mobile games came out to be 0.94 which is not significant at 0.05 level. This indicates that there is no gender difference found in time spent by school students on playing mobile games.

Table 4: Age Differences in Time Spent on Playing Mobile Games by School Students

Time Spent on Mobile Games	13 yrs.	%age	14 yrs.	%age	15 yrs.	%age	16 yrs.	%age	d_f	Chi-square
Less than 1 hour	5	3.9%	21	5.6%	22	4.6%	13	6.0%		
1 hour	77	59.7%	230	61.8%	310	64.2%	139	64.4%		
2 hour	26	20.2%	80	21.5%	94	19.5%	38	17.6%	9	5.08[NS]
More than 2 hours	21	16.3%	41	11.0%	57	11.8%	26	12.0%		
Total	129	100.0%	372	100.0%	483	100.0%	216	100.0%		

*NS Not significant at 0.05 level*

Table 4 shows that the chi-square value for testing significance of age difference in time spent on playing mobile games came out to be 5.08 which is not significant at 0.05 level. This indicates that there is no age difference found in time spent by school students on playing mobile games.

Table: 5   Device used for Playing Mobile Games by School Students

S. No.	Device used for playing Mobile Games	N=1200	%age
1.	Computer/Laptop	18	1.5
2.	Mobile	1091	90.9
3.	iPad	22	1.8
4.	Play Station	69	5.8

Table 5 reveals that 90.9% of school students use mobile for playing mobile games. Rest 5.8% school students use play station for playing mobile games. Only 1.8% school students use ipad and only 1.5% students use computer or laptop for playing mobile games.
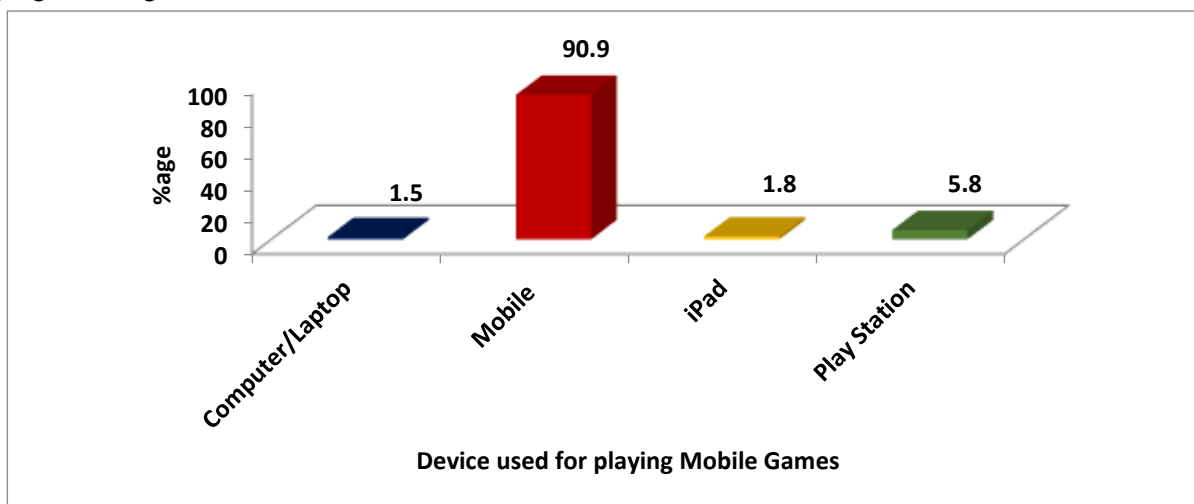
Fig. 3: Device used for Playing Mobile Games by School Students

Table: 6 Gender Differences in Device used for Playing Mobile Games by School Students

S. No.	Device used for playing Mobile Games	Boys	%age	Girls	%age	d_f	Chi-square
1.	Computer/Laptop	9	1.4%	9	1.7%		
2.	Mobile	606	91.0%	485	90.8%		
3.	iPad	13	2.0%	9	1.7%	3	0.34[NS]
4.	Play Station	38	5.7%	31	5.8%		
5.	Total	666	100.0%	534	100.0%		

NS Not significant at 0.05 level

Table 6 shows that the chi-square value for testing significance of difference in device used by school students for playing mobile games came out to be 0.34 which is not significant at 0.05 level. This indicates that there is no gender difference found in device used by school students for playing mobile games.

Table 7 Age Differences in Device used for Playing Mobile Games by School Students

Device used for playing Mobile Games	13 yrs.	% age	14 yrs.	% age	15 yrs.	% age	16 yrs.	% age	d_f	Chi-square
Computer/Laptop	5	3.9%	2	.5%	6	1.2%	5	2.3%		
Mobile	120	93.0%	337	90.6%	444	91.9%	190	88.0%		
iPad	0	0.0%	8	2.2%	6	1.2%	8	3.7%	9	18.49*
Play Station	4	3.1%	25	6.7%	27	5.6%	13	6.0%		
Total	129	100.0%	372	100.0%	483	100.0%	216	100.0%		

* Significant at 0.05 level

Table 7 shows that the chi-square value for testing significance of age difference in device used for playing mobile games came out to be 18.49 which is significant at 0.05 level. This indicates that there is age difference found in device used by school students on playing mobile games.

Table 8 Game preference for Playing Mobile Games by School Students

S. No.	Mobile Games Preference	N=1200	%age
1.	Adventure	233	19.4
2.	Action	444	37.0
3.	Puzzle	213	17.8
4.	Cards	177	14.8
5.	Role Playing	26	2.2
6.	Educational	89	7.4
7.	Other	18	1.5

Table 8 reveals that more than one-third i.e. 37% of school students play action games on mobile followed by 19.4% students play adventure games, 17.8% play puzzle games, 14.8% play cards. Rest 7.4% school students play educational games on mobile. Only 2.2% school students play role playing game and 1.5% students reported to use other games on mobile.
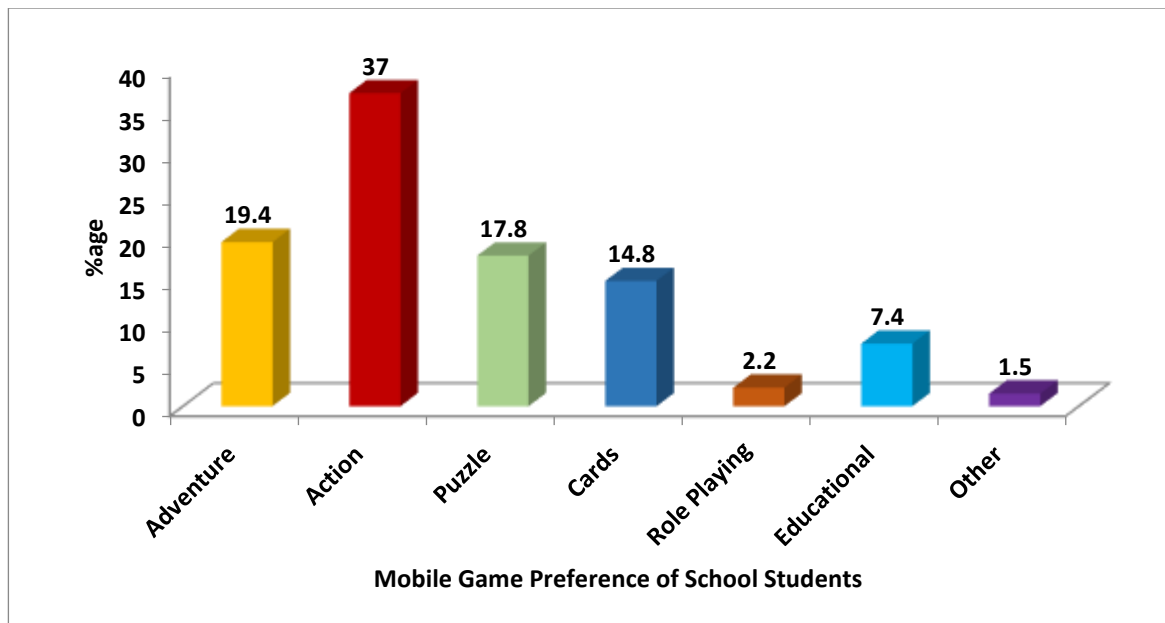
Fig. 4: Mobile Games preference of School Students

Table 9 Gender Differences in Game Preference for Playing Mobile Games by School Students

Mobile Games Preference	Boys	%age	Girls	%age	d_f	Chi-square
Adventure	141	21.2%	95	17.8%		
Action	279	41.9%	162	30.3%		
Puzzle	111	16.7%	102	19.1%		
Cards	99	14.9%	78	14.6%	6	71.41**
Role Playing	12	1.8%	14	2.6%		
Educational	14	2.1%	75	14.0%		
Other	10	1.5%	8	1.5%		
Total	666	100.0%	534	100.0%		

** *Significant at 0.01 level*

Table 9 shows that the chi-square value for testing significance of difference in preference of games played by school students came out to be 71.41 which is significant at 0.01 level. This indicates that there is a significant gender difference in preference of mobile games played by school students.

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Table 10 Age Differences in Game Preference for Playing Mobile Games by School Students

Mobile Games Preference	13 yrs.	% age	14 yrs.	% age	15 yrs.	% age	16 yrs.	% age	d_f	Chi-square
Adventure	27	20.9%	72	19.4%	88	18.2%	49	22.7%		
Action	52	40.3%	136	36.6%	176	36.4%	77	35.6%		
Puzzle	19	14.7%	73	19.6%	85	17.6%	36	16.7%		
Cards	15	11.6%	55	14.8%	77	15.9%	30	13.9%	18	11.26^{NS}
Role Playing	3	2.3%	8	2.2%	8	1.7%	7	3.2%		
Educational	12	9.3%	21	5.6%	41	8.5%	15	6.9%		
Other	1	0.8%	7	1.9%	8	1.7%	2	0.9%		
Total	129	100.0%	372	100.0%	483	100.0%	216	100.0%		

NS Not Significant at 0.05 level

Table 10 shows that the chi-square value for testing significance of age difference in game preference for playing mobile games came out to be 11.26 which is not significant at 0.05 level. This indicates that there exists no age difference found in game preference of school students on playing mobile games.

Findings and Discussions of Results:

The results suggested that there were significant gender differences in withdrawal, obsession, mood modification as well as overall mobile gaming habits among school students. The study is in cue with the studies of (Kaur, 2018, Pawłowska et al., 2018; Ibrahim et al., 2020; Undavlli et al., 2020; Kaur, 2022). Further, male school-going students were found to possess significantly more mobile gaming habits than their female counterparts. There are several studies supporting this result (Janardhana and Chandran, 2018; Kaur, 2018; Undavlli et al., 2020; Donati et al., 2021; Kaur, 2022) who concluded that significant gender differences among school students in both time spent on playing video games and game type preferences. These findings are disagreed with the findings of (Syvertsen et al., 2022; Gulu et al., 2023) who concluded that significant gender difference found in mobile game play as females had more addictive tendency to mobile game play as compared to males. The rationale behind male school students scored higher on mobile gaming habits might be as males considered mobile video gaming as social tool and to be a central part of their childhood and youth culture. This reason is supported by previous research suggesting gender-specific motivations for playing mobile games: while many females prefer mobile games suitable for relationship maintenance, males are often more interested in complex and competitive mobile game play gameplay with motive of achievement and to make friends (Laconi et al., 2017; Lopez-Fernandez et al., 2019). Compared with female adolescents, male adolescents tended to lack social skills, were more socially withdrawn and disclosed less about themselves in offline communication settings (Schouten and Valkenburg, 2007). This is also a reason why males are more likely to be attracted to a virtual world like mobile games since the online world is more comfortable and can offer more sense of security (Caplen, 2007).

Further present study connotes that there are no significant age differences (13, 14 15, 16 years) in

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mobile gaming habits along with its dimensions among school students indicating that school students of (13, 14, 15, 16 years) age range have similar levels of mobile gaming habits. The current finding very closely accords with the findings of (Janardhana and Chandran, 2018; Basha, 2021; Rajathi and Ravisankar, 2022) who also found no significant age differences in video gaming habits of school students as all age group play equally. Chaturvedi et al. (2021) found that 64% of the participants in the 18–22 age range during the COVID-19 period turned to digital activities (online gaming). There are dramatic increases in screen time during the COVID-19 epidemic period of all ages of school students (Saritepec, 2021; Sultana et al., 2021)

The probable explanation of mobile gaming habits not related to age is due to the similar developmental characteristics of the sample. Moreover, students in this age group (13- 16 years) usually have less self-control capability, and they are undoubtedly the biggest advocates of mobile game. When they play certain games for long periods of time their behaviour and psychological state will be changed in a subtle way.

Educational Implications:

Male school going students should be self–aware about their usage and must keep track of the time spent on mobile game play and set some sort of limit to refrain themselves from excessive play. Further, there should be some creative kind of home assignments for school going students so that they channelize their free time in some kind of recreational work and avoid wasting their time on playing mobile games. Parents may be made aware of this difference so that they may help in reducing mobile gaming habits among male school students by effective applicability of diverse strategies. Parents should make clear cut rules and regulations to control the excessive non-essential usage of mobile by the male students to control the negative impact of this obsession on their engagement in studies, interpersonal relations and on their personality. It may be recommended that the school students should be provided with timely support and the counselling to have a sense of control over own activities and to boost their confidence level so that the incidence of mobile gaming habits can be reduced. This should be joint effort of teachers, parents and counsellors.

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