

He and She in Video Games: Impact of Gender on Video Game Participation and Perspectives

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Abstract—Playing video games is now considered one of the day-to-day activities of many adolescents and young people. This research studies the gender impact on video game participation and perspectives among college students in the Kingdom of Saudi Arabia (KSA). The data were collected by first conducting discussions involving four focus groups with a total of 26 participants to explore the topic. An online questionnaire was then distributed, and a total of 2,756 responses were received. The analysis of the data shows a clear impact of gender on the playing practices adopted, perceptions towards the pros and cons of video games, and the most used consoles and popular games. However, the practices and perspectives of male and female players did not differ regarding bullying in video games. The findings of this study can advance the understanding of this subject, and game developers who are targeting the KSA game market can use the results as the basis for developing games that are more suitable for the players in that country.

Keywords—College students; gender differences; KSA; video games

I. INTRODUCTION

The Kingdom of Saudi Arabia (KSA) is the nineteenth biggest gaming market in the world and is currently experiencing an enormous (41.1%) year-on-year growth in this sector [1], with 21.1 million gamers in KSA in 2020 [2]. Several studies have discussed the possible impact of violent video games and potential gender-related effects [3] [4] [5]. While [6] argued for the positive effects of video games on well-being greatly depend on the presence of moderation; the aspects involved, such as social aspects, violence, or physical activity; and the motivations behind playing the game. In addition, Comeran-Chueca et al. [7] emphasized on this positive effect when they used active video games (AVG) as an effective strategy to increase energy expenditure in children and adolescents with overweight and obesity when they found that energy expenditure with AVG combined with multi-component exercise was 5.68 kcal/min in boys and 4.66 kcal/min in girls with overweight and obesity.

In the present study, the author explored gender differences in video game-playing among college students in the KSA, players' perspectives of the male and female characters' roles in the video games that they played, and the potential interference of gaming with other aspects of college students' lives. This study aimed to answer the following research questions: (1) What are the main areas that identify the practices and perceptions of players in the KSA? (2) Are there differences between male and female players' perceptions towards video games in the KSA? (3) Does gaming interfere with academic preparation and interpersonal relationships?

In this paper, we illustrate related previous research, describe and discuss our methodological approach, outline the findings about the participants' participation and perspectives regarding video games, and finally discuss the implications of these practices in the KSA.

II. LITERATURE REVIEW

Previous studies explored and discussed the impact of gender on different aspects of video games such as playing duration, the content of video games, and how this is affecting players' personal life. One study [8] reported that more boys than girls played video games at least once based on two 24-hrs activity diaries for three age groups: 3–5 year-olds, 6–8 year-olds, and 9–12 year-olds. According to the Kaiser Foundation [9], there is a gender impact on console video game playing, with boys spending an average of almost an hour a day playing (0:56) and girls just under fifteen minutes (0:14). One clear reason for the disparity in this age group is that girls lose interest in computer games as they enter their teenage years, whereas boys do not. Other studies have also reported gender differences in children's video game playing [10] [11], and the 2003 consumer survey by Interactive Digital Software Association [12] showed that approximately 72% of the most frequent players are boys or men. In arcades, video games are more often played by boys or men than by girls or women [13]; meanwhile, according to [14], approximately equal numbers of men and women in college play video games.

Gender is also a relevant issue regarding video games' content. More video games are male-oriented than female-oriented where Scharrer [15] examined 1,054 video game advertisements from video game magazines and reported that the ratio of male to female characters was greater than three to one. After their analysis of 597 characters from 47 randomly selected Nintendo 64 and PlayStation games, Beasley and Standley [16] found that only approximately 14% of those characters were women. In addition, female characters were depicted with more exposed skin than male characters. In a study of video game reviews on an Internet site, Ivory [17] similarly reported under-representation and sexualization of female video game characters. In none of these previous studies, though, were players' perspectives of gender-related content assessed.

Differential video game-playing by men and women may also be related to other aspects of individuals' lives. In [18], the author shows that brief exposure of children to a prosocial video game (PVG) increased their prosocial thoughts and prosocial behaviors. More precisely, boys reported higher accessibility of prosocial thoughts and more prosocial

behaviors than girls. The PVG effect on prosocial behaviors was mediated by prosocial thoughts. These findings suggest that increasing PVG exposure and training prosocial thoughts were effective ways to promote the positive development of prosocial behavior during early childhood. The research in [19] suggested that players' in-game motivational experiences can contribute to affective well-being, but they do not affect the degree to which play time relates to well-being. On other hand, the "displacement hypothesis" has been used previously to explain how children's television viewing may affect their other activities [20]; time spent in one activity displaces time that could have been used to do something else. Similarly, Gentile, Lynch, Linder, and Walsh [21] reported that both the amount of game playing and exposure to game violence were negatively linked to poor school grades in eighth- and ninth-grade students. Sixth- and ninth-grade boys were more likely than girls of the same age to indicate that they spent their free time playing computer/video games, and they were more likely to select "none" when asked how much time per day they spent reading for pleasure [22]. Video game playing has been linked with hostility [21], which could negatively impact interpersonal relationships in a variety of ways. Also, if men spend more time than women playing video games, romantic relationships may be negatively impacted because "couple time" could be displaced by time spent gaming, which could result in interpersonal conflict.

III. METHODOLOGY

The study began by forming focus groups, which are effective in exploring and examining participants' perspectives and concerns by allowing them to create new questions and concepts [23]. Focus group sessions are social gatherings, usually of six to eight participants [24]. Morgan [25] reported that it can take up to 32 telephone calls or personal visits to recruit just eight participants for a group. Participants are encouraged to debate the relevant issues and to develop their opinions and thoughts, as they would in real-world situations [26]. A moderator presents the focus of the discussion and helps to elicit conflicting arguments without judging the participants' opinions [27]. The approach used to analyze the resulting data was to categorize quotations from the focus groups into types of description, i.e., concepts, and then to compare them with targeted concepts of privacy perspectives [28]. Four focus groups were formed during March 2023 with 26 participants in total: a men-only group (seven participants), a women-only group (six participants), and two groups of mixed-gender (four women and three men, and three women and three men). All the focus group participants were college students aged 18–25 years and a snowballing technique was used to recruit them. Prior to each focus group, participants' consent obtained for ethical considerations. Conducting the four focus group discussions early in the study was useful, as they provided preliminary information on which to focus on the next step of the data collection.

A questionnaire was then designed to evaluate the possible influence that gender had on college students' perspectives and participation in video games. The questionnaire was based on the outcomes of the focus groups and face-validated using exploratory interviews; some items were rephrased in order to reflect the intended meaning, while others were deleted or

added. To define the final list of statements, respondents were asked to identify whether the proposed items from the questionnaire represented their perspectives toward video games and to indicate some additional items that they considered important for investigation. The questionnaire consisted of two parts: the first gathered gender and age information, and the second included 54 five-point Likert statements ranging from "strongly disagree" to "strongly agree." The questionnaire was created using Google Forms and the random target subjects of the questionnaire were college students in the KSA aged 18–25 years. The questionnaire took 10–15 minutes to complete. After collecting the responses, the data were entered into the computer and processed using the Statistical Package for the Social Sciences (SPSS V.20), which is a widely used program for statistical analysis in the social sciences.

IV. RESULTS

A. Focus Group Results

Analysis of the data from the focus groups revealed four main areas related directly to the perspectives and participation of students in video games in the KSA: playing practices; bullying; the pros and cons of video games; and the most used consoles and most popular games.

Playing practices consisted of variables that relate to activities such as spending money on video games, watching professionals playing, gender issues in video games, and the effect of playing on social and academic life. Bullying in video games comprised questions related to someone being bullied and practices to avoid bullying. The third area referred to possible advantages and disadvantages of playing video games, such as isolation or engagement with others, wasting money or time, health and religious effects, and improvements in mental agility and concentration. The final area includes variables relating to the most used consoles and the most popular video games.

B. Questionnaire Results

There were 2,756 responses to the questionnaire, of which 39.2% were from men and 60.8% were from women. However, 469 responses were excluded from the results because they were from respondents over 25 years of age; therefore, 2,287 responses were included in the study.

1) *Playing time:* Table I shows that when participants were asked about how much time they spent playing during the previous week, 26.9% did not play, and more women did not play than men. It can also be seen that 23% of participants played 1 to 2 hrs per week, and again most of them were women. However, the percentage of male players was higher for the last three categories: 2 to hrs, 6 to 10 hrs, and every day. In addition, the chi-squared test was used to determine the gender differences and playing hours in video games, and it was found that the p - value showed there was a statistically significant difference between men and women, and the number of hours of play differed according to gender. From the table below it can be seen that men prefer to spend more hours on video games than women.

TABLE I. TIME SPENT PLAYING DURING THE PREVIOUS WEEK

	Male	Female	Total (%)
None	132	610	742 (26.9%)
1–2 hrs	228	406	634 (23%)
2–5 hrs	226	182	408 (14.8%)
6–10 hrs	122	72	194 (7%)
Every day	191	118	309 (11.2%)
Total (%)	899 (39.3%)	1,388 (60.7%)	2,287(100%)

Chi-squared value = 21.41 *p* - value = 0.000*

**p* - value is statistically significant at 0.05

Respondents who did not play video games in the last week were presented with a choice of reasons why. The mean, standard deviation, and level of agreement of the responses are illustrated in Table II. The reasons chosen by respondents reflect a generally positive perspective, as the reasons for not playing were not lack of money or lack of ability to play, but rather their lack of time or enthusiasm to play.

TABLE II. REASONS FOR NOT PLAYING IN THE PREVIOUS WEEK

Reason	Mean	Standard Deviation	Level of Agreement
I don't have time	3.86	1.30	High
I don't like video games	3.90	1.29	High
I don't have enough money to play	2.39	1.37	Low
I am not good at video games	3.14	1.41	Medium

2) *Playing practices:* Table III demonstrates the respondents' answers to their playing practices, along with the mean, standard deviation, and level of agreement where the average mean was 3.28, which is medium.

The respondents' perspectives for all items varied between high and medium, where the highest mean of 3.72 was for item 1 (“For fun, I prefer to watch videos of other people playing”) followed by item 2 (“I will not pay for a video game that I never tried before; I have to try it first”) with a mean of 3.65, which indicates respondents' mindfulness of spending money on games. Items 12 and 13 have the lowest means of 2.93 and 2.70, respectively, indicating that respondents believe that video games do not have a significant effect on their academic performance or their social relationships, or that they are not sure.

3) *Bullying in video games:* Tabel IV presents the mean, standard deviation, and level of agreement regarding 13 items relating to bullying in video games. The mean was 3.46 in the high level, which indicates that respondents have high awareness regarding this topic, and as noted the mean for all the 13 items related to this topic ranged between 2.90–3.89, indicating a high to medium level. The highest mean, 3.89, is for item 1 (“I see a lot of bullying in video games”), followed by item 2 (“I play only with my friends”) where the mean was 3.84. The lowest means, 3.08 and 2.90, were for items 12 and 13, respectively (“I don't care if I witnessed someone being bullied,” and “Bullies are always female characters”); the level of perspectives was medium, indicating that respondents' are neutral about these two items.

TABLE III. PLAYING PRACTICES

	Item	Mean	Standard Deviation	Level of Agreement
1	For fun, I prefer to watch videos of other people playing	3.72	1.26	High
2	I will not pay for a video game that I never tried before; I have to try it first	3.65	1.28	High
3	I watch videos of other people playing just to learn from them	3.57	1.25	High
4	Most famous video games are masculine	3.48	1.14	High
5	In video games female characters are always sexually provocative	3.40	1.28	Medium
6	Playing affects my sleeping hours negatively	3.35	1.26	Medium
7	I might pay for a video game that I never tried before	3.24	1.38	Medium
8	I don't like to deal with people who play video games a lot	3.20	1.24	Medium
9	There are no famous video games that are feminine	3.20	1.19	Medium
10	I might pay to update a game or buy a weapon	3.13	1.39	Medium
11	I always pick a male character	3.04	1.40	Medium
12	Playing affects my academic performance negatively	2.93	1.29	Medium
13	Playing affects my relationships with others negatively	2.70	1.31	Medium
	Total	3.28	0.62	Medium

TABLE IV. BULLYING IN VIDEO GAMES

	Items	Mean	Standard Deviation	Level of Agreement
1	I see a lot of bullying in video games	3.89	1.05	High
2	I play only with my friends	3.84	1.14	High
3	Usually, if the team is all female players, they would refuse a guy playing with them	3.75	1.10	High
4	I do play with strangers picked randomly by the game.	3.71	1.08	High
5	Male characters are more professional in video games	3.69	1.23	High
6	Bullies are always men	3.57	1.14	High
7	If I witness someone being bullied, I always stand out	3.45	1.19	High
8	I do play with strangers from the opposite sex picked randomly by the game	3.41	1.25	High
9	Bullying is always against female characters	3.37	1.20	Medium
10	Women are more professional in video games	3.15	1.19	Medium
11	Usually, if the team is all male players, they would refuse a female player with them	3.11	1.31	Medium
12	I don't care if I witness someone being bullied	3.08	1.30	Medium
13	Bullies are always female characters	2.90	1.14	Medium
	Total	3.46	0.63	High

4) *Pros and cons of playing video games:* Participants in the focus groups were asked about the pros and cons of playing video games. Table V shows that the average mean was 3.88, with a high level, and this falls within the category of “agreed,” which indicates the respondents' agreement towards the pros and cons of playing video games and that they have awareness of the listed items. It is also noted that the mean of their perspectives ranged between 3.56–4.31 for the items listed and the highest mean was 4.31 for item 1 (“Spending fun time’ is an advantage of playing”). The lowest, 3.57 and 3.56, were for items 9 and 10, respectively (“Neglecting work/study’ is a disadvantage of playing,” and “Wasting money’ is a disadvantage of playing”) The perspective level was high which indicates that the respondents' approval of these cons is high, confirming that they concur on the defects of video games including their impact on work, academic achievement, and financial loss.

TABLE V. PROS AND CONS OF PLAYING VIDEO GAMES

	Items	Mean	Standard Deviation	Level of Agreement
1	Spending fun time’ is an advantage of playing	4.31	0.78	Very High
2	Living exciting moments in artificial reality’ is an advantage of playing	4.18	0.89	High
3	Evolving player's smartness and reflections’ is an advantage of playing	4.07	0.97	High
4	Affecting player's sight negatively or causing obesity’ is a disadvantage of playing	3.88	1.09	High
5	Knowing other players and get along with them’ is an advantage of playing	3.86	1.08	High
6	Neglecting prayers’ is a disadvantage of playing	3.84	1.20	High
7	Isolating players from community’ is a disadvantage of playing	3.80	1.09	High
8	Wasting time’ is a disadvantage of playing	3.74	1.17	High
9	Neglecting work/study’ is a disadvantage of playing	3.57	1.18	High
10	Wasting money’ is a disadvantage of playing	3.56	1.18	High
	Total	3.88	0.65	High

5) *Impact of gender:* In addition to the mean and standard deviations, the independent samples test was used to identify gender impact on respondents' perspectives towards playing practices, bullying, and the pros and cons of playing video games. Table IV shows that the p - value is statistically significant in both playing practices and the pros and cons of video games. This indicates that the perspectives of male respondents differ from those of female respondents towards these two areas, where the mean for men’s perspectives toward playing practices is higher than the women’s, indicating that men have a better perception of their playing

practices; however, it is the opposite case in the second area, where women’s perspectives toward pros and cons for playing video games is higher, indicating that they have a better perception of this area. However, it should be noted that there are no differences in male and female respondents' perspectives towards bullying in video games, meaning that their opinions are similar in this area. Fig. 1 below demonstrated the mean and standard deviations for males and females participants towards the three areas.

TABLE VI. IMPACT OF GENDER

Item	Gender	Sample Size	Mean	Standard Deviation	p - value
Playing practices	Male	767	3.34	0.59	0.000*
	Female	778	3.22	0.64	
Bullying	Male	767	3.46	0.62	0.911
	Female	778	3.45	0.64	
Pros and cons	Male	767	3.83	0.62	0.005*
	Female	778	3.93	0.67	

*p - value is statistically significant at 0.05

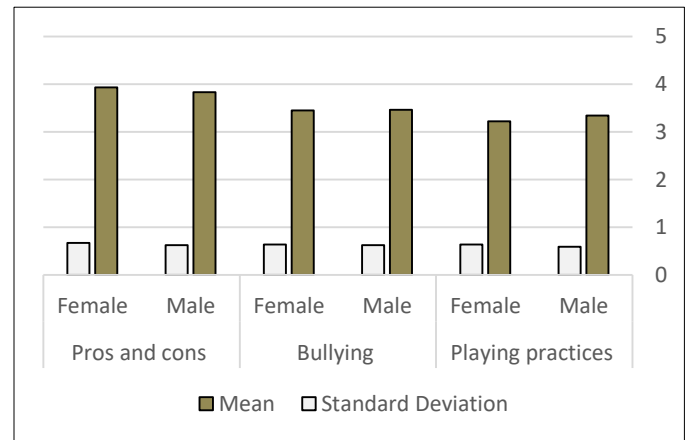


Fig. 1. Gender impact.

6) *Most used game console and most popular game:* The independent samples test was used in addition to mean and standard deviations to identify the influence of gender on the game consoles most used by male and female respondents, as presented in Table VII. The p - values in the table below indicate a statistical significance in the following consoles: Sony PlayStation, mobile phone, PC, and Xbox; this indicates that men's opinions differ from women’s towards these consoles, and it is clear from the table that the differences were in favor of males respondents, indicating that men have a higher preference than females for their use. Meanwhile, the p - value in the table is not statistically significant in the perspectives of male and female respondents towards Wii and Nintendo, indicating that the perspectives of male respondents do not differ from those of women towards these consoles. Fig. 2 demonstrated the mean and standard deviations for males and females participants towards the different game consoles.

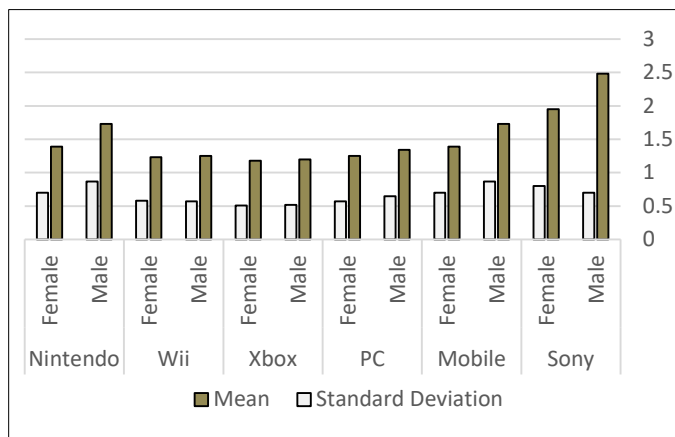


Fig. 2. Game consoles.

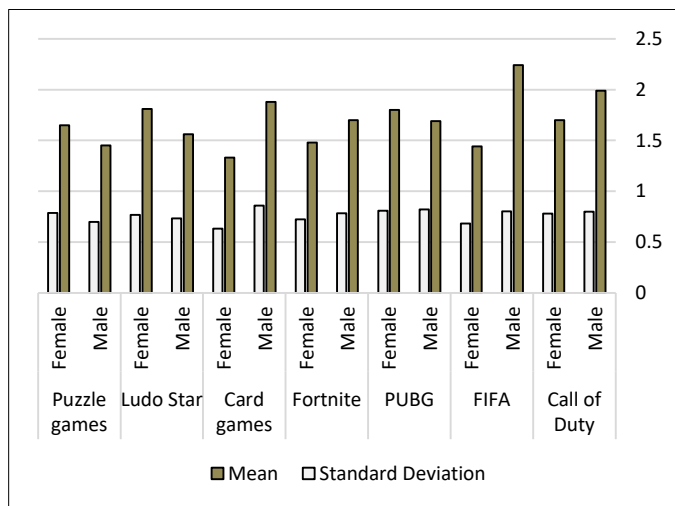


Fig. 3. Popular games.

Meanwhile, seven video games were mentioned by participants in the focus groups: Call of Duty, FIFA, PUBG, Fortnite, card games, Ludo Star, and puzzle games. Call of Duty is a video game series starting in 2003 and originally focused on the World War II setting, FIFA is a discontinued football video game, PUBG (previously known as PlayerUnknown's Battlegrounds) is a battle royal game, Fortnite is an online fighting video game released in 2017, card games are any game using playing cards as the primary device with which the game is played such as Solitaire, Spider Solitaire, Hearts, etc. Ludo Star is an online board dice video game, puzzle games are make up a broad genre of video games that emphasize puzzle solving. The types of puzzles can test problem-solving skills, including logic, pattern recognition, sequence solving, spatial recognition, and word completion. By exploring gender influence on the popularity of these games, Table VIII shows that the *p* - value is statistically significant in the perspectives of male and female respondents towards all the games, and this indicates that the perspectives of men differ from those of women towards playing those games. The differences were in favor of male respondents for Call of Duty, FIFA, Fortnite, and card games, and this indicates that men have a better perception than women of these games or that these games suit men better than women. On the other hand,

the differences were in favor of women for PUBG, Ludo Star, and puzzle games, and this indicates that women have a better perception than men of these games or that these games are more suitable for women than men. Fig. 3 demonstrated the mean and standard deviations for males and females participants towards popular games.

TABLE VII. MOST USED CONSOLES

Console	Gender	N	Mean	Standard Deviation	<i>p</i> - value
Sony PlayStation	Male	767	2.48	0.70	0.000*
	Female	778	1.95	0.80	
Mobile phone	Male	767	1.73	0.87	0.000*
	Female	778	1.39	0.70	
PC	Male	767	1.34	0.65	0.000*
	Female	778	1.25	0.57	
Xbox	Male	767	1.20	0.52	0.003*
	Female	778	1.18	0.51	
Wii	Male	767	1.25	0.57	0.367
	Female	778	1.23	0.58	
Nintendo	Male	767	1.73	0.87	0.383
	Female	778	1.39	0.70	

**p* - value is statistically significant at 0.05

TABLE VIII. MOST POPULAR VIDEO GAME

Video game	Gender	N	Mean	Standard Deviation	<i>p</i> - value
Call of Duty	Male	767	1.99	0.798	0.000*
	Female	778	1.70	0.780	
FIFA	Male	767	2.24	0.801	0.000*
	Female	778	1.44	0.684	
PUBG	Male	767	1.69	0.822	0.000*
	Female	778	1.80	0.810	
Fortnite	Male	767	1.70	0.782	0.003*
	Female	778	1.48	0.723	
Card games	Male	767	1.88	0.859	0.000*
	Female	778	1.33	0.631	
Ludo Star	Male	767	1.56	0.732	0.000*
	Female	778	1.81	0.769	
Puzzle games	Male	767	1.45	0.700	0.000*
	Female	778	1.65	0.787	

**p* - value is statistically significant at 0.05

V. DISCUSSION

Regarding the first research question about the main areas that identify the practices and perceptions of video game players in the KSA, the analysis found four main areas: playing practices, bullying, pros and cons of video games, and most used console and most popular game.

Meanwhile to answer the second research question: Are there differences between male and female players' perceptions

towards video games in the KSA? The similarities and differences between male and female players' perceptions towards video games have been highlighted. Regarding the playing practices, the study found that approximately one-third of the participants did not play at all in the week before the questionnaire, and the majority of these were women. For participants who played video games, the study found that more men than women prefer to play, and for longer hours, which supports the original hypothesis. This is supported by [8], [9] and [29], which reported that the percentages of daily and weekly male players are higher than those of female players. In addition, men's perspectives toward playing practices mentioned in Table III are higher than women's, which indicates that men have a better perception of their playing practices and wide agreement regarding the items mentioned in the table, particularly the first four items: watching others playing for fun or to learn something, not buying a game without trying it first, and the masculinity of famous games. Also, gender difference is noticeable in the responses of participants regarding the pros and cons of playing video games where, in this case, women have a better perception of them and wide agreement regarding the items mentioned in Table V such as playing for fun, increasing thinking and response abilities, and getting friendly with strangers are the advantages of playing video games, while the disadvantages are the negative impact on academic/work performance and social relationships, and wasting time and money. According to [29], 17.7% of players in the KSA use smartphones to play, 17.6% of them use Sony PlayStations, and the rest of the consoles are used by less than 5% of players. This study found the opposite, where the Sony PlayStation is used more than smartphones, and men's usage is higher than women's. Moreover, [29] specify the order of the most popular games in playing consoles as follows: FIFA, PUBG, Fortnite, Roblox, and Call of Duty. Similarly, the most popular games on smartphones are as follows: Subway Surfers, Snake.io, Roblox, Ludo Star, Yalla Ludo, and PUBG MOBILE. This order of popular games did not consider the gender aspect. In this study, the order of popular games would be the following: FIFA, Call of Duty, PUBG, Ludo Star, Fortnite, and Card games at the same level, and then finally puzzle games. The gender impact appears in men favoring the first two along with Fortnite and card games, while women favor PUBG, Ludo Star, and puzzle games. On the other hand, gender differences did not occur in one area, namely bullying in video games. This indicates that male and female players' opinions are similar, and there is wide agreement about the items in this area. These are mentioned in Table IV particularly the first eight items about the frequency of bullying and specifically male bullies in video games and the general preference of only playing with friends if possible; if not, it is still acceptable to team up with strangers picked out randomly by the game even if they are from the opposite sex.

The third research question regarding the interference of video games with academic preparation and interpersonal relationships was answered by the analysis of the data in V, where participants highly agreed that getting friendly with strangers are one of the advantages of playing video games, while the disadvantages are the negative impact on academic/work performance and social relationships.

The current study was exploratory and the self-reported approach used were as transparent as possible to enable others to examine and build upon this work, however, moving beyond this initial exploration of players' practices and perceptions to a more confirmatory approach, further research should follow different approach relying on collecting practical practices. Following this will result in a more reliable knowledge base for game developers.

VI. CONCLUSIONS

In the present study, the authors explored gender differences in video game playing among college students in the KSA, covering players' perspectives of the male and female characters' roles in the video games that they played, and the potential interference of gaming with other aspects of college students' lives. It found clear evidence supporting the high impact of gender on the participation and perceptions of college students in the KSA, as predicted. In addition, the four main areas identified can serve as the foundation for the development of appropriate game-marketing strategies for game vendors in the KSA. Game developers who are targeting the KSA game market can use the results of this study as the basis for developing video games by considering the impact of gender and the practices and perceptions of Saudi players detailed in this study. However, selecting college students puts a limitation on how generalizable our results are. Moreover, collecting data from participants using self-reports instead of objective measures of technology use can be other limitation to the current study. The findings in this study advance the knowledge of this subject and future research could be expanded by increasing the number of questions asked regarding students' academic performance and income or expanding the study range to include players other than college students. In addition, as this study was exploratory, we recommend other researchers to examine and build upon our work and collecting data regarding players' practices by using of more confirmatory approach.

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