

Profiling Strategic Game Players in the US

Milad Navarbafi
Ehsan Shahghasemi*

(Received 28 May 2022; accepted 29 December 2022)

Abstract

It is generally perceived that serious games are more interesting to people who are more educated. But is this perception really true? This paper tries to answer this question and some other related questions to provide a clearer picture of who plays strategic games in the US. Data were taken from a large dataset of one of the PEW's surveys. The American Trends Panel is a probability-based online panel which is carried out nationally using a sample of adults in the United States living in households. This survey was fielded for the Pew Research Center by Abt Associates from April 4 to April 18, 2017. Overall, 4,168 participants completed the Wave 26 survey. The results found that in comparison with non-strategic gamers, strategic gamers are more likely to be men, more educated and wealthier, though the differences are small. It seems the old stereotypes about Sgamers and NSgamers should be re-evaluated, if we want to know how to use serious games for educational purposes.

Keywords: education, serious games, socioeconomic status, strategic games, survey.

Milad Navarbafi; MA Graduate, Faculty of World Studies, University of Tehran, Tehran, Iran

Ehsan Shahghasemi (Corresponding author); Department of Communication, Faculty of Social Sciences, University of Tehran, Tehran, Iran | Email: shahghasemi@ut.ac.ir



This is an open access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (CC BY NC), which permits distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

Introduction

The gaming industry has been on the rise for decades and we have shown an increasing interest in video and computer games (see for example VGsales, 2017). It is forecasted that gaming industry will worth more than 200 billion dollars by 2023 (Gough, 2020) and by any criteria, this is a huge figure. Many groups might be tempted to use this gigantic industry and its enthusiastic followers for different purposes. Educators have been always interested not in financial benefits of the gaming industry, but its wonderful potential to be employed for educational purposes (see for example, Shahghasemi, 2020a; 2020b; Bagheri et al., 2023). Educators came to the conclusion that games have different aspects other than fun and leisure. Indeed, games are not just a way to pass time and have potential to pinpoint children's ability to learn how to communicate with others. A closer look at serious games shows a fundamental point: This kind of games are designed to entertain and educate players and to foster positive behavioral change via the incorporation of prosocial messages embedded within the game play (Darwesh, 2016). Strategic games are entertainment-educational games that simultaneously entertain the players and help them develop a more sophisticated understanding of the world around them.

Strategic games will be a phenomenon in the now and future and the use of games in education will become a simple daily routine as kids these days are increasingly dependent on their smartphones. Kids play more despite the fact that parents these days are more worried about negative aspects of mobile phone use among children. Intriguingly, parents will not have the same reaction for serious games if they are sure of their usefulness. With a serious game, the player learns when s/he should start another round of the game. Moreover, producers of serious game think about different designs for their products to make them have a fun aspect similar to general games (ibid).

Internet has changed many aspects of our lives (Sabzali, et al., 2022) and the strategic games' events mainly happen in a virtual world and handling both these aspects need a more sophisticated and operational mind. Virtual reality is currently being widely studied in the education sector and it seems to be a harbinger of making learning experiences more funny and amusing to youngsters and adults alike; if games become more interesting, they will be improving learner motivation, engagement, and attention (Xie et al., 2019). Virtual reality is naturally suited for practical education because skills developed in a realistic virtual environment naturally moves into one's skills in the real environment (for example, Hosseini & Sabar, 2018). Serious games and

their virtual reality environments could be particularly useful in cases where the real environment is costly to provide, an instance of which is the aircraft engine maintenance workshop (Abulrub et al., 2011) and distance surgeries. Again, we can see that people who are more likely to do strategic and serious games are more likely to be sophisticated.

Strategic games mainly happen in a simulated world. Educational simulations have tried to create engaging and productive learning environments in all fields of educational work. Some of the advantages that have been put forward the gaming industry and pioneer educators include: simulations is scalable, reusable and learner-centric; simulation has affordances that are related to illustration and visualization; simulation leads to student interest and engagement; and simulation produces desirable learning outcomes, especially in terms of conceptual knowledge but also with regard to developing mindset about scientific inquiry (Slavin et al., 2014). In addition to these advantages, the educational game institutes have tried to obtain learner data in order to analyze productive learner behavior which in turn adds to pinpointed and strengthened interest in educational simulations and serious games. However, this welcome tone does not mean that the outcomes of learning with and from educational simulations or games are straightforward or always positive (Veermans & Jaakkola, 2019).

It is easy to predict that more educated people are more likely to play strategic games, but is this really the case? What are the main demographic predictors of the so-called strategic-game-play? We have taken a large dataset of Americans' responses to one of Pew's surveys to answer this question:

- RQ: Who plays strategic games in the US?

In order to answer this question, we had to break it into 7 questions to compare strategic gamers (from now on, Sgamers) and non-strategic gamers (from now on, NSgamers):

- RQ1: Do American Sgamers and NSgamers equally see the world as a dangerous place?
- RQ2: Are Sgamers and NSgamers equally religious?
- RQ3: Are Sgamers and NSgamers equally environmentalist?
- RQ4: Is there any age differences between Sgamers and NSgamers?
- RQ5: Is there any educational differences between Sgamers and NSgamers?
- RQ6: Is there any ideological differences between Sgamers and NSgamers?
- RQ7: Is there any income differences between Sgamers and NSgamers?

Methodology

To profile American serious gamers' features, we used data from Pew Research Center's American Trends Panel Wave 26. The American Trends Panel is a probability-based online panel which is carried out nationally using a sample of adults in the United States living in households. This survey fielded for the Pew Research Center by Abt Associates from April 4 to April 18, 2017. Overall, 4,168 participants completed the Wave 26 survey. The survey was administered in English and Spanish. The margin of sampling error for full sample weighted estimates was ± 2.56 percentage points.

Findings

From 4168 participants, 920 said they play strategic games. We divided all respondents who said they play a type of game into two groups: Those who play strategic games (Sgamers) and those who do not play strategic games (NSgamers). Then we compared both groups in terms of their worldview, gender, education etc.

Game Type and Viewing the World as a Dangerous Place

There has been no agreement among researchers as to how video games might negatively -or positively- influence worldview of the game players. The "Dirty World Syndrome" (Shahghasemi, 2018) explains how those who play more violent video games might be seen as having a more negative view towards the world. Individuals who experience "Dirty World Syndrome" may feel overwhelmed and helpless in the face of seemingly endless reports of violence, natural disasters, and other negative events.

As for the relationship between playing video games and "Dirty World Syndrome," some researchers have suggested that video games may serve as a coping mechanism for individuals who experience this type of anxiety. Playing video games can provide a temporary escape from the real world and the constant stream of negative news stories. Additionally, video games can provide a sense of control and mastery that may be lacking in other areas of an individual's life.

However, it is important to note that excessive video game use can also contribute to feelings of isolation, anxiety, and depression. Individuals who use video games as a coping mechanism should be mindful of their gaming habits and seek additional support if necessary.

Overall, while there may be a relationship between playing video games and "Dirty World Syndrome," this syndrome is not a recognized diagnosis and further research is needed to fully understand the

potential effects of video game use on mental health. In our study, among 4168 participants, only 731 participants (17.5%) had answered both questions about doing Sgames or NSgames.

We wanted to know if there was a difference between two groups in terms of seeing the world as a dangerous place. The statistics (Pearson Chi-Square = 50.405, df= 3, P<0.000) showed that there was a difference between two groups in this respect.

The number of people in the sample who played strategic games (62.9%) was greater than the number of people who didn't (37.1%). The below table shows that among Sgamers 8.5% were very worried, 54.3% had little worry, and 37.2% had no worry at all that the world is a dangerous place. Also, among NSgamers 9.2% are very worried, 49.4% have little worry, and 41.3% have no worry at all that the world is a dangerous place. We can conclude that although there is a weak but significant relationship here, we cannot say that being a NSgamer or Sgamer has any relationship with seeing the world as a dangerous place.

WORRYE_W26 * GAMETYPE_F_W26 Crosstabulation

			GAMETYPE_F_W26		Total
			other game	Strategy games	
WORRYE_W26	Worry a lot	Count	25	39	64
		% within GAMETYPE_F_W26	9.2%	8.5%	8.8%
	Worry a little	Count	134	250	384
		% within GAMETYPE_F_W26	49.4%	54.3%	52.5%
	Do not worry at all	Count	112	171	283
		% within GAMETYPE_F_W26	41.3%	37.2%	38.7%
Total	Count	271	460	731	
	% within GAMETYPE_F_W26	100.0%	100.0%	100.0%	

Religiosity and Game Type

Religion has a significant presence in gaming culture and can greatly impact popular perceptions of religion. Therefore, religious studies scholars should focus on studying religion in gaming as a crucial aspect of understanding religion in popular culture. It is important to examine religious narratives, rituals, and behaviors in game studies and environments, as this can provide critical insights into how religion is portrayed in contemporary media and society (Campbell et al., 2016).

As more research is conducted on video games and their usage, it becomes increasingly important to understand how religion intersects with digital gaming. This is important for two main reasons. Firstly, while there is much debate about the impact of video games, the impact on religious beliefs has largely been overlooked. Secondly, various churches

are exploring the development and delivery of religious games, making it important to analyze the relationship between digital games and religion. This need for more studies emerged from early research on video games, which recognized that the field was multidisciplinary, with representatives from education, psychology, computer science, and more. To prevent privileging one perspective over another and encourage collaboration, some researchers proposed frameworks that included various aspects of game studies such as pedagogy, psychology, media effects, genre studies, and game design (Ferdig, 2014). We have tried to study relationships between religiosity and being a gamer.

Among 4168 participants, only 1522 (36.5%) had answered both questions. First, we wanted to see if there was a relationship between the type of gamer a participant is and his/her religiosity, which we found such relationship existed (Pearson Chi-Square = 18.419, $df=4$, $P<0.001$). As we can see in the below table, 14.3% of Sgamers and 19.4% of NSgamers are extremely religious while 21.2% of Sgamers and 15.6% of NSgamers are not religious at all. Cramer's V test shows that there is a significant, though weak, relationship between game type and religiosity (Cramer's $V = .110$, $P<0.001$). We can conclude, therefore, that in general Sgamers are less likely to be religious as compared to NSgamers.

DESCRIBE_A_W26 * GAMETYPE_F_W26 Crosstabulation

			GAMETYPE_F_W26		Total
			other game	Strategy games	
DESCRIBE_A_W26	Extremely well	Count	117	131	248
		% within GAMETYPE_F_W26	19.4%	14.3%	16.3%
	Very well	Count	143	185	328
		% within GAMETYPE_F_W26	23.7%	20.1%	21.6%
	Somewhat well	Count	154	222	376
		% within GAMETYPE_F_W26	25.5%	24.2%	24.7%
	Not too well	Count	95	186	281
		% within GAMETYPE_F_W26	15.8%	20.2%	18.5%
	Not at all well	Count	94	195	289
		% within GAMETYPE_F_W26	15.6%	21.2%	19.0%
Total	Count	603	919	1522	
	% within GAMETYPE_F_W26	100.0%	100.0%	100.0%	

Game Type and Environmentalism

Video games have an astonishing capacity for education and some pioneering people have thought about ways to use them for environmental issues. At the Climate Summit held at the United Nations Headquarters in New York in 2019, the Playing For The Planet Alliance was unveiled. With a collective reach of over 1 billion video game players, the Alliance's members have made commitments to promote environmentally-friendly initiatives in their

games. These include reducing their carbon emissions, supporting global environmental goals, and integrating green activities into their products. Specific initiatives undertaken by members range from planting millions of trees to reducing the amount of plastic used in their products.

Playing for the Planet conducted its largest survey ever, which discovered that video games can encourage positive attitudes and actions towards the environment in real life. The survey reached out to 380,000 players across ten different games, targeting gaming communities to understand their thoughts on environmental issues and content within games. This survey was launched after the Green Game Jam in 2022, where more than 40 studios explored ways to use in-game tactics to improve the environment. The survey’s participants were players from around the world who responded to survey questions during the Green Game Jam.

The survey found that more than 81% of gamers want to see more green messages and content in video games, and over two-thirds have considered changing their behaviour, such as eating less meat, as a result of in-game messaging. Additionally, around 80% of players are concerned about environmental issues affecting them now and, in the future, indicating a genuine willingness to take action. This survey was the first of its kind conducted by Playing for the Planet, and the results were remarkable.

In the dataset we used for this study, there was a question regarding participants’ care for environmental issues. Among 4168 people, 1521 (36.5%) had answered both questions. Statistics showed that there was no relationship between game type and environmentalism (Pearson Chi-Square = 2.256, df= 4, P= 0.689). In the below table we can see there are difference among levels of environmentalism between two groups, but the differences are so tiny that does not provide any opportunity to say if there is any reliable difference in the society.

DESCRIBEC_W26 * GAMETYPE_F_W26 Crosstabulation

			GAMETYPE_F_W26		Total
			other game	Strategy games	
DESCRIBEC_W26	Extremely well	Count	144	243	387
		% within GAMETYPE_F_W26	23.9%	26.4%	25.4%
	Very well	Count	226	340	566
		% within GAMETYPE_F_W26	37.5%	37.0%	37.2%
	Somewhat well	Count	190	284	474
		% within GAMETYPE_F_W26	31.6%	30.9%	31.2%
	Not too well	Count	37	44	81
		% within GAMETYPE_F_W26	6.1%	4.8%	5.3%
	Not at all well	Count	5	8	13
		% within GAMETYPE_F_W26	0.8%	0.9%	0.9%
	Total	Count	602	919	1521
		% within GAMETYPE_F_W26	100.0%	100.0%	100.0%

Age and Game Type

There is a general belief that aged people don't like to -or cannot- play video games. But the typical image of video game players is no longer accurate. The average player is now 34 years old, and almost half of all players are women. Surprisingly, 26% of players are over 50 years old. In 2009, the majority of American households (67%) owned a console or personal computer for playing video games or other entertainment software. This means that video games have become an integral part of American culture (Primack et al, 2012).

Among 4168 participants in our study, only 1523 (36.5%) had answered both questions regarding age and game type. My association test (Cramer's $V = .216$, $P < 0.001$) showed that there was a weak but highly significant relationship between these two variables. As we can see in the below table, 12.6% of NSgamers and 19.9% of Sgamers are in the age range of 18-29 while 22.7% of NSgamers and 11.5% of Sgamers are in the age range of +65. We can conclude that in general, older generations are less likely to play strategic games.

F_AGECAT_FINAL * GAMETYPE_F_W26 Crosstabulation

			GAMETYPE_F_W26		Total
			other game	Strategy games	
F_AGECAT_FINAL	18-29	Count	76	183	259
		% within GAMETYPE_F_W26	12.6%	19.9%	17.0%
	30-49	Count	191	419	610
		% within GAMETYPE_F_W26	31.7%	45.5%	40.1%
	50-64	Count	199	212	411
		% within GAMETYPE_F_W26	33.0%	23.0%	27.0%
	65+	Count	137	106	243
		% within GAMETYPE_F_W26	22.7%	11.5%	16.0%
Total		Count	603	920	1523
		% within GAMETYPE_F_W26	100.0%	100.0%	100.0%

Sex and Game Type

The initial research, known as the "first wave," concentrated on narrow gender stereotypes present in most games, the lack of interest of girls and women in commercial games, the desire of female players for different gaming experiences, and the invisibility of women in game production. The first major volume on gender and digital games, "From Barbie to Mortal Kombat," published in the late 1990s, was a reflection of these concerns. Researchers were interested in the notion that games could be used as a way to promote math, science, computer science, engineering, and technology careers, which was especially significant since these areas were

predominantly male-dominated. Additionally, there was an authentic desire to comprehend why gaming was gendered, specifically why girls were not participating to the same extent as boys or in the same way (Richard, 2013).

In our study, among 4168 participants, 1523 (36.5%) had answered both questions and therefore were included in this association test. Our association test (Cramer’s V= 0.140, P<0.001) showed that there was a weak but highly significant relationship between these two variables. As we can see in the below table, 42% of NSgamers and 56% of Sgamers are male, while 58% of NSgamers and 43.7 Sgamers are female. We can conclude, then, that in general men are more likely to play strategic games.

F_SEX_FINAL * GAMETYPE_F_W26 Crosstabulation

			GAMETYPE_F_W26		Total
			other game	Strategy games	
F_SEX_FINAL	Male	Count	253	518	771
		% within GAMETYPE_F_W26	42.0%	56.3%	50.6%
	Female	Count	350	402	752
		% within GAMETYPE_F_W26	58.0%	43.7%	49.4%
Total		Count	603	920	1523
		% within GAMETYPE_F_W26	100.0%	100.0%	100.0%

Education and Game Type

We were interested in knowing the relationship between level of education and game type. Among 4168 participants, 1523 (36.5%) had answered both questions and therefore were included in this association test. My test (Cramer’s V = 0.104, P<0.007) showed that there was a weak but highly significant relationship between these two variables. As we can see in the below table, the growth of education level is associated -though loosely- with higher likelihood of preferring Sgames over NSgames.

F_EDUCCAT2_FINAL * GAMETYPE_F_W26 Crosstabulation

			GAMETYPE_F_W26		Total
			other game	Strategy games	
F_EDUCCAT2_FINAL	Less than high school	Count	21	23	44
		% within GAMETYPE_F_W26	3.5%	2.5%	2.9%
	High school graduate	Count	98	102	200
		% within GAMETYPE_F_W26	16.3%	11.1%	13.1%
	Some college, no degree	Count	164	234	398
		% within GAMETYPE_F_W26	27.2%	25.4%	26.1%
	Associate’s degree	Count	66	104	170
		% within GAMETYPE_F_W26	10.9%	11.3%	11.2%
	College graduate/some postgrad	Count	134	272	406
		% within GAMETYPE_F_W26	22.2%	29.6%	26.7%
	Postgraduate	Count	120	185	305
		% within GAMETYPE_F_W26	19.9%	20.1%	20.0%
Total		Count	603	920	1523
		% within GAMETYPE_F_W26	100.0%	100.0%	100.0%

Income and Game Type

One curious question in the realm of video game studies has been if there is a relationship between income and gameplay. Previous research has shown people of all income groups are interested in playing videogames. A recent survey conducted by the dating site SeekingArrangement.com suggests that being skilled at playing video games and achieving success in real life may not be as incompatible as commonly believed, especially among affluent men. The survey polled 13,728 of the site's members who earn at least \$100,000 US per year, revealing that 54% of them play video games at least once per week. The amount of time spent on gaming increased with income, with those earning between \$100,000 US and \$200,000 US playing an average of 5.2 hours per week, and those earning between \$300,000 and \$400,000 US playing an average of 10.3 hours per week. Contrary to the belief that gaming detracts from success, the survey suggests that gaming serves as a healthy outlet in the lives of wealthy men.

Among 4168 participants, 1504 (36.1%) had answered both questions and therefore were included in this association test. My association test (Pearson Chi-Square = 7.800, df= 8, P= 0.453). showed that there was no significant relationship between these two variables. As we can see in the below table, levels of income are not sharply different between NSgamers and Sgamers.

F_INCOME_FINAL * GAMETYPE_F_W26 Crosstabulation

			GAMETYPE_F_W26		Total
			other game	Strategy games	
F_INCOME_FINAL	Less than \$10,000	Count	35	80	115
		% within GAMETYPE_F_W26	5.9%	8.8%	7.6%
	10 to under \$20,000	Count	56	64	120
		% within GAMETYPE_F_W26	9.4%	7.1%	8.0%
	20 to under \$30,000	Count	59	91	150
		% within GAMETYPE_F_W26	9.9%	10.0%	10.0%
	30 to under \$40,000	Count	66	88	154
		% within GAMETYPE_F_W26	11.0%	9.7%	10.2%
	40 to under \$50,000	Count	49	79	128
		% within GAMETYPE_F_W26	8.2%	8.7%	8.5%
	50 to under \$75,000	Count	116	167	283
		% within GAMETYPE_F_W26	19.4%	18.4%	18.8%
	75 to under \$100,000	Count	72	115	187
		% within GAMETYPE_F_W26	12.0%	12.7%	12.4%
	100 to under \$150,000 [OR]	Count	92	136	228
		% within GAMETYPE_F_W26	15.4%	15.0%	15.2%
	\$150,000 or more	Count	53	86	139
		% within GAMETYPE_F_W26	8.9%	9.5%	9.2%
Total		Count	598	906	1504
		% within GAMETYPE_F_W26	100.0%	100.0%	100.0%

Ideology and Game Type

New studies have presented convincing proof that people’s political and ideological views are increasingly aligned on moral issues. When personal choices such as marriage partners, child-rearing, and religious practices are considered as expressions of group membership, they can lead to division. These “hot-button” topics, including gay rights, gender roles, school prayer, and abortion, focus on normative rather than aesthetic preferences, and therefore generate more intense emotions. For example, when fast-food chain Chick-Fil-A announced its opposition to same-sex marriage, the act of purchasing a sandwich suddenly became a political statement. Those opposed to same-sex marriage flocked to take part in “Chick-Fil-A Appreciation Days” while proponents protested outside. Recent studies suggest that even the choice of marital partners based on political affiliation has become divisive, with Democrats and Republicans reporting increasing discomfort with their children marrying someone from the opposite party. In summary, the complexity of lifestyle politics contributes to the perplexing creation of cultural enclaves around seemingly unrelated preferences (DellaPosta et al., 2015).

Among 4168 participants, 1517 (36.4%) had answered both questions and therefore were included in this association test. My association test (Cramer’s V= 0.086, P<0.05) showed that there was a very weak but significant relationship between these two variables. As we can see in the below table, the levels of association have differences, but these differences are too weak to help us provide a case for the effect of political allegiance on game type.

F_IDEO_FINAL * GAMETYPE_F_W26 Crosstabulation

			GAMETYPE_F_W26		Total
			other game	Strategy games	
F_IDEO_FINAL	Very conservative	Count	56	58	114
		% within GAMETYPE_F_W26	9.3%	6.3%	7.5%
	Conservative	Count	136	185	321
		% within GAMETYPE_F_W26	22.6%	20.2%	21.2%
	Moderate	Count	243	361	604
		% within GAMETYPE_F_W26	40.4%	39.4%	39.8%
	Liberal	Count	117	206	323
		% within GAMETYPE_F_W26	19.5%	22.5%	21.3%
	Very liberal	Count	49	106	155
		% within GAMETYPE_F_W26	8.2%	11.6%	10.2%
	Total	Count	601	916	1517
		% within GAMETYPE_F_W26	100.0%	100.0%	100.0%

Conclusion

From the beginning, it was perceived that interesting and attractive features of video and computer games -and later online games- could be employed to foster better and more effective education. Moreover, the general perception has been that strategic games are the realm of more educated male wealthy people. Strategic games need a special talent which is thought to be only found in “talented” people.

This study proved this perception. People who were more likely to play strategic games were more likely to be male, educated and wealthy. But, a closer evaluation of these results shows that in all cases, the differences between Sgamers and NSgamers are so slight that we cannot say for sure if our results could be replicated by other studies. It seems the old stereotypes about Sgamers and NSgamers should be re-evaluated, if we want to know how to use serious games for educational purposes.

Ethical considerations

The authors have completely considered ethical issues, including informed consent, plagiarism, data fabrication, misconduct, and/or falsification, double publication and/or redundancy, submission, etc.

Conflicts of interests

The authors declare that there is no conflict of interests.

Data availability

The dataset generated and analyzed during the current study is available from the corresponding author on reasonable request.

References

- Abulrub, A.H.G.; et al. (2011). “Virtual reality in engineering education: The future of creative learning”. 2011 IEEE Global Engineering Education Conference (EDUCON). Jordan, Amman.
- Bagheri, M.; Saeedabadi, M.R. & Sabar, S. (2023). “The Effects of Gasification Mechanics on User Engagement”. *Management Studies in Development and Evolution*. 31(106): 135- 154. doi: 10.22054/jmsd.2022.63446.4027.
- Campbell, H.A.; Wagner, R.; Luft, S.; Gregory, R.; Grieve, G.P. & Zeiler, X. (2016). “Gaming religionworlds: Why religious studies should pay attention to religion in gaming”. *Journal of the American Academy of Religion*. 84(3): 641-664.
- Darwesh, D.A.M. (2016). “Concepts Of Serious Game In Education”.

- International Journal of Engineering and Computer Science.12(4): 15229-15233.
- DellaPosta, D.; Shi, Y. & Macy, M. (2015). "Why do liberals drink lattes?". *American Journal of Sociology*. 120(5): 1473-1511.
- Ferdig, R.E. (2014). "Developing a framework for understanding the relationship between religion and videogames". *Online-Heidelberg Journal of Religions on the Internet*. 5. 68-85. <https://doi.org/10.11588/rel.2014.0.12158>
- Gough, C. (2020). "Video game market value worldwide from 2012 to 2023". <https://www.statista.com/statistics/292056/video-game-market-value-worldwide/>. (Retrieved 06 November 2020).
- Hosseini, R. & Sabar, S. (2018). "Natural intelligence's Life in the Era of Artificial Intelligence: A Glance at Future Societies from the Perspective of Sci-fi Movies based on Artificial Intelligence". *Cultural Studies & Communication*. 14(Seda v Sima): 9-22.
- Primack, B.A.; Carroll, M.V.; McNamara, M.; Klem, M.L.; King, B.; Rich, M. ... & Nayak, S. (2012). "Role of video games in improving health-related outcomes: a systematic review". *American Journal of Preventive Medicine*. 42(6): 630-638. doi: [10.1016/j.amepre.2012.02.023](https://doi.org/10.1016/j.amepre.2012.02.023)
- Richard, G.T. (2013). "Gender and gameplay: Research and future directions". *Playing with virtuality: Theories and methods of computer game studies*, 269-284.
- Sabzali, M., Sarfi, M., Zohouri, M., Sarfi, T., & Darvishi, M. (2022). Fake News and Freedom of Expression: An Iranian Perspective. *Journal of Cyberspace Studies*, 6(2), 205-218. doi: 10.22059/jcss.2023.356295.1087
- Shahghasemi, E. (2020a). "Americans' Perception of Possible Utilities of Video and Computer Games". 78th Annual Conference of New York State Communication Association. New York.
- (2020b). "Are Video and Computer Games Suitable for Educational Purposes? An Attitudinal Survey". 78th Annual Conference of New York State Communication Association. New York.
- (2018). "How Online Game Players Perceive Pervasiveness of violence in the society". 2nd National and 1st International Digital Games Research Conference: Trends, Technologies, and Applications (DGRC). November: 134-144. IEEE.
- Slavin, R.E.; Lake, C.; Hanley, P. & Thurston, A. (2014). "Experimental evaluations of elementary science programs: A best-evidence synthesis". *Journal of Research in Science Teaching*. 51(7): 870-901.

- Veermans, K. & Jaakkola, T. (2019). "Pedagogy in Educational Simulations and Games". Cai, Y.; van, J.W. & Walker, Z. VR, Simulations and Serious Games for Education. New York: Springer.
- VGsales (2017). "Video game industry". https://vg-sales.fandom.com/wiki/Video_game_industry. (Retrieved 02 November 2020).
- Xie, Y.; Zhang, Y. & Cai, Y. (2019). "Virtual Reality Engine Disassembly Simulation with Natural Hand-Based Interaction". Cai, Y.; van, J.W. & Walker, Z. VR. Simulations and Serious Games for Education. New York: Springer: 121-128.