

DOI: 10.53555/jptcp.v31i1.4290

GAMING IN THE SUBCONTINENT: A STUDY ON THE PSYCHOSOCIAL IMPACT OF VIDEO GAMES ON INDIAN TEENS

Rohit Chauhan^{1*}, Prof. Seema Vinayak²

^{1*}Research Scholar, Department of Psychology, Panjab University, Chandigarh, India. Email- rohitrofl@gmail.com
²Professor, Department of Psychology, Panjab University, Chandigarh, India. Email: svpsy.pu@gmail.com

*Corresponding Author: Rohit Chauhan

*Research Scholar, Department of Psychology, Panjab University, Chandigarh, India. Email- rohitrofl@gmail.com

Abstract

Although many studies have linked video gaming with decision-making, fewer studies have examined the relationship between video gaming and participative decision-making. The central assumptions posited that engaging in "Video gaming" would lead to a notable enhancement in "Teamwork" skills while diminishing children's inclination towards "participating in decision-making" processes. The research gathered data from 60 physically and mentally fit adolescents, ensuring a minimum of 12 months of video gaming experience. Structure equation modeling using SmartPLS4 was used for hypothesis testing. The findings indicated that an escalation in video gaming activities correlated with a reduction in decision-making participation, although no statistically significant relationship was identified between video gaming and teamwork. The results revealed an approximately 20% variance in decision-making participation when gaming was a predictive variable. Further, no significant moderation was found because of gender in the relation between gaming and participative decision-making.

Keywords: Adolescent, Digital gaming, Decision making, social characteristics, Teamwork.

1. Introduction:

In the contemporary digital era, the influence of gaming has transcended the boundaries of entertainment, captivating millions of individuals across the globe. Between 2023 and 2027, the 'Video Games' segment of the digital media market is expected to experience consistent growth, with the global user base projected to rise by a total of 0.4 billion users, reflecting a 15.15 percent increase. Following five consecutive years of growth, the indicator is anticipated to reach a new peak of 3.02 billion users by 2027 (Statistica, 2023). Projections from industry reports indicated a strong likelihood of the market surpassing eight billion U.S. dollars by the financial year 2027 (Statistica, 2023). What was once considered a recreational activity has now evolved into a powerful medium for immersive experiences, fostering a unique blend of decision-making skills and teamwork. Utilizing entertainment and enjoyment, video games have the potential to effectively achieve diverse objectives, including education (Gaskin & Berente, 2011), training (A. Eichenbaum et al., 2014), acquiring experience in complex situations (Huntemann & Payne, 2009) and fostering social

networks (J. McGonigal, 2011). Researchers have started looking for ways to implicate the idea of gamification in academics. M. Khalil et al., (2018) in their study for gamification in MOOCs (Massive Open Online Courses) suggested that there is a positive correlation between gamification and students' motivation and engagement. As the popularity of video games continues to rise exponentially, it has become interesting to investigate the profound effects of gaming on the psychosocial attributes of adolescent gamers.

Adolescence is a crucial stage of life characterized by significant cognitive, emotional, and social development. During this period, adolescents are faced with numerous opportunities to engage in decision-making processes that shape their personal growth and future endeavors. Moreover, teamwork and collaborative skills are fundamental for success in both academic and professional domains. The ability to work effectively in teams enables individuals to pool their unique strengths, cultivates diverse perspectives, and collectively addresses complex challenges.

While video gaming offers captivating and immersive experiences, concerns have been raised regarding its potential effects on real-world skills and social behaviors. The recognition of Internet Gaming Disorder (IGD) as a mental health condition in the ICD-11 and its consideration in Section 3 ('Conditions for further study') of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) is based on substantial evidence, highlighting its clinical and public health significance. As per the eleventh revision of the International Classification of Diseases – section: 6C51, the clinical presentation of Internet Gaming Disorder (IGD) involves a diminished ability to regulate gaming behaviour, a heightened emphasis on gaming at the expense of other pursuits, and persistent or intensified gaming despite adverse outcomes. Individuals suffering from IGD endorsed symptoms of depression, anxiety, stress, lower self-esteem and lower life satisfaction (A.H. Bargeron & J.M. Hormes, 2017).

Since these young minds will become tomorrow's leader, it becomes imperative to explore whether video gaming enhances or impedes their participative decision-making skills and teamwork. Research conducted through meta-analyses consistently indicates a notable enhancement in team performance and productivity as a result of engaging in team-building activities. (C. Klein et al., 2009).

Furthermore, the multiplayer aspect of gaming has introduced an entirely new dimension to the experience, emphasizing the significance of teamwork and collaboration. Several games now require players to work in an alliance or team where a certain part of the mission needs team assistance or can be done in team modes only. In such games, collective decision-making and collaboration are vital for success. Additionally, the Military has started to become proficient in using such tactics and collaboration-based games such as War Craft, Brigade Combat Team and Doom for their training purposes (Michael & Chen, 2005). The virtual nature of these interactions offers laboratory-like settings to study the intricacies of teamwork dynamics and explore their implications in various contexts.

This study aims to understand the role of video gaming in shaping these psychosocial characteristics in adolescents. By delving into this subject, we seek to provide valuable insights into the impact of video gaming on important aspects of adolescent development and social interactions. Understanding these relations will help the parents, policymakers, educators and game developers about the potential risks and benefits associated with gaming culture in India.

1.1 Participative Decision making vs. Gaming: A Cognitive Connection

An expanding body of research demonstrates that participation in decision-making, be it in the realms of education, health, or social services, yields positive developmental outcomes. (Lansdown et al. 2014) has highlighted that involvement in decision-making has the potential to result in developmental advantages concerning self-esteem, cognitive abilities, social skills, and a heightened sense of respect for others. In addition to that, when children and young people effectively participate in decision-making, and later if it leads to success, it produces a four times positive 'therapeutic effect' characterized by improved child/professional relationships, elevated self-esteem, heightened feelings of mastery and control, and a decrease in stress and anxiety (Vis et al. 2011). Gaming has emerged

as more than just a form of entertainment; it has increasingly influenced various aspects of human behaviour, including decision-making processes.

One of the considerable contributions of video gaming to participative decision-making is the development of critical thinking and problem-solving skills. Numerous modern games require players to analyze complex situations, and strategies and make decisions that directly impact their progress and rewards in the game. These cognitive abilities can easily translate into real-life scenarios, encouraging individuals to approach decision-making with a more analytical and informed mindset. In addition to that, Reynaldo, C. et al. (2021), and Eichenbaum et al. (2014) in their study concluded that responsible gaming can positively influence decision-making, as players transfer skills to practical scenarios. Dong and Potenza's (2014) cognitive-behavioral model of Internet Gaming Disorder (IGD) identifies decision-making as a crucial domain that undergoes alterations in individuals affected by IGD.

However, gaming enhances cognitive functions like problem-solving, attention, and memory through immersive challenges but the virtual environment lacks real-life consequences, potentially impacting risk assessment. It is crucial to recognize the potential drawbacks of excessive gaming, such as addiction and social isolation. Balancing gaming with other activities is essential to ensure that it enhances rather than hinders participation in decision-making processes. Excessive gaming may lead to impulsive choices and reduced focus in reality leading to impaired decision-making (Yao et al. 2015).

Numerous studies were conducted within the realm of decision-making and video gaming, utilizing renowned databases such as SCOPUS, Google Scholar, and Web of Science, which are widely regarded as top databases for social sciences. However, a noticeable gap exists in substantial research specifically addressing the relationship between participative decision-making and video gaming in adolescents.

1.2 Teamwork vs. Gaming: Forging Bonds in Virtual Realms

Teamwork and gaming share a fascinating dynamic in today's digital age. Multiplayer games demand collaboration, communication, and coordination among players to achieve shared objectives. In these virtual realms, participants learn to trust, respect, and leverage each other's strengths. Avatars, a compelling narrative, and team collaboration all contributed positively to social connectedness. Team-based challenges cultivate essential interpersonal skills, fostering camaraderie and friendship among gamers worldwide. Since multiplayer games offer social interactive dimensions, they could help develop team-based skills like communication, leadership and coordination (Freitas, 2006). (Riivari et al., 2021) suggests that computer games can facilitate collaborative learning and enhance teamwork skills among adolescents. Moreover, successful teamwork in gaming often requires adapting strategies on the fly and honing critical thinking and problem-solving abilities. While gaming provides a unique platform to experience teamwork, its impact can extend beyond screens, influencing how individuals collaborate in their daily lives, be it at work or within communities. (Rojas et al., 2013) explored the use of the online game "Manage-Art" to improve teamwork and decision-making skills and found that the game-based approach positively impacted the participant's ability to work collaboratively and make effective decisions.

2. 2.1 Research Question: Is there a significant impact of video gaming on the psychosocial characteristics of students?

2.2 Hypotheses

H1: There shall be a significant impact of video gaming on students' participative decision-making skills.

H2: There shall be a significant impact of video gaming on students' teamwork characteristics.

H3: There shall be a significant impact of gender on students' involvement in decision-making.

H4: Gender moderates the relationship between gaming and Decision-making participation.

3. METHODOLOGY

3.1 *Participants:* The sample population included 60 adolescents (37 boys and 23 girls) of the age range 15-19 years with no history of mental or physical disability. The average age of the sample was 16.91 years (SD \pm 1.42). Almost half the sample was of higher secondary grade (n = 34 56.6%), 3 students were from 9th grade (5%) and 23 students were from 10th grade (38.4%). Only those students were included in the study who showed a liking for video games and had a prior experience of at least 12 months or more. Daily video game play time was reported 4.32 h on average (SD \pm 3.12).

3.2 Operational Definition:

Video gaming: "A video game constitutes a form of interaction involving a player, an electronic device with a visual display, and potentially other players. This interaction is facilitated by a meaningful fictional context and is upheld by an emotional connection between the player and the consequences of their actions within that fictional setting." (*Bergonse, 2017*).

Teamwork: "The merging of individuals' endeavors aimed at achieving a common objective." (*Mathieu et al., 2017; p. 458*).

Participative Decision-making: "Participative decision-making (PDM) involves granting employees the opportunity to contribute their insights to the decision-making process concerning work-related matters." (*Zanoni & Janssens, 2007*)

3.3 Measures:

As a baseline, children were asked to provide their demographic information like age, gender and education. Later after that, children were asked to complete the GASA, CAP-DMQ and teamwork scale for youth.

GASA (Gaming Addiction Scale for Adolescents)- to assess the gaming characteristics of the studentby Lemmens et al. (2009)- comprises 7 items in a Likert scale form having Never, Rarely, Sometimes, Often and Very often as options having a value of 1,2,3,4 and 5 respectively. Score ranges from 7-35, higher score pointing to higher gaming addiction.

CAP-DMQ (*Child and Adolescent Participation in Decision-making Questionnaire*)- to assess the students' participative decision-making- by Santin et al. (2016)- comprises 10 self-report Likert scale items presented as items ranging from strongly agree (1) to disagree strongly (5). The lower the score on the scale, the higher the participation in decision-making.

Teamwork scale for Youth- to assess the teamwork characteristics in students - Leeann et al. (2015)comprises 10 items presented as 5-point Likert items ranging from 1(not at all true) to 5(really true). The higher the score on the scale, the higher the teamwork characteristics in the children.

3.4 Procedure and Consent

The participants were asked to participate in the study of their free will and were informed about the aims and rationale of the study. The students were included based on their liking for gaming and those who showed interest in gaming. No written consent was taken since the participation was voluntary and the whole procedure was conducted in the presence of school authorities, Responses for all three questionnaires were taken at once.

3.4.1 *Ethics* -The research involves administering a brief survey with participants about their experiences on a non-sensitive topic, and the questions are not invasive or likely to cause any form of distress. The questionnaires are considered to be a no-risk scenario and prior consent from the participants was taken before filling their questionnaires.

3.4.2 Analytical Plan

partial least squares (PLS) structural equation modelling technique in SmartPLS 4 was employed to validate our model (https://www.smartpls.com/ [accessed 2023-12-25]). This analytical approach was chosen for its suitability, as PLS is not reliant on normal distributions or interval scales (W. W. Chin et al., 2003), aligning well with our research objective. To ensure robust predictions, we conducted 10,000 bootstrap procedures. Our analysis involved two models. In the first model, we amalgamated Gaming, teamwork, and Participative Decision Making (PDM) to assess the impact of gaming on teamwork and PDM. In the second model, we introduced Gender as a binary variable between gaming and PDM to explore potential moderation effects due to gender differences. Both models were then checked for psychometric properties to establish reliability and validity. When established, models were used for hypothesis testing.

4. RESULTS

Table 1: Mean, SD, variance for Gaming, decision-making participation and teamwork (N=60).

	N	Minimum	Maximum	Mean	Std. Deviation
Age	60	14.00	19	16.8833	1.51927
Decision making participation	60	19	45	33.63	6.197
Teamwork	60	8	35	23.33	7.304
Gaming Scores	60	7.00	24.00	15.2833	4.37672
Valid N (listwise)	60				

Table 1 shows the mean, SD, minimum and maximum values for all scales for N = 60. On gaming addiction, the mean came out to be 15.28, with SD \pm 4.37. The minimum and maximum scores obtained are 7 and 24 respectively. On the Teamwork scale, the mean appeared to be 23.33, SD \pm 7.30 with minimum and maximum values of 8 and 35 respectively. For the decision-making participation scale, the mean and SD came out to be 33.63 and 6.197 respectively having a minimum and maximum value of 19 and 45 respectively.

4.1 Measurement Model (for Gaming, PDM, and Teamwork)

A measurement model was used to assess the quality of the constructs in the study. The assessment starts with the factor loading, and then establishing reliability and validity.

4.1.1 Factor Loading



Fig. 1: Model to check the impact of gaming on PDM (participative decision making) and teamwork. Each construct along with their factor loadings.

	Gaming	Teamwork	PDM	
GA1	0.012			
GA2	0.551			
GA3	0.436			
GA4	0.502			
GA5	0.593			
GA6	0.714			
GA7	0.612			
TW1		0.715		
TW2		0.627		
TW3		0.709		
TW4		0.850		
TW5		0.861		
TW6		0.766		
TW7		0.801		
TW8		0.704		
DM1			0.632	
DM2			0.478	
DM3			0.710	
DM4			0.643	
DM5			0.776	
DM6			0.596	
DM7			0.591	
DM8			0.718	
DM9			0.595	

Table 2. Factor loading for all the constructs.

The factor loadings in Table 2 were generated from running the model at 10000 bootstrap procedures. The factor loadings having a value less than 0.5 or p-value > 0.05 were removed from the final model to increase the construct reliability and validity. *Removed factor loading GA1, GA3, and TW2.*

Improved Model with factor loadings removed



Fig. 2 – Proposed model after removing insignificant factor loadings.

4.1.2 Reliability Analysis

"Reliability is characterized by the stability and consistency of a measuring instrument. At its core, reliability reflects the ability of an instrument to produce consistent results when administered repeatedly." (Mark, 1996). The widely used reliabilities are Cronbach's Alpha and the Composite Reliability. Table 3 below presents the reliabilities of the constructs.

	Cronbach's Alpha	Composite Reliability	
Gaming	0.703	0.753	
Teamwork	0.892	0.925	
PDM	0.819	0.862	
Table 3: Construct reliability analysis			

Table 3: Construct reliability analysis.

All the construct has reliability greater than the required threshold of .70 (Hair et al. 2011). Hence, the construct reliability is established.

4.1.3 Discriminant validity

Fornell and Larcker Criterion

"Discriminant validity is confirmed when the square root of the Average Variance Extracted (AVE) for a construct exceeds its correlation with all other constructs." (Fornell & Larcker, 1981)

Gaming	Teamwork	PDM	
0.616	0.089	0.345	
0.089	0.77	0.054	
0.345	0.054	0.643	
	0.616 0.089 0.345	0.616 0.089 0.345 0.054	0.616 0.089 0.345 0.345 0.054 0.643

Table 4: Discriminant Validity

Note: Bold and Italic show the square root of AVE values for the respective construct.

4.1.4 Goodness of Fit (Model's Predictive Capabilities)

The results of the analysis revealed an R^2 value of .199 (p < .01) for PDM and .092 (p > .05) for teamwork. This shows that 19.9% variance in PDM is accounted for by gaming while no significant variance is accounted for by teamwork from gaming. Falk & Miller, (1992) recommended that the R^2 value should meet or exceed 0.10 to consider the explained variance of a specific endogenous construct as satisfactory. Q^2 is a predictive relevance, it confirms whether the model is fit for prediction or not (Q^2 > 0 is good). Q^2 : 0.02, 0.15, 0.35 for a weak, moderate, or strong degree of predictive relevance for each effect (Hair et al., 2013).

	Q ² predict	RMSE	MAE	
PDM	0.093	0.968	0.739	
Teamwork	0.027	1.017	0.873	
Table 5. prediction symmetry table				

Table 5: prediction summary table.

Hence from Table 5, it can be concluded that Q^2 value for each endogenous construct was over 0, so the predictive relevance was established.

SRMR value was also calculated for further addition to prediction relevance. Hu & Bentler, (1999) recommended that if the SRMR value is less than 0.10 or 0.08, then only it should be considered as a good fit. The current SRMR value for the model came out to be 0.096.



4.2 Measurement Model (for Gaming, Gender, and PDM)

Fig. 3- Proposed model to assess the moderation of relation between PDM and gaming through gender.

	Gaming	Gender	PDM
GA1	0.010		
GA2	0.642		
GA3	0.472		
GA4	0.546		
GA5	0.636		
GA6	0.647		
GA7	0.612		
G1DM1		1.000	0.623
DM2			0.507
DM3			0.697
DM4			0.668
DM5			0.771
DM6			0.609
DM7			0.573
DM8			0.723
OM9			0.573

Further, GA1 and GA3 were removed from the final model because of low factor loading (less than 0.5) and p > .05.

4.2.2 Reliability Analysis

	Cronbach's Alpha	Composite Reliability		
Gaming	0.703	0.755		
Gender	1.000	1.000		
PDM	0.819	0.862		

 Table 7: Construct reliability analysis.

All the construct has reliability greater than the required threshold of .70 (Hair et al. 2011). Hence, the construct reliability is established.

4.2.3 Convergent validity

"Convergent validity pertains to the extent of agreement among multiple attempts to measure the same concept. The concept suggests that two or more measures of the same phenomenon should exhibit high covariance if they are valid measures of that particular concept." (Bagozzi et al., 1991, p. 425). "When the Average Variance Extracted (AVE) value equals or exceeds the recommended threshold of .50, it indicates that items converge effectively to measure the underlying construct, thereby confirming convergent validity. (Fornell & Larcker, 1981). The AVE value in the current study is slightly lower than the required AVE values. However, the established CR value in Table 7 was greater than .70. Hence, a slightly low CV is not much of an issue.

Average Variance Extracted (AVE)			
Gaming	0.482		
Gender	1.00		
PDM	0.413		

Table 8: Construct convergent validity

4.2.4 Goodness of Fit

¥	Q ² predict	RMSE	MAE
PDM	0.092	0.954	0.789

Table 9: prediction summary table

Hence from Table 9, it can be concluded that the Q2 value for each endogenous construct was over 0, so the predictive relevance was established.

The SRMR value for the model in Fig. 4 came out to be 0.088 which further adds to the prediction relevance of the table.

4.3 Structural Model

This section will cover the hypothesis testing part of the study using the model presented in Fig. 2 and Fig. 3.

4.3.1 Hypotheses Testing

H1: There shall be a significant impact of video gaming on students' participative decisionmaking skills.

H1 estimates that there shall be a significant impact of gaming on students' participation in decisionmaking. The findings revealed that gaming has a significant impact on PDM (β = -.446, t = 5.179, p < .001). Hence, we failed to reject hypothesis H1. The negative correlation (r = -.446, p < .001), implies that with an increase in video gaming, there shall be a decrease in CAP-DMQ scores, thus leading to an increase in participative decision-making skills.

H2: There shall be a significant impact of video gaming on students' teamwork characteristics. H2 estimates that there shall be a significant impact of video gaming on students' teamwork characteristics in students. The finding revealed that gaming does not have a significant impact on teamwork characteristics ($\beta = -.303$, t = 1.545, p > 0.05). Hence, we reject the hypothesis H2.

H3: There shall be a significant impact of gender on students' involvement in decision-making. H3 estimates the presence of significant impact of gender on PDM. The findings conclude that there is a significant impact of gender on PDM ($\beta = .587$, t = 2.695, p < 0.01). Hence, we failed to reject H3. H4: Gender moderates the relationship between gaming and Decision-making participation.

H4 estimates that gender will moderate the relation between gaming participation. Findings concluded that "Gender x Gaming" does not significantly impact the relationship between gaming and PDM ($\beta = .026$, t = .118, p > 0.05). Hence, we reject the H4 hypotheses.

Hypotheses	Impact	β	Т	Sig.	Reject/ Failed to reject
H1	Gaming> PDM	446	5.179	0.000	Failed to reject
H2	Gaming> Teamwork	303	1.545	0.122	Reject
H3	Gender> PDM	.587	2.695	0.007	Failed to reject
H4	Gender x Gaming> PDM	.026	.118	0.906	Reject

 Table 10: Hypotheses table

5. DISCUSSION

5.1 Decision-Making Participation vs. Gaming:

Results from this study conclude that gaming since a positive effect on the individual's decisionmaking skills (Eichenbaum et al. 2014; Reynaldo, C. et al. 2021), and it also has a positive impact on an individual's participative decision-making skills. The reason for that could be:

Self-determination theory: by Edward L. Deci and Richard M. Ryan, 2008 - emphasizes the importance of intrinsic motivation and autonomy in driving behavior. People who are highly motivated by video gaming might feel even more motivated in their decision-making. As video game provides an immediate reward system, those virtual decision helps the individual gain confidence in their choices. This confidence thus leads to an increase in participative decision-making skills.

Flow Theory: Mihaly Csikszentmihalyi, 2000 Flow is a mental state characterized by complete absorption, deep focus, and enjoyment of an activity. Video games often provide an optimal environment for experiencing flow due to their interactive and challenging nature. This theory supports the idea that the positive experience derived from video gaming, including the state of flow, may contribute to individuals' willingness to actively participate in decision-making processes.

Game Transfer Phenomenon (GTP): de. Gortari, A. B. O. et al., 2011- GTP explores how experiences from gaming can transfer to real-life situations. Positive experiences and skills gained in video games may influence decision-making tendencies outside of gaming contexts. Video gaming often involves social interactions, and if the individual leads their online team or actively participates in alliance decisions, it could lead to the development of PDM.

Authoritative parenting style from parents could also be a reason for high participative decisionmaking since children in such parenting styles tend to have high self-esteem (Chauhan et al., 2023; Zakeri, H. & Karimpour, M., 2011) and high self-esteem would lead to high confidence in themselves and the children will feel themselves capable of being part of team's decision.

5.2 Teamwork vs. Gaming:

The absence of a significant correlation suggests that there is no significant impact of video gaming on the collaborative characteristics of the students. In contrast to this, (Rojas et al., 2013; Riivari et al., 2021; Jin, Y. & Li, J., 2017) proposed that teamwork abilities are enhanced with the help of gaming. This discrepancy in findings from the literature could be reasoned by the fact that the students involved in the study were from all sorts of gaming backgrounds, the absence of correlation reasoned by Diversity in gaming experience, game content and Objectives, Individual differences, social context outside gaming, Frequency of gaming, Parental and peer influence, cognition and Emotional aspects etc.

It is essential to note that not all digital games exhibit these characteristics, and many games actively promote and encourage teamwork. Team-based games, such as cooperative multiplayer games and team sports simulations, are designed explicitly to foster collaboration and teamwork among players. The significance of workplace spirituality, organizational citizenship behavior, and organizational justice in healthcare, as demonstrated by the study (Poonam et al. (2023)), finds resonance in the

gaming world as well. Encouraging teamwork and participative decision-making in gaming teams can mirror the concept of organizational citizenship behavior, where individuals actively contribute to the collective success of the group.

5.3. GenderXGaming Vs. Participative decision making

The research findings suggest that while gender independently affects individuals' participation in decision-making activities, engagement with gaming does not exhibit a differential influence based on gender when it comes to participative decision-making. One possible interpretation of this finding is that the effects of gaming on decision-making behaviors may be relatively consistent across genders. In other words, individuals, regardless of gender, might experience a similar degree of influence from their gaming activities when it comes to participating in decision-making processes.

6. CONCLUSION

The findings from our study paint a nuanced picture, revealing a substantial and positive correlation between video gaming and participative decision-making. Individuals who engage in video gaming demonstrate a heightened inclination towards actively contributing to decision-making processes, demonstrating the possible impact of the gaming experience on motivation and cognition aspects.

However, it should be kept in consideration that our investigation did not reveal any statistically significant relationship between teamwork and video gaming. This implies that while video gaming may improve participative decision-making, its direct impact on teamwork dynamics may be less pronounced.

The findings from our investigation provide a thoughtful reflection on the multifaceted aspects of video gaming's impact on individual and group behavior. The established positive correlation between PDM and gaming aligns with Flow theory and Self-Determination theory, highlighting the potential transferability of motivation and cognitive engagement fostered in gaming environments.

For discrepancies between the investigation's findings and literature could be further to explore specific elements within gaming contexts that may contribute to the development of teamwork and collaborative skills.

Limitations

- Data was taken from all types of gamers and no criteria for the game type were introduced thus it could be the reason for no significant relation between video gaming and teamwork.
- A sample of 60 is considered a weak sample thus a larger sample (> 500) could be taken for future studies.

• Experimental studies could be done to test the causal relation of video gaming with cognitive and behavioral variables to check the long-term effect of gaming on individuals.

Future Recommendations

- A comparative study between competitive and collaborative game types could be conducted to gain a more comprehensive understanding of how each contributes to the development of teamwork characteristics.
- Introducing specific criteria or game types is recommended to enhance the comprehension of teamwork dynamics.

• When empirically testing the teamwork dynamics, the predictions should be based on theories so that the existing theories can be extended to gaming contexts as well.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author, Rohit Chauhan. The data are not publicly available due to restrictions of large data, confidential and containing information that could compromise the privacy of research participants.

Funding:

The research has been funded by the University Grants Commission (UGC, New Delhi, India), (Grant number – 210510701671).

Conflict of interest:

The authors declare no conflict of interest.

REFERENCES

- Bargeron, A. H., & Hormes, J. M. (2017). Psychosocial correlates of internet gaming disorder: Psychopathology, life satisfaction, and impulsivity. *Computers in Human Behaviour*, 68, 388-394. https://doi.org/10.1016/j.chb.2016.11.029
- Basuroy T. Market size of the gaming industry India FY 2019-2027. 2023 Jul 18. URL: https://www.statista.com/statistics/740983/india-gaming-industry-market-size/ [Accessed 2023-12-27]
- 3. Baumeister, R. F. (1990). Suicide as escape from the self. Psychological Review, 97, 90-113 https://doi.org/10.1037/0033-295X.97.1.90
- 4. Bergonse, R. (2017). Fifty Years on, What exactly is a videogame? An essentialistic definitional approach. The Computer Games Journal, 6(4), 239–255. https://doi.org/10.1007/s4086 9-017-0045-4.
- 5. Chauhan, R. (2023). Role of Parenting Style of Mothers of Rural India in Self Esteem of Children. International Journal of Indian Psychology, 11(1).
- 6. https://www.researchgate.net/publication/368545049_Role_of_Parenting_Style_of_Mothers_of _Rural_India_in_Self_Esteem_of_Children
- Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information systems research*, 14(2), 189-217. https://doi.org/10.1287/isre.14.2.189.16018
- 8. Clement J. Number of active video gamers worldwide from 2017 to 2027. Statista. 2023 Nov 14. URL: https://www.statista.com/statistics/748044/number-video-gamers-world/ [accessed 2023-12-26]
- 9. Csikszentmihalyi, M. (2000). *Beyond boredom and anxiety*. Jossey-bass. https://psycnet.apa.org/record/2000-12701-000
- Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. Canadian psychology/Psychologie canadienne, 49(3), 182. https://doi.org/10.1037/a0012801
- 11. De Freitas, S. (2006). Learning in immersive worlds: A review of game-based learning. https://d1wqtxts1xzle7.cloudfront.net/33149109/deFreitas2006Learninginimmersiveworldsarev iewofgamebasedlearning-libre.pdf?1394103376=&response-content-disposition=inline% 3B+ filename%3DLearning_in_Immersive_worlds_A_review_of.pdf&Expires=1703704190&Signa ture=KIzJw11xnCQ-oFIefcJVBsBJYejYEGOnWIsNLxfQaaTL59m-rA2lgAc3RPg4Ge5ANu H767vOV2kL18uOo4SW49yZ4ak6Q53yos9cqNaeodj9H4ApM47SIZ8E34pu0ZQS5Fgth1Onz lvUytjOnK6ibzX3a1So3hlkGyyfl9Spg3REqyCRH1CQb6GX7~E0zNt4pZiR5aytNjBAERde-QweTWyp8fFCkw7J8Xo8uTIUT1c5Yrr6gS4tLRh3BUVa5CAqLMkTbSZVcF8FyzGO9Ex 9g5aT~cY4tOPf60gkQEVQYKsZwfephdjr8JCEvgcxFF3z5DhMjPYHFqF6qDnz7~0JCg_& Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA
- 12. de Gortari, A. B. O., Aronsson, K., & Griffiths, M. (2011). Game Transfer Phenomena in video game playing: A qualitative interview study. *International Journal of Cyber Behaviour*, *Psychology and Learning (IJCBPL)*, *1*(3), 15-33. https://doi.org/10.4018/ijcbpl.2011070102
- 13. Dong, G., & Potenza, M. N. (2014). A cognitive-behavioural model of Internet gaming disorder: Theoretical underpinnings and clinical implications. Journal of psychiatric research, 58, 7-11. https://doi.org/10.1016/j.jpsychires.2014.07.005

- 14. Eichenbaum, A., Bavelier, D., & Green, C. S. (2014). Video games: play that can do serious good. American Journal of Play, 7(1), 50-72. https://eric.ed.gov/?id=EJ1043955
- 15. Falk, R. F., & Miller, N. B. (1992). A primer for soft modeling. University of Akron Press. https://psycnet.apa.org/record/1992-98610-000
- 16. Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, *18*(1), 39-50. https://doi.org/10.1177/002224378101800104
- 17. Gaskin, J., & Berente, N. (2011). Video game design in the MBA curriculum: An experiential learning approach for teaching design thinking. *Communications of the Association for Information Systems*, 29(1), 6. https://doi.org/10.17705/1CAIS.02906
- 18. Guitton, M. J. (2019). Manipulation through online sexual behaviour: exemplifying the importance of human factor in intelligence and counterintelligence in the Big Data era. *The International Journal of Intelligence, Security, and Public Affairs*, 21(2), 117-142. https://doi.org/10.1080/23800992.2019.1649122
- 19. Hair, Joseph F. and Ringle, Christian M. and Sarstedt, Marko, Editorial Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance (March 14, 2013). Long Range Planning, Volume 46, Issues 1-2, pp. 1-12, Available at SSRN: https://ssrn.com/abstract=2233795
- 20. Huntemann, N. B., & Payne, M. T. (Eds.). (2009). Joystick soldiers: The politics of play in military video games. Routledge. https://lccn.loc.gov/2009008747
- 21. Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling*, 6(1), 1-55
- 22. https://doi.org/10.1080/10705519909540118
- 23. International Classification of Diseases, Eleventh Revision (ICD-11), World Health Organization (WHO) 2019/2021
- 24. https://icd.who.int/browse11. Licensed under Creative Commons Attribution-NoDerivatives 3.0 IGO licence (CC BY-ND 3.0 IGO).
- 25. Jin, Y., & Li, J. (2017). When newbies and veterans play together: The effect of video game content, context and experience on cooperation. *Computers in Human Behaviour*, 68, 556-563. https://doi.org/10.1016/j.chb.2016.11.059
- 26. *Klein, C., DiazGranados, D., Salas, E., Le, H., Burke, C. S., Lyons, R., & Goodwin, G. F. (2009). Does team building work?. Small group research, 40(2), 181-222 https://doi.org/10.1177/1046496408328821
- Khalil, M., Wong, J., de Koning, B., Ebner, M., & Paas, F. (2018, April). Gamification in MOOCs: A Review of the State of the Art. In 2018 IEEE global engineering education conference (educon) (pp. 1629-1638). IEEE.
- 28. https://doi.org/10.1109/EDUCON.2018.8363430
- 29. Kozlowski, S. W., & Bell, B. S. (2003). Work groups and teams in organizations. Handbook of psychology: Industrial and organizational psychology, 12, 333-375. https://doi.org/10.100 2/0471264385.wei1214
- 30. Lansdown, G., Jimerson, S. R., & Shahroozi, R. (2014). Children's rights and school psychology: Children's right to participation. *Journal of school psychology*, 52(1), 3-12. https://doi.org/10.1016/j.jsp.2013.12.006
- Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2009). Development and validation of a game addiction scale for adolescents. Media psychology, 12(1), 77-95. https://doi.org/10.1080/15213260802669458
- 32. Lower, L. M., Newman, T. J., & Anderson-Butcher, D. (2017). Validity and reliability of the teamwork scale for youth. Research on Social Work Practice, 27(6), 716-725. https://doi.org/10.1177/1049731515589614
- 33. Mathieu, J. E., Hollenbeck, J. R., van Knippenberg, D., & Ilgen, D. R. (2017). A century of work teams in the Journal of Applied Psychology. Journal of Applied Psychology, 102, 452-467. https://doi.org/10.1037/apl0000128

- 34. Mark, R. (1996). *Research made simple: A handbook for social workers*. Sage https://lccn.loc.gov/95041740
- 35. McGonigal, J. (2011). Reality is broken: Why games make us better and how they can change the world. Penguin. https://matthewjbrown.net/teaching-files/philtech/mcgonigal.pdf
- 36. Michael, D. R., & Chen, S. L. (2005). Serious games: Games that educate, train, and inform. Muska & Lipman/Premier-Trade. https://doi.org/10.1145/3554364.3561610
- 37. O'Hare, L., Santin, O., Winter, K., & McGuinness, C. (2016). The reliability and validity of a child and adolescent participation in decision-making questionnaire. Child: care, health and development, 42(5), 692-698. https://doi.org/10.1111/cch.12369
- 38. Poonam, Rohit Chauhan, & Preeti. (2022). Role of Workplace Spirituality, Organizational Citizenship Behavior, Organizational Justice and Performance of Nurses. International Journal of Indian Psychology, 11(2). https://doi.org/10.25215/1102.086
- 39. Regier, D. A., Kuhl, E. A., & Kupfer, D. J. (2013). The DSM-5: Classification and criteria changes. World psychiatry, 12(2), 92-98. https://doi.org/10.1002/wps.20050
- 40. Reynaldo, C., Christian, R., Hosea, H., & Gunawan, A. A. (2021). Using video games to improve capabilities in decision making and cognitive skill: A literature review. Procedia Computer Science, 179, 211-221. https://doi.org/10.1016/j.procs.2020.12.027
- 41. Riivari, E., Kivijärvi, M., & Lämsä, A. M. (2021). Learning teamwork through a computer game: for the sake of performance or collaborative learning?. Educational technology research and development, 69, 1753-1771. https://doi.org/10.1007/s11423-021-10009-4
- 42. Rojas, M. D., Alis, J. E., & Londoño, L. M. (2013). Teamwork for Decision-Making Through Games: The Case of On-Line "Manage-Art". In Developments in Business Simulation and Experiential Learning: Proceedings of the Annual ABSEL conference (Vol. 40). https://absel-ojs-ttu.tdl.org/absel/article/view/46
- 43. Sailer, M., Hense, J. U., Mayr, S. K., & Mandl, H. (2017). How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. *Computers in human behaviour*, 69, 371-380. https://doi.org/10.1016/j.chb.2016. 12.033
- 44. Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. Cognitive science, 12(2), 257-285. https://doi.org/10.1016/0364-0213(88)90023-7
- 45. Vis, S. A., Strandbu, A., Holtan, A., & Thomas, N. (2011). Participation and health–a research review of child participation in planning and decision-making. *Child & Family Social Work*, *16*(3), 325-335.https://doi.org/10.1111/j.1365-2206.2010.00743.x
- 46. Yao, Y. W., Wang, L. J., Yip, S. W., Chen, P. R., Li, S., Xu, J., ... & Fang, X. Y. (2015). Impaired decision-making under risk is associated with gaming-specific inhibition deficits among college students with Internet gaming disorder. Psychiatry research, 229(1-2), 302-309. https://doi.org/10.1016/j.psychres.2015.07.004
- 47. Zakeri, H., & Karimpour, M. (2011). Parenting styles and self-esteem. *Procedia-social and behavioural sciences*, 29, 758-761.https://doi.org/10.1016/j.sbspro.2011.11.302
- 48. Zanoni, P., & Janssens, M. (2007). Minority employees engaging with (diversity) management: an analysis of control, agency, and micro-emancipation. *Journal of Management Studies*, 44(8), 1371-1397. https://doi.org/10.1111/j.1467-6486.2007.00700.x