



Birth order, Video Gaming Behaviour, Aggression Levels, And Leadership Style Amongst Adults

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Abstract: This study explores the influence of Birth order on video gaming behaviour, aggression levels, and leadership styles among the Gen-Z adults. The study will enable us to know how birth order can influence video gaming behaviour amongst the individuals who actively play video games. This will also help video gaming companies to understand and build their games around the targeted audience and help in understanding their audience better (choice of games played by the participants is also collected). Further e-sports team can use this to choose their in-game leaders (IGL). The primary aim is to understand whether birth order groups- First born, second born, last born, and only child- significantly affects video gaming behaviour in way that is problematic, how aggression is manifested within them , as well as their leadership style which can affect in game leadership as well as their workplace leadership style. The research design adopted in this study is quantitative and comparative and employs purposive sampling to recruit participants who are of the ages 18-28 years old. Data does not yield significant difference between the groups though it does show that middle born and last born show higher gaming engagement than others, with second born preferring FPS games more than their earlier born and later born. Further, Country Club Leadership style showed more aggression than any other leadership style. The finding can offer video gaming industry to develop games and update their games by understanding their current audience, as well as E-sports company to understand how Gen-Z adults differ from younger Gen-Z (teenagers).

Keywords: *Birth order, Video gaming behaviour, Aggression levels, Leadership styles, Adults, Indian*

1. Introduction

“Gen-z” is a term that is used to categories and describe a generation that is after “Millennials”. The age range for the generations varies, though the most commonly accepted range is 1997-2012, as per the Pew research Centre (Geiger, 2024). Gen-Z is marked with the bloom and readily availability of technology, making them the first generation to have the access to internet and technology from the very start of their lives (Hill & Capture Higher Ed, n.d.). Gen-Z individuals dominantly have Generation X (1965-1980) as their parents, though the younger Gen-z may have millennials (1981- 1996) as their parents. Shockingly, it has been found that the generation that spends the most time on video games are the Millennials (Inside Gaming, 2023). In this study, the adults being studied are those individuals who belong to the Generation -Z.

1.1 Birth Order

Alfred Adler’s birth order theory is one of the most popular theories of personality. According to Adler, the order in which children are born influences their personality development. He postulated that an individual’s birth order doesn’t necessarily develop certain traits to them, but instead it impacts the environment, situations, and the experiences that ultimately shapes their personality. Adler in his theory postulated 5 orders: First child, second child, the middle child, youngest child, and the only child. (Adler, 1928)

Using the theory, this study will focus on the four birth orders, i.e., “First born” or the oldest child, they are marked by resentment and hostility towards younger siblings. They feel a sense of “dethronement” if the parents have not prepared the child for a new sibling. They may also take on the role of other parent for their siblings, thus they are protective, supportive, and nurturing of their siblings. The oldest child understands the importance of power and authority; thus, they are also supportive of authorities and can also be more conservative and conforming to them (Adler, 1928).

Then comes the “Second born” or the middle child, they are the individuals who try to catch up to their older siblings, they see their older sibling as their role model. Middle child may have beliefs that their parents support their other siblings more than them in terms of finances and emotions. Thus, due to this, middle children may have lower self-esteem than the other siblings in the family (Sissons, 2024). Due to not having primacy of the first child and attention acquiring regency of the youngest child, middle child may feel like they were squeezed out of their families (Stewart, 2012)

Third born or the youngest one, the pampered ones of the family. They get majority of the attention from the family members, and thus it may result in them being excessively

dependent on others for support and protection (Ryckman, 2013). Due to everyone indulging themselves with the youngest one, the last-born child may result in becoming an individual who can easily learn how to coax and charm others into doing their tasks. They tend to excel in multiple facets of their lives due to having to compete with their older sibling/s and often surpassing them as well. They are given support and love from all the family members. They are also seen as the popular ones amongst their siblings.

Only child is defined as a child who has no siblings. Due to there not being any competition, they get to have parent's undivided attention and are pampered by the parents. Thought, according to Stewart (2012), they can often feel entitled and be dependent when they are not with their family. Though that's not the case always, sometimes they may feel smothered by the attention and seek independence and autonomy (Stewart, 2012)

This theory was further analysed by Eckstein (2000) and Eckstein et. al., (2010) which only focuses on the four categories- oldest child, middle child, youngest child, and only child. They combined Adler's second child and middle child categories into one.

1.2 Video Gaming Behaviour

Video gaming has evolved throughout the years, going through multiple developments, starting from mere light and two boxes – Willy Higinbotham's "*Tennis for two*" in 1958- to an engaging world of fantasies and wonders (Goldstein, et. al., 2005)

Video gaming is an innovative way that people have been using in their lives for improvements in one domain or the other, for example. Corrigan, et, al., (2023) study showed that individuals with ADHD can have their memory significantly improved using immersive virtual reality. Furthermore, in an organisational setup, gaming acts as a way to keep the employees connected, video gaming has shown to improve leadership skills as well (Rubtcova & Pavenkov, 2017). 'Serious Games' is a term that is used by many managerial leaders for the play of games in their organisation, it encompasses the concept of taking advantage of psychological predisposition via gaming in such a way that it impacts the cognitive, emotional, and social domains which in turn increases motivation of learners or the employees (Allal-Chérif et al., 2022).

The rise of video gaming led to it becoming an important part of people's life as it acts as a leisure activity tending to individual's need of entertainment, as well as a space for them to socialise with others, especially for individuals belonging to Gen-Z generation. Though, there are many who view video gaming not just as an entertainment form, but rather a platform where individuals can develop cognitive skills like leadership roles, decision making, teamwork, etc. (Granic et. al., 2014)

Problematic video gaming behaviour refers to large amount of time spent on video gaming and compulsive gaming habits which affects individuals' day-to day life in terms of occupation, social well-being, physical, and psychological (White, 2024). Gamers with problematic gaming behaviour show significantly different personality traits than the gamers with non-problematic gaming behaviour in terms of neuroticism and depression symptoms (Dieris-Hirche et al., 2020)

1.3 Leadership and leadership styles

“Leadership is a process whereby an individual influences a group of individuals to achieve a common goal” is a definition of leadership given by Northouse and Lee (2019).

Northouse (2013) emphasises that leadership consists of certain traits or characteristics, which are intelligence, high energy, self-confidence, fluency, and sociability. He further gave importance to abilities such as influencing subordinates by paying attention to them and giving them a sense of validation by understanding their feelings, behaviours, and thoughts so that they can work efficiently.

Individuals possess a group of characteristics that corresponds to the type of leadership styles, to name a few leadership styles: transformational, transactional, laissez-faire, autocratic, democratic, and servant leadership (Bass & Riggo, 2006; Goleman, 2000; Greenleaf 1977). Sulloway (1997) argued in his work “*Born to Rebel*” that birth order may shape personality development and thus their leadership tendencies also get impacted. Firstborns are more responsible, conscientious, and are achievement-oriented and thus gravitate towards authoritarian and/or task-focused leadership style (Stewart & Stewart, 1995). Whereas later born may have greater social flexibility and risk-taking tendencies, thus having participative or transformational leadership approach (Salmon, 1999).

One of the influential leadership models is the Leadership Grid given by Blake and Mouton which is widely known as the Blake and Mouton Managerial Grid. The Grid understand the leadership styles depending on the two dimensions, i.e. “concern for people” and “concern for production” (Blake & Mouton, 1964), thus they focus on both task-oriented and relationship-oriented behaviours.

The grid offers 4 main leadership style, with 5th one being a balance:

Impoverished Management: where there is low concern for people and task. It is a leader who uses “delegate and disappear” management style. These individuals allow their members to do as they please and tend to detach themselves at the time of important team processes.

Task management/ Authoritarian: where there is low concern for people but high task concern. These individuals focus on getting their task done and tend to be harsh towards their members. They tend to overpower the members and leave no room for cooperation.

Country Club management: where there is high concern for people but low task concerns. These individuals use their powers to keep the team disciplined and often tend to encourage them towards their accomplishments. Though they tend to be behind when it comes to using their powers in more legitimate way. This is due to their fear of jeopardising relationships with other team members due to their power.

Team management/ Team leader: these individuals have high concerns for people as well as high concern for task. This is considered to be the most desirable leadership style in a leader. Individuals with team leader leadership style tend to lead with positive example and aim to have an environment for their other members where those members can reach their highest potential. They tend to achieve the goals as a team effectively while also tending to create and strengthening bonds between the team members. (Creative Property of The Vision Council, n.d.)

Middle of the road style: These individuals have the middle scores in the grid and are situated at the centre (5,5) creating a type of leadership style where they aim to balance their task concerns and people concern leading to minimum performance standard while trying to maintain a satisfactory level of relationship with the team. Thus, this style tends to lead results in mediocracy in terms of production and limited employee satisfaction. (Fripp, 2023)

Taking on the e-sports outlook, it has been found that there are certain leadership styles such as transformational leadership which helps in increasing and enhancing the team performance and further has been seen to be helpful to the gaming industry in creation of video games (Chelonis, 2020). Furthermore, transactional leaderships are found in gamers, yet they prefer transformation leadership more as they are able to motivate others, are creative, as well as inspire team at a crucial time (Lisk et al., 2011).

1.4 Aggression

Aggression is considered to be a form of behaviour that is aimed to harm or injure another living being who is motivated to avoid such treatments (Baron & Richardson, 1994). It encompasses a vast spectrum of behaviours, ranging from verbally abusing someone to causing physical harm to others. Anderson and Bushman (2002) define aggression as “a behaviour directed towards another individual carried out with the proximate (immediate) intent to cause harm”.

Aggression can be due to emotional behaviour manifested by frustration, or it can occur due to learning of it via the individual's physical environment (Dollard, et. al., 1939; Bandura, 1973). It can occur due to genetics (Miles & Carey, 1997), can be caused due to low levels of serotonin (Coccaro, 1992), and also due to high levels of testosterone levels (Archer, 2006). Environmentally individuals may get impacted in such a way that gives them exposure to aggression, according to the General Aggression Model (GAM), exposure to violent media such as video games or movies have shown to increase aggressive thoughts, emotions, and behaviour over time (Anderson et. al., 2010). Family also poses as a causality factor specially in families which face domestic abuse and children who face parental rejection (Dodge, Coie, & Lynam, 2006).

Aggression levels are the intensity of aggression an individual possesses which can be assessed, one of the most widely used measurement is the Aggression Questionnaire by Buss & Perry (1992), other measurement tools such as the Overt and Relational Aggression Questionnaire by Crick & Grotpeter (1995), Reactive-Proactive Aggression Questionnaire- RPQ by Raine, et. al., (2006), and State-trait anger expression inventory -2 – STAXI-2 by Spielberger (1992) are also widely used for research purposes and to assess individuals in a clinical setup.

Aggression has found to be higher in individuals who participate in esports and thus leading to poorer psychological well-being amongst them (Kumari et al., 2022). Further, players acquire other psychological issues such as depression, anxiety, apathy, mental distress, distress in social, life, etc. (Sharma et al., 2020)

2. Review of literature

Billingham, Smith, and Keller (1989) earlier study found that there is no significant differences based on birth order and followed it up by suggesting that there may be other factors that play a more important role when it comes to aggression. The study was aimed to examine the impact of birth order on various sexual behaviours and attitudes. Their work “the effect of chronological and theoretical birth-order on sexual attitudes and behaviours” marked an important role for future researchers to apply this knowledge into other findings around aggression levels and birth order. Though the findings showed that males had significantly higher sexual aggression, social attitudes, emotional attitudes, and total orgasm scores.

Corbett (1993) study also had a similar result that showed that there is no significant difference among first born and later born when it came to concern for people, or participatory leadership behaviour. There he suggested to have furthermore studies be done on self-reporting

behaviour of leaders versus reporting of leader's behaviour by followers when attempting to relate family birth order. His study was conducted on 341 principals of Michigan state's public schools. Herein he used the Leadership Grid by Blake & McCauley, 1991 for comparison.

Sulloway (1996) proposed in his study that birth order also plays an important role in shaping and development of individual's personality traits. According to him, first-borns are often more achievement-oriented and dominant in nature, whereas the later-born (second born, and you youngest born) tend to be more rebellious, open to new experiences, and creative.

Sultana and Latif (2013) conducted a study in India using the Bengali version of the aggression scale of Edwards Personal Preference Schedule which was administered on 100 students at different colleges in Rajasthan. This study investigated the relationship between aggressive behaviour and gender, which were further divided upon the basis of birth order of first born and last born. The study yielded a result that portrayed men to be possessing more aggressive behaviour than the women and that the last-born children are more aggressive than the first-born children.

Grossman and Eisenman (1971) study on birth order, authoritarianism, and the projection of sex and aggression was conducted on 239 college students who were studying psychology. The findings showed that later born males and females showed higher authoritarian characteristics and these individuals scored high in projection of sex. The study further also showed that authoritarianism and projection has a relationship. They noted that birth order on these variables is complex and may be moderated by other factors such as culture and environment an individual grows up in.

Volling et. al. (2017) examined the developmental trajectories of firstborn children's aggressive behaviours after the birth of a sibling. The study included 241 families which had a firstborn child and a newborn child. It was longitudinal research where mothers were asked to report about their firstborns' aggressive behaviours at five points during the prenatal stage of the second born, and then later when they were 1,4,8, and 12 months old. The findings showed that there were three different trajectories found- Low stable, High-decreasing, and high-stable.

Tricarichi and Jalajas (2019) conducted a study where they conducted a study on 144 participants who were primarily undergraduate students, aiming to examine whether an individual's birth order influences their personality traits and leadership style during group activities. Using the Big Five Inventory and Multifactor leadership questionnaire they found that there is no significant differences between firstborns and later-born individuals when it comes to personality traits and leadership style in context to group activities.

Berisha et al. (2021) investigated birth order revelations about managers, wherein 230 managers from Kosovo participated. The aim of the study was to reveal the effects of birth order in decision making style, conflict handling style, and propensity for participative decision making. The results found out that single children are more avoidant and spontaneous decision makers, whereas firstborn are rational in decision making and then to lean towards problem-solving during a conflict. Lastborn make rational decisions and use both compromising and problem-solving during conflicts, they also lean towards participative decision making more than the others (middle child, firstborns, and only children).

Dieris-Hirche et al. (2020) study brings forth a remarkable result of gamers with problematic video gaming behaviour, the study showed that gamers with problematic gaming behaviour scored higher in time spent gaming, depression symptoms, and neuroticism, whereas they scored lower in self-efficacy, extraversion, conscientiousness, and openness. The total sample for this study was 820 video gamers. Further the study revealed that FPS and MMORPG gamers spent more time than other gamers playing video games.

Black et al. (2017) study titled as “*Born to lead? The Effect of Birth Order on Non-Cognitive Abilities*” aimed to study the effect of birth order on personality traits amongst men of Sweden. They found out that first born men are more emotionally stable, persistent, socially outgoing and are willing to take up responsibilities as well as take initiatives than the later born. Further they found out that first born children are more likely to emerge as managers while later born tend to be self-employed. First born, according to them, also tend to find themselves in occupation which requires leadership ability, social ability, and having Big 5 personality traits.

Wang et al. (2023) conducted a study where the authors found that there is a significant positive correlation between problematic video gaming behaviour and increase in aggression among adolescents and young adults. According to them, this is due to more aggressive and violent games being introduced at early age and desensitization of violence in them.

Ajith et al. (2024) study found out that internet gaming disorder was linked to changes in the expression of anger after playing video games, the individual's preference for online than the real-life interaction, and their state of confusion or frustration while the individuals were playing video games. Along with these, it was also found out that these individuals tend to “tilt” and have high levels of loneliness. Thus, due to all of the variables, they caused hindrance in individuals occupational, social and familial relationships.

2.1 Rationale

As the video game industry booms, its demographics is substantially increasing as we can see by the number of streamers that have increased as the years go by. This increase also shows us how different individuals' personality are in the gaming industry. To assess this difference via birth order, this study will pursuit how birth order can affect video gaming behaviour, aggression, and leadership styles.

2.2 Research Gap

The research is specifically be conducted on Indian Gen Z adults, i.e. adults who are currently of the ages 18-28 belonging to the generational category of "Gen Z". The age group is chosen as according to the youngest to oldest Gen Z adult currently as of 2025.

There is significantly less research done on the four comparative variables together and for Indian adults. Most of the research were found to be either of children comparing their aggression levels, or leadership styles, or problematic behaviour with very few being searched upon together in a comparative way, or few research on childbirth order for children and not adults in comparison to either aggression levels, or leadership styles in context of video gaming. Birth order has yet to be studied in terms of video gaming behaviour as well.

This research will be aimed towards comparing the variables in terms of childbirth order to gain some understanding of whether birth order actually impacts individuals who play video games when it comes to their video gaming behaviour, aggression levels and leadership styles.

3. Research Methodology

3.1 Aim

To study the comparison between aggression, video gaming behaviour, and leadership style as per birth order.

3.2 Purpose

To investigate the influence of birth order on video gaming behaviour, aggression levels, and leadership styles and how they interact with each other among the Indian Gen Z adults. This study aims to explore how birth order shapes an individual's online gaming behaviour, how it affects the leadership style the gamers adopt, and the distinct levels of aggression individuals possess.

This research can onward assist game developers, psychologists, and educators regarding the links between family dynamic and the psychological implications of video gaming behaviour.

3.3 Research Objective

- a. To find significant differences in aggression levels, video gaming behaviour, and leadership style of individuals as per their birth order.
- b. To compare and correlate video gaming behaviour, aggression levels, and leadership styles with each other across the four groups.

3.4 Hypothesis

H₀¹: There will be no significant difference in video gaming behaviour, aggression levels, and leadership style among individuals with different birth order.

H₁¹ : There will be a significant difference in video gaming behaviour, aggression levels, and leadership style among individuals with different birth order.

H₀²: There will be no significant correlation between aggression levels and video gaming behaviour.

H₁²: There will be a significant correlation between aggression levels and video gaming behaviour.

H₀³: There will be no significant correlation between leadership styles and aggression levels.

H₁³: There will be a significant correlation between leadership styles and aggression levels.

H₀⁴: There will be no significant correlation between leadership style and video gaming behaviour.

H₁⁴: There will be a significant correlation between leadership style and video gaming behaviour.

3.5 Research Design

The research adopts a quantitative and comparative research design to examine the influence of childbirth order on Video gaming behaviour, aggression levels, and leadership styles. Thus, this research design allows to find statistically significant differences between the birth order groups, i.e. First born, second born (middle child), last born (youngest), and the only child in video gaming industry.

3.6 Population and Sample

Population chosen are the Indian Gen-Z adults who actively play video games. The sampling is achieved through purposive sampling. The sample consisted of 112 participants (N = 112, Female = 43 , Male = 67 , Other = 2). The second born and third born in a family of 4 siblings are considered in the middle child group, whereas the second born in a family of 2 siblings are considered in last born (youngest) group.

3.6.1 Inclusion criteria

- a. Participants have to be between the ages of 18-28 years old.
- b. Their nationality is Indian
- c. Actively plays video games.
- d. Must know English and knowledge of how to access Google Forms.

3.6.2 Exclusion criteria

- a) Non video gamers.
- b) Anyone above the age of 28 years old and lower the age of 18 years old.
- c) Anyone whose nationality is not Indian.

3.7 Data Collection

The data from the survey was collected via developing an online form on a website which enables individuals to create digital forms called “ Google Forms”, after publishing, the link to the google form was shared to individuals via QR codes (in person), and through a software called “Discord”.

3.8 Measures

This research consists of the usage of 3 assessment tools for each variable, namely Problematic Online Gaming Questionnaire Short -Form, The Blake and Mouton Managerial Grid Leadership Self-Assessment Questionnaire, and Aggression Questionnaire by Buss and Perry.

3.8.1 Problematic Online Gaming Questionnaire Short-Form (POGQ-SF)

The problematic online gaming questionnaire-short form (POGQ-SF) (Pápay, et al., 2012) is a revised version of the original Problematic gaming questionnaire (Demetrovics, et.al., 2012) which is an 18-item scale. POGQ-SF measures six dimensions and includes 12 items. The assessment includes a 5-point Likert scale for recording responses, which ranges from 1-5, i.e., 1- Never, 2- Seldom, 3- Occasionally, 4- Often, and 5- Almost always/always

3.8.2 Aggression Questionnaire

Aggression questionnaire by Buss and Perry consists of 29 items, and respondents rate themselves on a 5-point Likert scale where 1= Extremely Uncharacteristic to me to 5= Extremely characteristic to me, though question number 9 and 16 are reverse scored items. This scale consists of 4 subscales- Physical aggression, verbal aggression, Anger, and Hostility.

3.8.3 Blake & Mouton Managerial Grid Leadership Self-Assessment Questionnaire

This leadership self-assessment questionnaire consists of 18 items and uses a 5 Likert scale: 1- never to 5- Always. This tool helps in identification of leadership style, and helps individuals identify and improve their management approach. The leadership styles that are

included in this tool are: Impoverished, Country Club, Task Oriented, Middle-of-the-road, Team Leader.

3.9 Statistical Analysis

Since data collected is not normally distributed, the only way to proceed further is by using non-parametric tests, thus using chi-square independence tests, Mann-Whitney U test Kruskal-Wallis test, and Monte Carlo stimulation of Chi-Square test, the data collected was analysed to find whether there is any significant difference or not between the four groups, i.e., first born, second born (the middle child), last born (youngest), and only child when it comes to each variable, and to find whether any significant difference exists between the three variables. Two of the dependent variables were categorised- Leadership as per the Leadership style and two categories for Problematic video gaming behaviour- At risk and not at risk.

4. Data Analysis and Result

4.1 Problematic video gaming behaviour and Birth order

Table1: Chi-Square analysis of Problematic gaming behaviour

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.979 ^a	3	.113
Likelihood Ratio	6.106	3	.107
Linear-by-Linear Association	5.489	1	.019
N of Valid Cases	112		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.04.			

Table 2: Groups crosstabulation data of Birth order and Video gaming Behaviour

			Groups				Total
			Firstborn	second born	third born	single child	
vbg	1.00	Count	24	8	13	8	53
		Expected Count	18.9	8.0	13.3	12.8	53.0
		% within vbg	45.3%	15.1%	24.5%	15.1%	100.0%
		% within Groups	60.0%	47.1%	46.4%	29.6%	47.3%
	2.00	Count	16	9	15	19	59
		Expected Count	21.1	9.0	14.8	14.2	59.0
		% within vbg	27.1%	15.3%	25.4%	32.2%	100.0%
		% within Groups	40.0%	52.9%	53.6%	70.4%	52.7%
Total		Count	40	17	28	27	112
		Expected Count	40.0	17.0	28.0	27.0	112.0
		% within vbg	35.7%	15.2%	25.0%	24.1%	100.0%
		% within Groups	100.0%	100.0%	100.0%	100.0%	100.0%

Chi-square result of Video gaming behaviour (categorised as 1= problematic, and 2= non-problematic). Video gaming behaviour being labelled as “Vbg” while groups are the birth orders.

Chi-square test of independence (Table 1) showed that the association between birth order and video gaming behaviour was not statistically significant, $\chi^2(3, N = 112) = 5.98, p = .113$. This suggests that problematic gaming is not significantly related to birth order in the sample. Whereas Table 2 shows First born have high proportion and show more problematic gaming behaviour than expected. Thus, we fail to reject our null hypothesis, though further work on this may yield a different result.

4.2 Aggression levels and Birth order

Table 3: *Kruskal-Wallis H test of Aggression levels and Birth Order*

	Aggression levels
Chi-Square	4.943
df	3
Asymp. Sig.	.176
a. Kruskal Wallis Test	
b. Grouping Variable: Birth Order	

Kruskal-Wallis H test was conducted to determine if there were differences in aggression levels across groups. The test (Table 3) showed no significant difference in aggression levels between the groups, $\chi^2(3) = 4.943, p = .176$. Thus, failing to reject our null hypothesis.

4.3 Leadership styles and Birth order

Table 4: *Monte-Carlo test for Leadership Style and Birth Order*

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	7.027 ^a	9	.634	.647 ^b	.635	.660			
Likelihood Ratio	8.937	9	.443	.543 ^b	.530	.555			
Fisher's Exact Test	7.370			.595 ^b	.582	.608			
Linear-by-Linear Association	1.616 ^c	1	.204	.207 ^b	.197	.217	.108 ^b	.100	.115

N of Valid Cases	112								
a. 12 cells (75.0%) have expected count less than 5. The minimum expected count is 1.67.									
b. Based on 10000 sampled tables with starting seed 2000000.									
c. The standardized statistic is 1.271.									

The Chi-Square test of independence with Monte Carlo simulation was conducted to examine the association between birth order and leadership style. The test (Table 4) indicated no significant association between the two variables, Pearson's $\chi^2(9, N = 112) = 7.03$, Monte Carlo $p = .647$, 99% CI [.635, .660]. Thus, there is no significant difference between birth order and leadership style. Thus, here we fail to reject our null hypothesis, and we accept our null hypothesis.

4.4 Aggression levels and leadership style

Using Mann-Whitney U test, 6 pairs were analysed, out of which 1 set of pair *Country club* vs *Team Leader* had a significant difference in their result.

Table 5: Mann-Whitney U test for Country club vs Team Leader for Aggression Levels

	Aggression levels
Mann-Whitney U	219.000
Wilcoxon W	3222.000
Z	-2.920
Asymp. Sig. (2-tailed)	.003
a. Grouping Variable: leadershipstyle	

The test that was conducted to compare aggression levels between Team Leader and Country Club leadership styles, revealed a statistically significant difference in aggression levels between the two groups: $U = 219.000$, $Z = -2.920$, $p = 0.003$.

The Country Club group had a higher mean rank (65.25) compared to the Team Leader group (41.84), indicating that individuals with a Country Club leadership style demonstrated higher aggression levels than those with a Team Leader style. Thus, here we can reject our null hypothesis, and accept our alternative hypothesis.

4.5 Aggression levels and Problematic video gaming behaviour

Table 6: Mann-Whitney U test for PVGB at risk vs non risk for aggression levels

	Aggression levels
Mann-Whitney U	1413.000
Wilcoxon W	3183.000
Z	-.877

Asymp. Sig. (2-tailed)	.380
a. Grouping Variable: video gaming behaviour	

The Mann-Whitney U test that was performed to determine whether there was a significant difference in aggression levels between participants classified as having problematic video gaming behaviour and those without. The results indicated that the difference in aggression scores between the two groups was not statistically significant, $U = 1413.00$, $z = -0.88$, $p = .38$. This suggests that aggression levels do not significantly vary according to problematic video gaming status in this sample, thus accepting our null hypothesis.

4.6 Problematic video gaming behaviour and leadership style

Table 7: Correlation analysis of PVGB and Leadership Style

	Value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)			Monte Carlo Sig. (1-sided)		
				Sig.	99% Confidence Interval		Sig.	99% Confidence Interval	
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	4.167 ^a	3	.244	.270 ^b	.258	.281			
Likelihood Ratio	4.298	3	.231	.262 ^b	.251	.274			
Fisher's Exact Test	4.123			.259 ^b	.247	.270			
Linear-by-Linear Association	.025 ^c	1	.874	.927 ^b	.921	.934	.467 ^b	.455	.480
N of Valid Cases	112								
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.21.									
b. Based on 10000 sampled tables with starting seed 957002199.									
c. The standardized statistic is -.159.									

A Chi-square test of independence was conducted to examine the relationship between leadership style and problematic video gaming behaviour. Results indicated no significant association between the variables, $\chi^2(3, N = 112) = 4.17$, $p = .24$. Monte Carlo simulation and Fisher's exact test supported this finding ($p = .27$ and $p = .26$, respectively), indicating that leadership style does not differ significantly by problematic video gaming status in this sample. Thus, we fail to reject our null hypothesis here too.

4.7 Video Game Category and Birth Order

Table 8: Video game Category preferred by Birth order

			VG CATEGORY							Total
			FPS	RPG	Action	Battle_Royal	Sandbox	MMORPG	Horror	
Groups	Firstborn	Count	23	7	2	3	3	1	1	40
		% within Groups	57.5%	17.5%	5.0%	7.5%	7.5%	2.5%	2.5%	100.0%
	second born	Count	13	2	2	0	0	0	0	17
		% within Groups	76.5%	11.8%	11.8%	0.0%	0.0%	0.0%	0.0%	100.0%
	third born	Count	16	6	2	3	1	0	0	28
		% within Groups	57.1%	21.4%	7.1%	10.7%	3.6%	0.0%	0.0%	100.0%
	single child	Count	20	1	4	1	0	0	1	27
		% within Groups	74.1%	3.7%	14.8%	3.7%	0.0%	0.0%	3.7%	100.0%
Total		Count	72	16	10	7	4	1	2	112
		% within Groups	64.3%	14.3%	8.9%	6.2%	3.6%	0.9%	1.8%	100.0%

The data shows a strong preference for FPS games across all birth orders, particularly among second-borns' (76.5%) and single children (74.1%). Firstborns (57.5%) and third born (57.1%) also favour FPS, but show slightly more diversity, with RPG and Action games being moderately popular. Other genres like MMORPG, Horror, and Sandbox have minimal engagement across all birth orders.

5. Discussion

The aim of the study is to explore the relationship between birth order, video gaming behaviour, aggression levels, and leadership styles. The study specifically aims to test whether there is any difference between these variables across the different birth orders, i.e. First born, second born, last born, and the single child. The study ended up accepting the null hypothesis, that yes, there is no significant difference between the variables.

Birth order does not impact video gaming behaviour, aggression levels, and the leadership styles of adults who play video games, though first born showed higher proportion of problematic video gaming behaviour, this was found to not be statistically significant. Birth order can be ruled out of as a factor that affects video gamers personality even if the sample size was bigger than the ones used in this study. The interaction of birth order with the dependent variable does not show any form of relationship in India, thus it reflects that other factors may be more influential than the familial birth order. Aggression levels are shaped more

than just the familial birth order, personality and experiences as well as individual personalities affects aggression more according to previous research (Zhang & Van Pelt, 2011).

Similarly, the study found that the Indian adult video gamers were at low risk of problematic video gaming behaviour, further contrary to previous research, aggression levels was observed not to be significant between problematic and non-problematic video gamers. This adds to the current literature about gaming and aggression, showing how complex the nature of aggression is when it comes to video gaming and how adults as of 2025 act in their virtual world.

Though there was a noteworthy finding that showed individuals who possess Country Club leadership style show more aggression levels than any other leadership style. Country club leadership style is characterized by high concern for people and low task concerns; it could be due to conflicts within a team that is manifested as aggression. Contrary to assumptions of Authoritarian leadership style showing more aggressive traits, country club in this study shows more aggression than the others. The result also showed that the most leading leadership style was the Team Leader style, which shows high concern for task completion as well as maintaining good relations with the members. This shows that leadership style can be a good factor to assess while choosing an in-game leader for an esports team and may help in developing an effective leadership by managing aggression.

The study shows most preferred category for video games is FPS, with second born preferring FPS games such as Valorant more than the first born, last born, and single child. Further Last born (Third born) show more preference for RPG than the earlier born. Note not all video games are similar, FPS games are different that MMORPG, this can be an influential part of the study and may be studied in further studies. Prior studies have showed how MMO games are more strongly associated with problematic video gaming behaviour than casual or puzzle games (Kuss & Griffiths, 20212). Moreover, research can be done on gaming preferences of different birth orders, such as how personality or a certain trait/global event affects or leads to preference of a video game type, which can help video game developers to develop games for their specific targets, for example the game *Florence* revolves around a single child who has to bear the burdens of a lost relationship as well as catering to her mother and handling her job.

Thus, through this research E-sports companies can have a better understanding of their players and their leaders of the team as well as of the administrative leader. Further, gaming industry can use this study understand their Indian audience better and also use this in game

development since there are games which revolves around familial ties and help in developing their personality as per the studies.

6. Conclusion

To summarize, the study found no significant relation between birth order and video gaming behaviour, aggression levels, or leadership style, which suggests that birth order may not be a primary determinant of these traits among the Indian adults. However, it showed that a type of leadership style called Country Club leadership style show more aggressive traits than other leadership styles (Team Leader, Impoverished, and Authoritarian). Further it shows most video gamers prefer FPS games over other games, with sandbox games having the least preference, and second borns show highest preference for FPS than any other birth order.

7. Limitations

The study conducted was limited by the sample size, total number of samples who participated was 112, which when divided into 4 groups had an immense uneven number of total participants in each group, for example there were 8 participants for the middle child as well as single child group, whereas there were 24 first born and 13 last born participants.

Further the abnormally distributed data also caused an obstruct for the test, it is ideal to have normally distributed data for this research due to its diverse group properties.

This research only focuses on birth order and the three dependent variables, disregarding the type of video games they play, only using it the information for an added informative purpose.

Gender differences can arise as well, this study has not studied gender differences, a noteworthy element that can be studied in future for video gamers.

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