ASSESSING THE RELATIONSHIP BETWEEN GAME DESIGN PREFERENCE, ESCAPISM AND IMPULSIVITY WITH GAMBLING ADDICTION

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Abstract. The growing popularity of mobile gaming, particularly gacha games, has raised increasing concern over their potential association with gambling addiction. Gacha games operate on randomized reward systems that resemble gambling mechanisms and encouraging repeated play and monetary spending in pursuit of uncertain outcomes. Despite their prevalence, empirical research exploring how psychological and design-related factors contribute to gambling like behaviours among players remains limited, especially within the Malaysian context. This gap underscores the need to understand how individuals' motivations and personality traits interact with gaming mechanics to influence addictive tendencies. This preliminary quantitative study investigates the relationships between game design preference, escapism, impulsivity, and gambling addiction among active gacha game players. Using a structured self-administered online questionnaire, data were analysed through Pearson correlation to determine the strength and direction of association between the studied variables. The results indicate that impulsivity and escapism are positively associated with gambling addiction, while game design preference shows no significant relationship. Overall, the findings contribute to the growing body if literature on digital gaming behaviour by highlighting the psychological and motivational dimensions underlying gambling tendencies. This study offers important insights for researchers, game developers, and policymakers in developing a culturally more relevant interventions and responsible gaming framework.
Keywords: *Gacha games, gambling addiction, game design, escapism, impulsivity, motivational factors*

Introduction

The gaming industry has undergone a significant transformation in the last ten years, from physical console video games to digital games that are easily downloaded on everyone's mobile phones or computers. This also applies to gacha games that were heavily inspired by Japan's vending machine called *gashapon* or *gachapon*. According to Lakić et al. (2023), 'gacha' refers to twisting the vending machine handle, whereas 'pon' refers to the sound of a capsule falling out, and these vending machines mainly distribute capsule toys, which frequently include licensed characters from popular anime, manga, or video games. Like a slot machine, the person will pull the machine's lever to get a randomised item that will determine their fate of losing or winning (Chen and Fang, 2023). Loot box mechanics may also be applied in gacha games as well in which spending in- game currency or may also use real money for a chance to receive virtual items, with the outcome determined by chance rather than skill (Inaguma et al., 2024). Hence, the way that gacha game systems work is like all the systems mentioned above, where the players use in-game currency to gain 'gacha pulls and each pull gives a chance (but no guarantee) to win a desired item or character (Chen and Fang, 2023). As stated by Drummond et al. (2022), this system to repeated spending to obtain

specific, rare, or limited-time content, and the purpose of this randomisation is to captivate players and encourage them to continue interacting with the game while spending money.

Although gacha games are mostly free-to-play (F2P) and players can play the games according to their pacing, unfortunately, what people are unaware of gacha games have systems like gambling, as it has a huge potential to cost a lot of real money (Xiao et al., 2022). Based on a news article, a 56-year-old product manager, Mr. Lim, discovered an overdue credit card debt exceeding SDG20,000 (roughly RM 61,766) linked to 89 unauthorised transactions. At first, he suspected it was a scam, but the credit card company informed him that the transactions were legitimate and there was no recourse for reversing them. In the end, he managed to figure out that the transactions were made by his 18-year-old daughter's Grab account, which had been linked to his credit card to cover her transportation expenses, to which she had been impulsively spending the money on the mobile gacha game, *Genshin Impact*. The problem with gacha games lies in their potential to exacerbate poor coping mechanisms among players, particularly during stressful or lonely periods. As stated by Katz et al. (2024), during times of increased stress and social isolation, many individuals, particularly young adults, have turned to online gaming as a means of escapism. Gacha games, with their reward-driven mechanics, provide an attractive outlet for those seeking distraction and emotional relief from external pressures. Unfortunately, this reliance on gaming to cope with emotional distress can result in maladaptive behaviours, with players spending excessive amounts of time and money in pursuit of virtual rewards.

While prolonged hours of playing gacha games may cause gambling addiction, the existing literature lacks a comprehensive understanding of the specific behavioural and psychological mechanisms that affect this relationship. There is a need for more targeted research to investigate how gaming behaviours, time investment, and emotional attachment to rewards can trigger gambling-like behaviour. Current studies have explored various aspects of gacha game engagement, including impulsiveness and addiction, but these studies often fail to link how prolonged gaming sessions may lead to the tendency to gamble direct, structured way. By addressing these gaps, this study aims to: (1) examine the relationship between players' game design preferences and gambling addiction; (2) investigate the relationship between players' escapism resulting from excessive gacha gameplay and gambling addiction; and (3) examine the relationship between players' impulsivity associated with prolonged gacha gameplay and gambling addiction.

Literature review

The immersive qualities of gacha games can largely be attributed to their impressive graphics, captivating gameplay, and the mechanics behind their loot box systems. These design elements work together to grab players' attention and keep them deeply engaged. As Kesuma and Princes (2024) explain, the combination of detailed visuals and soundscapes plays a major role in drawing players in and holding their interest over long gaming sessions. The way these games are designed visually and emotionally pulls players in, making it easy to lose track of time (Chen and Fang, 2023). Woods (2022a) adds that the emotional connections fostered by this aesthetics this aesthetics help create a deeper immersion, keeping players hooked on the gameplay and invested in the world the game creates. Additionally, the gameplay mechanics themselves are tailored to keep players coming back for more. Gacha games often rely on a random reward system,

where players collect characters or items, creating an element of surprise and excitement. As noted by Teng et al. (2023), these erratic mechanisms cause players to constantly pursue powerful or rare objects, creating a kind of obsessive loop. Players are kept interested in in extended periods by the excitement of advancement, success, and the rewards that follow, and even minor victories encourage them to keep playing. This notion is further emphasised by Bakrie et al. (2024), who contend that the meticulously designed rewards system is the main reason why these games may be so hard to put down and that players are continuously drawn back by the anticipation of the next major reward.

Gacha games' social interactions and customisation options offer another level of allure. These games feel more linked and community-driven thanks to features like in-game rankings, achievement sharing, and cooperative activities. These factors are especially important for younger players, especially those in Generation Z, who are more inclined to remain involved when they feel like they're a part of a greater social experience, claims Xi (2024). Furthermore, the ability to alter in-game characters or avatars adds a personal touch and reflects personal preferences. Players have a strong incentive to return to these games because of the sense of personalisation they receive as well as the social recognition they receive from taking part in these common experiences (Bakrie et al., 2024). Gacha games are a potent kind of escape for many players, giving them a chance to escape the stresses of everyday life. Players are drawn into an exciting yet secure world by the immersive design of these games. The compelling environment created by the beautiful sights and captivating dynamics of gacha games allows players to escape from their real-world issues, as Chen and Fang (2023) explain. Similarly, Hollebeek et al. (2021) contend that because gamers receive quick gratification, the hedonic attraction of "seeking pleasure and satisfaction" in gaming contributes to this escapist experience. Gacha games give players an outlet for stress and a place to temporarily forget about their real-life worries by offering moments of pleasure and comfort.

The ability of gacha games to let users assume various personas and storylines is another important component of this escapism. Players can escape the limitations of their everyday life and transform into different people in these virtual worlds, frequently taking on the role of a character with unique skills or going on exciting adventures. According to Woods (2022b), these games create emotional bonds with players through their likeable characters and complex plots, which heightens the allure of the escape. Players might find solace in a setting where their actions feel significant and meaningful by developing close emotional bonds with these virtual environments. According to Lakić et al. (2023), players can use gacha games as a stress-reduction tool when they're feeling overwhelmed by real-world problems. Gacha games' sense of accomplishment and community can make them an alluring diversion from the challenges players encounter in their daily lives. Gacha games' tendency to entice players to make sustained time and financial commitments is also strongly related to their addictive qualities. The amount of time players spend engrossed in these games tends to rise as they seek for rare characters and resources, further solidifying their function as an escape. According to Woods (2022a), delayed reward systems are frequently used in gacha games, requiring players to wait for a payout that seems just out of reach. Players may feel more invested as a result of this anticipation process, which makes them want to keep playing until the payoff arrives. Furthermore, according to Lakić et al. (2023),

the game's design incentivises players to invest a significant amount of time in pursuing prizes, so generating a loop in which the player's commitment keeps increasing.

Players can more easily defend their growing involvement in these virtual worlds because the time and money spent there are justified as vital expenditures. Players continue to pursue the comfort and diversion that the game offers, frequently at the expense of other aspects of their lives, thanks to this cycle of investment and return (Katz et al., 2024). Gacha games might provide a momentary reprieve, but as the lines between the virtual and real worlds begin to blur, they can also have unfavourable effects. Katz et al. (2024) caution that when excessive gaming, especially gacha games, starts to interfere with a person's everyday obligations, it might cause psychological discomfort. Because of their escapist and immersive qualities, video games can be hard to put down, especially for players who depend on them to deal with more serious emotional problems. Additionally, Woods (2022b) emphasises how players' intense emotional attachments to in-game characters and storylines can lead to an unhealthy relationship, making it difficult to distinguish between the real world and the virtual one. Even though gacha games can offer much-needed respite in the short term, their addictive qualities can encourage dependency and cause an imbalance between gaming and obligations in the real world. In the end, even while these games provide a little reprieve from reality, the difficulty is striking a good balance to prevent the escape from turning into a long-term haven from unsolved problems.

Impulsivity and Gacha games

These games encourage players to spend money in the hopes of obtaining a rare or powerful character, which amplifies impulsive behaviour due to their random payouts and the thrill of uncertainty. According to Chen and Fang (2023), gacha games are made to keep players searching for the next prize, which instils a sense of urgency that makes it difficult to avoid spending money. This perspective is supported by Raybould et al. (2022), who point out that impulsive behaviours are exacerbated by the desire for fast rewards and the unpredictability of the loot box system, especially when players are looking for immediate gratification from their investments. Impulsive spending is more than just a passing indulgence; it's a symptom of underlying behavioural habits that might be challenging to overcome. According to Müller et al. (2023), players are especially susceptible to the pecuniary temptation of gacha games if they already exhibit impulsive behaviours in other spheres of their lives. The urge for instant gratification combined with impulsive decision-making causes players to make snap decisions without considering the long-term effects. Jeong et al. (2019) also point out how this impulsive behaviour pattern might escalate, with players pursuing the next reward without pausing to weigh the total cost. Gacha pulls' addictive qualities have the potential to start a vicious cycle in which players feel compelled to keep spending more money to get that little sense of fulfilment, which eventually reinforces their impulsive behaviour.

However, the consequences of such impulsive behaviour can extend beyond the game, affecting players' financial well-being and emotional health. Szyszka et al. (2025) argue that when impulsivity is paired with excessive gaming, it can lead to gaming disorder, a condition where players' behaviour becomes increasingly reckless, driven by the immediate gratification they get from the game. The system of frequent rewards and easy access to in-game purchases only encourages this cycle, making it easy for players to justify spending more money in pursuit of the next reward. Raybould et al. (2022)

further stress that the lack of reflective decision-making in moments of impulsivity can lead to poor financial choices, creating long- term problems. As the need for instant gratification grows, so does the risk of financial strain and emotional distress, which makes the impulsive nature of gacha games not just a playful habit but a serious concern for many players.

Gacha games and gambling addiction

Concern over the connection between extended gacha game play and the development of gambling addiction is growing. The mechanics of gacha games, especially their use of randomised prizes, are thought by many researchers to be like gambling and to have the potential to cause addictive behaviours. Inaguma et al. (2024) describe a scenario in which a person's recurrent loot box purchases led to a gaming disorder and serious financial repercussions. They contend that these games' uncertain results elicit the same psychological reactions as gambling, including the excitement of chance and the desire for a significant victory. Tang et al. (2022) support this claim by demonstrating that young adults' extended use of gacha games is associated with higher gambling behaviours, implying that playing these games for extended periods may lead to gambling addiction. This lends credence to the theory that a combination of chance-based rewards and prolonged engagement fosters an atmosphere conducive to gambling-like addiction. The cycle of impulsive purchasing is reinforced by the rewards' randomness and the feelings of accomplishment that come with obtaining unusual products. Gacha games are sometimes compared to gambling because of the unpredictable prizes, which keep players in a state of perpetual anticipation and encourage them to spend more in the hopes of striking it rich (Inaguma et al., 2024). The characteristics of addiction, obsessive spending, and excessive gaming can swiftly develop from this pattern (Inaguma et al., 2024).

Even if earlier research had demonstrated that playing gacha games for extended periods could have an impact on gambling addiction, not all experts concur and think there is a connection between the two. A contrary viewpoint is provided by Woods (2022a), who contends that players are drawn to gacha games more because of their emotional and visual appeal than because of the randomness of the rewards or the mere passing of time. In the same year, Woods conducted another study that indicates players frequently appreciate gacha games for more reasons than just the possibility of winning; they provide an emotionally fulfilling and immersive experience through character gathering and storytelling. The story of the game and the joy players derive from expanding their in-game collection are the real drivers of player engagement, even though gacha games and gambling may have certain similarities, such as random prizes (Woods, 2022b). According to Woods, concentrating on the amount of time spent, or the element of chance ignores the deeper, more nuanced motivations behind players' attraction to these games, which frequently transcend addiction and touch on issues of emotional fulfilment and personal enjoyment. Uses and Gratifications Theory (UGT), formulated by Katz, Blumler, and Gurevitch, offers a framework for analysing how individuals intentionally choose and utilize media to fulfil specific needs. The theory posits that audiences are not passive recipients; instead, they are active participants who engage with media to fulfil psychological and social gratifications (Garba and Hasan, 2022). Recent research has broadened the application of UGT to digital platforms, indicating that users' motivations frequently encompass not only information consumption but also self-expression, a sense of belonging, and emotional satisfaction

(Bhatiasevi, 2024; Osei-Frimpong et al., 2022). Uses and Gratifications Theory provides a robust theoretical framework to this study for understanding the appeal of gacha games and the influence of individual motivations on behavioural outcomes where players frequently participate in gacha games to fulfil needs related to escapism, achievement, and social interaction, which elucidates the intensity and duration of their gameplay.

This study aims to examine the correlations between game design preference, escapism, impulsivity, and gambling addiction within the gacha game engagement. This paradigm posits that prolonged exposure to gacha games may heighten players' emotional and psychological involvement, potentially leading to gambling-like behaviours. Each motivational factor represents a distinct dimension on this relationship; game design preference reflects the appeal of interactive and visual elements that sustain player engagement; escapism denotes the use of gaming as a coping mechanism for stress or emotional discomfort; and impulsivity characterizes a tendency to act spontaneously in response to reward stimuli (*Figure 1*).

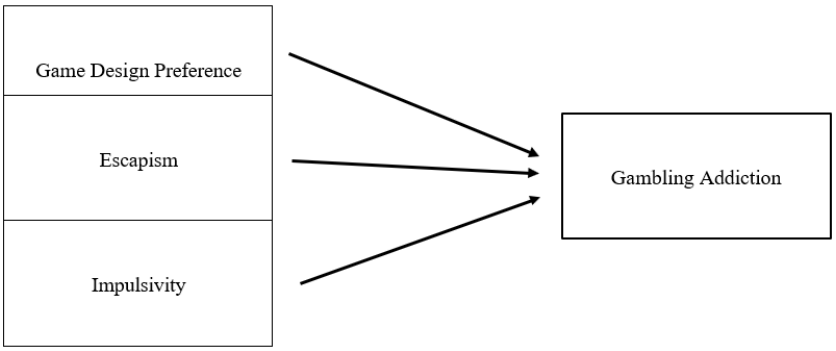

Figure 1. *Conceptual framework.*

Materials and Methods

This study adopts a quantitative research design, utilising a structured, self-administered questionnaire to examine the relationship between the time spent playing gacha games and gambling addiction. Quantitative research is encouraged for its capacity to measure behaviours, opinions, and attitudes, facilitating generalisations from broader groups (Vijayendra and Fantone, 2023). A cross-sectional survey method was selected to collect data at a single point in time. This study used purposive sampling, which is a non-probability sampling method. The target population consisted of young adults, specifically those between 18 and 35 years old, who are actively engaged in playing gacha games, and have been playing for an extended period. Participants were selected based on their availability and suitability to meet these criteria, as they were primarily accessed through platforms like WhatsApp and Facebook within the gacha games community. A sample size of at least 120 respondents was chosen to ensure the statistical validity of the results while also keeping the study practical and manageable in terms of a preliminary study. The data were analysed using the Statistical Package for the Social Sciences (SPSS) V. 29 as it encompasses data analysis, data management, descriptive and inferential statistics, visualisation, and reporting functionalities (Tumiran, 2023).

Reliability test

Based on *Table 1*, Cronbach's alpha was used to assess the reliability and internal consistency of the questionnaire items, with values ranging from 0 to 1. A coefficient above 0.7 is generally considered acceptable for most research purposes (Arora et al., 2025). All four domains demonstrated good to excellent internal consistency, indicating that all items were relevant to the study objectives. The Cronbach's alpha for all four variables acceptable to good. These results confirm the stability, consistency, and suitability of the scales for use in future studies. The normality test (*Table 2*) indicates that all four domains fall within the acceptable range for skewness (±2) and kurtosis (±7), suggesting normal distribution of the data. Overall, the data across all domains was considered normally distributed and suitable for the real data collection.

***Table 1**. Reliability test.*

Domain	Item	Reliability, α	Internal Consistency
Game Design Preference	7	0.767	Acceptable
Escapism	7	0.863	Good
Impulsivity	7	0.865	Good
Gambling Addiction	7	0.832	Good

***Table 2**. Normality test.*

Domain	N	Skewness	Kurtosis	Interpretation
Game Design Preference	7	-0.567	-0.750	Accepted
Escapism	7	-0.162	-0.250	Accepted
Impulsivity	7	0.569	-0.509	Accepted
Gambling Addiction	7	0.563	-0.545	Accepted

Results and Discussion

Demographic information

After the pilot test proved the instrument to be reliable and normal, the study further collected 120 participants with an average age of 25.27 years (SD=3.94), predominantly female (81.7%), suggesting a higher propensity among women players for gacha games. In terms of occupation, 35.0% were students, followed by 33.3% were from the private sector, 11.7% were self-employed, 10% were among government employees, and 10.0% were unemployed. Monthly income distribution shows that 44.2% earned below RM2,000, 25.0% earned between RM2,001-RM4,000, while 20.8% preferred not to disclose their earnings. In terms of gacha game engagement, less than half have played between 2-3 games (35.8%), followed by 4-5 games (27.5%), and not more than 1 game (9.2%). This indicates that a substantial portion of the sample actively engages with multiple gacha games, providing a relevant basis for analysing gaming patterns and potential behavioural impacts such as impulsiveness or gambling tendencies.

***Table 3**. Demographic information, N=120.*

Variables	Frequency	Percent	Mean	Standard Deviation
Age	-	-	25.27	3.940
Gender				
Male	22	18.3%		
Female	98	81.7%		
Occupation				
Government Employee	12	10.0%		
Private Sector Employee	40	33.3%		
Self-employed	14	11.7%		
Student	42	35.0%		
Unemployed	12	10.0%		

Monthly Income		
Below RM 2,000	53	44.2%
RM 2,001 – RM 4,000	30	25.0%
RM 4,001 – RM, 6000	8	6.7%
RM 6,001 – RM 8,000	4	3.3%
Prefer not to say	25	20.8%
Gacha game played		
Less than 1 game	28	23.3%
2 to 3 games	43	35.8%
4 to 5 games	33	27.5%
6 to 8 games	11	9.2%
More than 8 games	5	4.2%

Distribution by levels

Based on *Table 4*, the distribution of variables by level shows that game design preference is predominantly high (92.5%), with scores indicating consistency (Mean=2.925, SD=0.264). Escapism is mostly moderate (53.3%) with a substantially high proportion (41.7%), reflecting greater variability (Mean=2.366, SD=0.578). Impulsivity is chiefly low (47.5%) and moderate (39.2%), with lower overall scores but wider spread (Mean=1.658, SD=0.704). Gambling addiction similarly trends low (44.2%) and moderate (37.5%), with comparably low scores and high dispersion (Mean=1.741, SD=0.750). These results indicate that participants share a strong, consistent preference for high- quality game design (Mean=2.925, SD=0.264). In contrast, escapism displays a wider range of motivations, as suggested by its moderate mean and variability (Mean=2.366, SD=0.578). The lower means and higher standard deviations for impulsivity (Mean=1.658, SD=0.704) and gambling addiction (Mean=1.741, SD=0.750) suggest this risk factors are less prevalent but more unevenly distributed across individuals. Overall, the data reflects a sample unified in valuing game design quality yet diverse in psychological risk tendencies. The Pearson correlation analysis (*Table 5*) shows that impulsivity has a fairly strong and significant relationship with gambling addiction (r=0.782, p=0.000), which insinuates that people who are more impulsive are more likely to show signs of gambling addiction problem. Next, escapism which is a way to avoid real life stress and emotions also showed a weak but positive significant link with gambling addiction (r=0.273, p=0.003). However, the design of the game did not influence the players' gambling addiction (r=0.950, p=0.300). In summary, this study investigated the factors that affected gambling addiction and found that players who were more impulsive, acted without thinking, are likely to show signs of addiction. Players who gambled to escape from reality also showed signs of addiction.

***Table 4**. Distribution by levels.*

Domain	Level by range			Mean	Standard deviation
	Low (1.00-1.99)	Moderate (2.00-2.99)	High (3.00-4.00)		
Game Design Preference	0	9 (7.5%)	111 (92.5%)	2.925	0.264
Escapism	6 (5.0%)	64 (53.3%)	50 (41.7%)	2.366	0.578
Impulsivity	57 (47.5%)	47 (39.2%)	16 (13.3%)	1.658	0.704
Gambling Addiction	53 (44.2%)	45 (37.5%)	22 (18.3%)	1.741	0.750

***Table 5**. Pearson Correlation.*

Variable	Gambling addiction		Correlation interpretation (Napitupulu et al., 2018)
	r-value	p-value	
Game Design Preference	0.950	0.300	Not significant
Escapism	0.273	0.003	Weak Positive Correlation
Impulsivity	0.782	<0.001	Fairly strong Positive Correlation

The results of this study highlight the psychological and behavioural mechanisms that underpin the connection between time spent playing gacha games and gambling addiction, particularly through the effects of escapism and impulsivity. The variable, impulsivity, exhibited a strong and highly significant relationship with gambling addiction ($r=0.782$, $p<0.001$) reinforces prior research that identifies impulsivity as a core predictor of problematic gaming and gambling behaviours (Müller et al., 2023; Raybould et al., 2022; Jeong et al., 2019). This aligns with studies by Szyszka et al. (2025) as well as Tang et al. (2022) where prolonged gaming and impulsivity act as complementary predictors of gaming disorder and gambling tendencies. In contrast, escapism was found to have a moderate yet significant relationship with gambling addiction ($r=0.273$, $p=0.003$), indicating that individuals often turn to gacha games as a coping mechanism for emotional stress or dissatisfaction. This supports earlier work by Lakić et al. (2023) as well as Hollebeek et al. (2021), who proposed that gaming offers hedonic and stress-relieving gratifications that can evolve into maladaptive behaviours when players rely on virtual rewards for emotional regulation. Moreover, Marques et al. (2023) found that escapism through virtual gaming correlates with diminished emotional health, a pattern consistent with this study's results. Although game design preference was highly rated among respondents, it did not show a statistically significant relationship with gambling addiction, and this result mirrors Xi (2024) as well as Woods (2022a) observations that the attraction to gacha games often stems from aesthetic appreciation and social engagement rather than purely exploitative gambling-like features. Therefore, immersive visuals, interactivity, and game mechanics enhance engagement but do not necessarily cause harmful behavioural outcomes unless mediated by psychological vulnerabilities (Kesuma and Princes, 2024; Teng et al., 2023).

Conclusion

In conclusion, this study set out to explore the complex relationship between time spent playing gacha games and gambling addiction, focusing on how motivational factors influence this dynamic. By addressing the research gap in existing literature, it contributes to a deeper understanding of how digital gaming behaviours intersect with psychological tendencies. The study underscores that gaming addiction is not solely a consequence of time investment or game mechanics, but rather a reflection of underlying motivations that drive prolonged engagement. Through this perspective, the research adds to the broader discourse on gaming and behavioural psychology, situating gacha gaming within the context of contemporary digital consumption and mental health concerns. Beyond its theoretical contributions, this research holds practical significance for policymakers, educators, and game developers. It highlights the importance of fostering responsible gaming environments that acknowledge the psychological vulnerabilities of players, especially young adults. By integrating psychological awareness into game design and public education, the risks associated with excessive play and gambling-like behaviour can be mitigated. While the study's scope was limited by its sample size and design, it lays a foundation for future research to further examine the emotional, social, and behavioural mechanisms that underlie gaming addiction. Ultimately, this study demonstrates that understanding player motivation is essential not only to explaining gaming behaviour but also to promoting healthier and more balanced interactions with digital entertainment.

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Conflict of interest

The authors confirm that there is no conflict of interest involve with any parties in this research study.

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