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IMPULSIVITY MODERATING BETWEEN USER ENGAGEMENT AND MICROTRANSACTION BEHAVIOR AMONG FILIPINO EMERGING ADULT GENSHIN IMPACT PLAYERS

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ABSTRACT

This study analyzed the moderating effect of impulsivity on the relationship between user engagement and microtransactions among Filipino emerging adult Genshin Impact players. The interaction between user engagement and impulsivity remains underexplored, particularly in the Filipino context. Using a quantitative design, data were gathered from 215 emerging adult players in the Greater Manila Area who made gacha-related purchases. Standardized scales measured user engagement (UES-SF), impulsive buying tendency (IBT), and in-game purchase intention (ICPIS). Moderation analysis showed that both user engagement (b = 0.538, p < .001) and impulsivity (b = 0.308, p < .001) predicted microtransactions, but their interaction was not significant (b = –0.213, p = .129). Simple slope analysis indicated that engagement predicted spending across all levels of impulsivity, although the positive effect was slightly attenuated at higher levels of impulsivity. These findings suggest that while both engagement and impulsivity independently influence microtransaction behavior, impulsivity does not significantly amplify engagement-driven spending.

Keywords: *user engagement, impulsivity, microtransaction behavior, emerging adults, Genshin Impact*

INTRODUCTION

Gacha games, which have originated in the distinctive Japanese coin-operated machines known as 'Gachapon' (capsule-toy vending machines), have evolved into a significant part of the gaming industry. The games entice players by offering random virtual items through microtransactions, thereby establishing a lottery-like experience. An example of this is Genshin Impact, a free-to-play action role-playing game developed by miHoYo (now known as HoYoverse), which was released in 2020. The "Wish" system in Genshin Impact, which encourages repeated attempts to obtain rare items, is frequently likened to gambling due to its striking similarities (Lakić, Bernik, & Čep, 2023; Nguyen, 2025; Petrovskaya et al., 2022; Park, 2020; Widjaja et al., 2024). The gaming industry targets these players through in-game purchases, microtransactions, and loot boxes, all of which employ randomized rewards that resemble gambling (Close et al., 2021).Particularly among digitally native consumers, understanding the behavioral factors influencing microtransaction engagement is crucial, given the rapid growth of gacha games.

The growth of gacha games raises public health and consumer protection concerns regarding financial harm. One of the main psychological elements influencing microtransaction behavior is user engagement. This refers to the extent to which players are engrossed in digital environments. Greater engagement is associated with more in-app purchases, as engaged players are more likely to view in-game spending as significant and a reasonable investment.

However, engagement alone does not explain why some players spend responsibly while others face financial distress. This suggests a moderating factor is at work in microtransaction behavior. Impulsivity is likely the one causing the difference in this decision. It is characterized by an individual's tendency to act on immediate urges without considering the consequence (Hamari & Keronen, 2017, as cited in Hamari et al., 2020).

This problem is especially pressing among emerging adults (specifically Filipino gamers). This group is prone to impulsive and problematic digital behaviors due to their developmental stage and lifestyle (King et al., 2020). Emerging adults constitute a frequently studied demographic in the Philippines across digital contexts, including social media and general internet use (Cleofas et al., 2022; Luo et al., 2023; Fields, 2024). In the Filipino context, mobile gaming and digital connectivity are integral to the lives and interactions of youth, with high levels of internet engagement shaping both leisure and social behaviors (Labor & Sayuno, 2024).

Review of Related Literature

Understanding User Engagement in Gaming

User engagement refers to the degree to which players are cognitively, emotionally, and behaviorally engaged in digital environments. In this study, the operationalized definition of user engagement is the degree of psychological immersion and involvement of the participant in a gacha game. Self-Determination Theory suggests that engagement in digital games is often driven by individuals' psychological needs and emotions, motivating them to continue playing. To assess engagement levels, the User Engagement Scale (UES) is often used. This is used to evaluate individuals' cognitive, emotional, and behavioral investments in digital systems, as in in-game contexts (Lalmas et al., 2022). Furthermore, user engagement is clearly high among Filipino gamers, with over 43 million active players as of 2021. The Philippines ranks 18th globally in electronic sports (esports) revenue, with Filipino esports players collectively earning over $20 million across more than 1,000 events. More gaming events and competitions are forthcoming, further cementing the role of digital gaming in entertainment and economic growth in the Philippines (Marcelo, 2024).

Microtransaction Behavior and its Psychological Underpinnings

Microtransaction behavior refers to the motivations, frequency, and monetary value of in-game purchases, particularly in gacha games,

which resemble gambling due to chance-based rewards and psychological reinforcement (Gibson, 2022). This study conceptualized microtransaction behavior as players' intention to purchase in-game content, grounded in the Theory of Planned Behavior, which identifies intention as the primary predictor of behavior, shaped by attitudes, subjective norms, and perceived control (Nonis et al., 2025). Focusing on intention highlights the cognitive and motivational processes preceding expenditures, measured here using the In-Game Content Purchase Intention Scale (ICPIS), capturing drivers such as self-liberation and self-efficacy (Chung & Lau, 2021).

Impulsivity as a Moderator of Engagement and Spending

Impulsivity is defined as a predisposition toward rapid, unplanned responses to stimuli, without adequate consideration of potential negative consequences (Barratt, 1994; Patton, Stanford, & Barratt, 1995, as cited in Lau et al., 2022). Individuals with high impulsivity sometimes find it challenging to focus, control their behavior, or pause to consider the long-term effects of their actions. In this research paper, the operationalized definition of impulsivity is based on the impulsive buying tendency. Drawing from the work of Beatty & Ferrell (1998) and Rook & Fisher (1995), as cited in Badgaiyan, Verma, & Dixit (2016), impulsive buying tendency is defined as the degree to which an individual is likely to make unintended, immediate, and unreflective purchases.

This specific focus on financial behaviors in gaming environments, where gameplay and in-game stimuli can trigger spontaneous decisions, differentiates it from a more general personality trait. According to the Reflective-Impulsive Model, the reflective system weighs long-term consequences, whereas the impulsive system drives immediate, affect-laden choices that often result in uncalculated microtransactions (Strack & Deutsch, 2004, as cited in Ong, 2022; Eysenck & Eysenck, 1977, as cited in Richard & King, 2022).

Genshin Impact's Wish Mechanics and the Filipino Context

Genshin Impact's "wish" mechanic operates on a variable-ratio reinforcement schedule, where each wish has a slight chance (0.3%) of yielding a five-star character. It includes a "soft pity" boost after 75 pulls and guarantees a five-star by 90 pulls on character banners.This design leverages the variable-ratio principle (known to produce high persistence in operant behaviors) by keeping the exact pull threshold unpredictable (Johansson et al., 2022). Impulsivity, particularly the facets of positive urgency and sensation seeking, moderates the relationship between wish pulls and spending severity. A quantitative survey found that higher urgency scores significantly predicted both the number of pulls and total Primogem expenditure, even after controlling for income (Smith & Lee, 2024). Emerging evidence links heavy gacha engagement to higher risks of gambling-like harms, particularly among youth with limited self-control (Han, 2025).

Research Gap

Research on microtransactions and user involvement has been extensive, but knowledge of the role of impulsivity as a moderator between these variables remains limited. Impulsivity correlates with problematic gaming and spending patterns (Murch & Clark, 2021), yet few studies examine how it interacts with high user engagement to trigger impulsive in-game purchases. This gap is particularly relevant in the Filipino gaming landscape, given the industry's rapid growth and culturally shaped consumption patterns.

Theoretical Framework

Reflective-Impulsive Model (RIM) is a dual-process theory providing a careful approach to comprehending human behavior (Strack & Deutsch, 2004, as cited in Ong, 2022). This model posits that two linked systems shape behavior: the slow, logical, deliberate, reflective system and the impulsive system, which responds quickly and emotionally, typically in pursuit of immediate gratification. The reflective system is more likely to be active when players are highly engaged and focused on the game. By treating microtransactions as investments that enhance their overall experience, players can make strategic in-game purchases that align with their long-term gaming objectives. On the other hand, individuals who rely more on the impulsive system (System 1) are more prone to making quick, emotionally driven purchases. The Impulsive Buying Tendency (IBT) scale measures a consumer's impulsivity across two dimensions: cognitive and affective. High scorers on this scale are more prone to make regular, unplanned microtransactions depending on emotions rather than reason.

Conceptual Framework

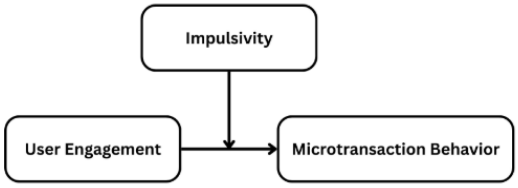

Figure 1. Conceptual Framework of the Study

Grounded in the Reflective–Impulsive Model (Strack & Deutsch, 2004, as cited in Ong, 2022), this study examined how reflective (deliberative) and impulsive (affective) processes shape digital consumption decisions. User engagement refers to players' immersion, emotional investment, and motivation during gameplay (Lalmas et al., 2022). Highly engaged players are more likely to perceive in-game purchases as valuable, increasing microtransaction spending.

Impulsivity was proposed as a moderator of this relationship, such that higher impulsivity strengthens the positive association between engagement and microtransaction behavior by increasing susceptibility to spontaneous purchases. Conversely, players with lower impulsivity were expected to exhibit more controlled spending even at high engagement levels.

Microtransaction behavior reflects the frequency and amount of in-game spending, particularly in gacha systems where randomness promotes repeated purchases (Hamari & Keronen, 2017, as cited in Hamari et al., 2020). Impulsivity, defined as a tendency to act without considering long-term consequences (Fenneman et al., 2022), increases responsiveness to in-game marketing and reduces delayed gratification, leading to more unplanned purchases, whereas low impulsivity is associated with more deliberate financial decisions.

Research Questions and Hypothesis

The study examined how user engagement relates to microtransaction behavior, specifically investigating whether impulsivity influences this relationship. (1) Does impulsivity moderate the relationship between user engagement and microtransaction behavior? Drawing from existing literature and theoretical frameworks, this study hypothesizes that impulsivity influences how strongly user engagement impacts microtransaction behavior. (1) The relationship between user engagement and microtransaction behavior would be stronger for those with higher levels of impulsivity.

METHODS

Research Design

This study investigated the relationship between user engagement and microtransactions among emerging adult players of Genshin Impact using a quantitative, cross-sectional methodology. For this study, this type of research was appropriate since it allowed the relationship

between engagement and expenditure to be clearly measured.

Participants and Study Sites

The study focused on Genshin Impact players aged 18-29, a period sometimes referred to as emerging adulthood (Arnett, 2023). This period is marked by exploration and transition: no longer adolescents, but not yet fully settled into the responsibilities of adulthood. The sample size for this study was 215 participants, consistent with prior similar studies. For instance, a study by Zein et al. (2023) on the determinants of game product repurchasing behavior in a virtual community collected data from 215 respondents. The sample's age distribution for this study included 40 participants at 18 years old (20%), 29 at 21 years old (14.5%), and 27 at 22 years old (13.5%), with the remainder aged 19-29.

In this study, the sample was predominantly composed of emerging adults, with the largest age groups at 18 years (20%), 21 years (14.5%), and 22 years (13.5%). Most respondents reported residing in Metro Manila (63%), followed by Cavite (16.5%), Laguna (9%), Bulacan (7.5%), and Rizal (4%).

Regarding gaming activity, 17.5% reported playing Genshin Impact for 3 to 4 hours per week, 14% for 2 to 3 hours, and 13% for more than 10 hours per week. Regarding monthly income, 64% earned below ₱10,000, while 24% earned between ₱10,000 and ₱29,999.

Table 1. Demographics Profile of the Participants (N=30)

Demographic Variable	Category	Frequency (f)	Percentage (%)
Age	18 years old	40	20
	19 years old	24	12
	20 years old	22	11
	21 years old	29	14.5
	22 years old	27	13.5
	23 years old	13	6.5
	24 years old	7	3.5
	25 years old	6	3
	26 years old	9	4.5
	27 years old	4	2
	28 years old	7	3.5
	29 years old	12	6
Hours Playing Genshin Impact per Week	Less than an hour	19	9.5
	1 to 2 hours	25	12.5
	2 to 3 hours	28	14
	3 to 4 hours	35	17.5
	4 to 5 hours	24	12
	5 to 6 hours	12	6
	6 to 7 hours	15	7.5
	7 to 8 hours	9	4.5
	8 to 9 hours	2	1
	9 to 10 hours	5	2.5
	More than 10 hours	26	13
Monthly Income	Less than ₱10,000	128	64
	₱10,000 to ₱29,999	48	24
	₱30,000 to ₱49,999	11	5.5
	₱50,000 and above	13	6.5
Residence	Metro Manila	126	63
	Bulacan	15	7.5
	Cavite	33	16.5
	Laguna	18	9
	Rizal	8	4

These individuals also have played Genshin Impact for at least six consecutive months, completed a minimum of two microtransactions to purchase Genesis Crystals (converted to Primogems) for "pulls" or "wishes" on the character or weapon banners (limited or standard banner), receive and use disposable income (salary rather than allowance), and possessed an understanding of randomized in-game purchasing mechanics in the game. To ensure that the sample only focused exclusively on the gacha system of Genshin Impact, anyone whose in-game purchases were confined to non-gacha microtransaction models was excluded. In addition, individuals who did not fall within the 18–29 age range, who had never made a randomized pull in the game, or who did not live in the Greater Manila Area were excluded.

Purposive sampling was utilized to recruit participants. Purposive sampling, a non-probability sampling technique, involves selecting participants based on specific characteristics or criteria relevant to the study question. The recruitment site was hosted on online platforms and communities where Genshin Impact players gather, and the survey was distributed in pertinent Facebook and Reddit groups.

Research Instruments

Data were collected using an online survey administered via Google Forms to ensure accessibility and convenience. The questionnaire comprised five sections: (1) Informed Consent Form, (2) Demographic Profile (age, residence within the Greater Manila Area, duration and weekly hours of Genshin Impact play, and disposable income range), (3) User Engagement Scale, (4) Impulsive Buying Tendency (IBT) Scale, and (5) In-Game Content Purchase Intention Scale. The informed consent outlined the study procedures, participants' rights, and voluntary participation, including the option to withdraw at any time.

User Engagement Scale

User engagement was operationalized using the User Engagement Scale–Short Form (UES-SF), which measures engagement across four dimensions: Focused Attention, Perceived Usability, Aesthetic Appeal, and Reward. The UES-SF has been applied across diverse digital contexts and age groups, supporting its cross-cultural relevance (Amriza et al., 2023; Wisessathorn et al., 2022). Responses were rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with overall scores computed by averaging the twelve items. The original Cronbach's alpha for the UES-SF is .86 (O'Brien, 2025). In the present study, reliability was .635, which is considered acceptable for exploratory behavioral research using brief, multidimensional scales (Henseler et al., 2020).

Impulsive Buying Tendency (IBT) Scale

Impulsivity was measured using the 11-item Impulsive Buying Tendency (IBT) scale developed by Badgaiyan et al. (2016), assessing cognitive and affective components of impulsive purchasing. Items were rated on a Likert scale and summed to obtain total and subscale scores. The IBT demonstrated strong internal consistency in this study (α = .846), comparable to reliability reported in prior validation studies. The sample mean impulsivity score was 2.53 (SD = 0.75).

In-Game Content Purchase Intention Scale

Microtransaction behavior was operationalized using the In-Game Content Purchase Intention Scale (ICPIS), which assesses purchase intention across Self-Liberation and Self-Efficacy dimensions. Items were rated on a 6-point Likert scale (1 = strongly disagree, 6 = strongly agree), with higher scores indicating stronger purchase intentions. The ICPIS demonstrated acceptable internal consistency in the present study (α = .742), consistent with prior validation findings (Chung & Lau, 2021). The overall mean purchase intention score was 4.64 (SD = 0.69).

Data Gathering Process

The data collection process started with participant recruitment through purposive sampling. This involved actively seeking out and engaging with online communities, forums, and groups on social media platforms dedicated to gacha games.

The researchers posted the invitation to participate in the study in these online spaces, ensuring that it clearly stated the study's purpose,

inclusion criteria, estimated time to participate, and assurances of anonymity and data privacy.

Individuals who clicked the link in the post were directed to a Google Forms survey that included sections to collect demographic information, gacha gaming habits, and microtransaction experiences. The survey was followed by an implicit screening through initial survey questions to ensure that participants met the basic inclusion criteria. Participants who qualified then completed the standardized questionnaires. Responding to the survey took approximately 10-15 minutes. Responses were automatically collected and stored in Google Forms. Once data collection was complete, the data were exported and cleaned before being analyzed in Jamovi to test the hypotheses, including a moderation analysis.

The statistical analysis conducted on the sample data was used to estimate the population correlation between the variables of interest. Ethical considerations included obtaining participants' digital informed consent before participation and providing them with study details. The participants' responses were voluntary; they could withdraw at any time without consequences. Confidentiality was maintained to ensure compliance with the Data Privacy Act of 2012. Sensitive personal information, such as participants' age, as defined under the Act, was securely managed, stored separately, and used only for research purposes, thereby ensuring that no one could be identified. A debriefing plan was given at the end of the survey. It explained the purpose of the study, thanked participants for their time, and provided support resources for any psychological or emotional discomfort experienced during or after the survey.

Ethical Considerations

This study adhered to established ethical standards to protect participants' rights and welfare. Informed consent was obtained prior to survey participation, with participants fully informed of the study's purpose, procedures, risks, and benefits. Participation was voluntary, and respondents could withdraw at any time without penalty. Confidentiality was ensured through anonymous data collection, secure storage, and presentation of findings in aggregated form. No sensitive personal information, as defined by the Data Privacy Act of 2012, was collected aside from age; other personal data were handled with strict confidentiality. All data were encrypted and accessible only to the student researchers and supervising faculty.

Data Analysis

A moderation analysis was conducted to examine whether impulsivity influenced the relationship between user engagement and microtransaction behavior. This method was selected to determine whether the strength or direction of the engagement–spending relationship varied as a function of impulsivity (Hair et al., 2021).

RESULTS

Table 2. Descriptives of the Key Variables

	Mean	SD	Variance	Minimum	Maximum
User Engagement	4.02	0.404	0.164	3.00	5.00
Impulsivity	27.80	8.272	68.420	13	49
Microtransaction Behavior	46.36	6.876	47.27	23	60

Table 2 presents the descriptive statistics of the key variables. User engagement showed a high mean score (M = 4.02, SD = 0.40), indicating generally strong engagement among participants. Impulsivity scores averaged 27.80 (SD = 8.27), reflecting moderate impulsivity. Microtransaction behavior had a mean of 46.36 (SD = 6.88), suggesting moderate to high in-game spending behavior.

Table 3. Shapiro–Wilk Test of Normality for Key Study Variables

	Shapiro-Wilk	
	W	*p-value*
User Engagement	0.983	0.010
Impulsivity	0.971	<.001
Microtransaction Behavior	0.979	0.003

Shapiro–Wilk tests indicated significant deviations from normality for user engagement (W = .983, p = .010), impulsivity (W = .971, p < .001), and microtransaction behavior (W = .979, p = .003).

Table 4. Moderation Analysis of Impulsivity on User Engagement & Microtransaction Behavior

	Estimate	SE	Z	*p-value*
User Engagement	5.384	1.0242	5.26	<.001
Impulsivity	0.280	0.0468	5.99	<.001
User Engagement * Impulsivity	-0.193	0.1121	-1.72	0.085

Moderation analysis revealed that user engagement was a significant positive predictor of microtransaction behavior (β = 5.38, p < .001), as was impulsivity (β = 0.28, p < .001). However, the interaction between user engagement and impulsivity was not statistically significant (β = −0.19, p = .085), indicating that impulsivity did not significantly moderate the relationship between engagement and microtransaction behavior.

Table 5. Simple Slope Analysis for the Moderating Role of Impulsivity

	Estimate	SE	Z	*p-value*
Average	5.38	1.03	5.21	<.001
Low (-1 SD)	6.98	1.60	4.37	<.001
High (+1 SD)	3.79	1.14	3.31	<.001

Simple slope analyses showed that user engagement significantly predicted microtransaction behavior at low, average, and high levels of impulsivity (all *ps* < .001). The strongest effect was observed at low impulsivity, with the magnitude of the relationship decreasing as impulsivity increased. These conditional effects help explain the non-significant interaction, suggesting variation in effect strength without a statistically reliable moderating influence.

DISCUSSION

Main Effects and Independent Pathways

The main goal of this study was to examine how user engagement and impulsivity predict microtransaction behavior. The results show that both are significant, positive, and independent predictors of microtransactions. Specifically, user engagement and impulsivity both contribute to spending intentions but through additive rather than interactive mechanisms. These findings align with the Reflective–Impulsive Model (RIM), which posits that behavior is driven by two distinct systems: a reflective system and an impulsive system. In this study, user engagement appears to map onto the reflective pathway, in which spending is a calculated outcome of game investment, immersion, and progression goals (O'Brien, 2025; Lalmas et al., 2022). This reflective system operates through propositional reasoning, where the player evaluates the utility of a purchase based on their long-term involvement. Impulsivity maps onto the impulsive pathway, in which spending is driven by trait-level susceptibility to immediate gratification and reward seeking (Nguyen, 2025; Rita et al., 2024). This system is governed by associative links and affect, triggering behavior through immediate sensory cues rather than deliberation. The significance of both predictors, in the absence of an interaction, suggests that these two psychological routes operate in parallel: a player's internal trait (impulsivity) increases their baseline propensity to spend, while the situational state (engagement) provides

a separate, cumulative urge to buy. This pattern is consistent with recent findings showing that involvement in mobile game play and related emotional and psychological engagement correlate with impulsive purchasing tendencies, indicating distinct but additive behavioral drivers (Chung et al., 2024).

Explaining the Non-Significant Moderation

Contrary to the hypothesis, the interaction between user engagement and impulsivity was not significant. This means impulsivity did not moderate. In the context of the Reflective–Impulsive Model (RIM), this result suggests that the impulsive system's automatic triggers operate independently from the reflective system's motivations. These two psychological pathways function as separate entry points to the behavioral schema, which indicates that a player's immediate urges and their logical investment goals provide distinct, parallel drives toward microtransaction behavior. Several demographic and contextual factors likely contributed to this.

First, the participants' demographic profile may explain the findings. The sample mainly consisted of emerging adults (18–22), a group with developing financial literacy and limited discretionary income (Kaur & Singh, 2025). While highly impulsive and engaged players may have the psychological urge to spend excessively (which would theoretically create a significant interaction), their actual behavior is constrained by financial reality. This "ceiling effect" imposed by budget constraints may have prevented the exponential spending spikes expected under a moderation model, thereby masking the interaction. Second, modern Gacha games are designed to have independent rather than interactive effects. These systems target both pathways, but separately. Games have "pity systems" and guaranteed progression to monetize reflective, engaged players while simultaneously using sensory-rich, casino-like aesthetics to monetize impulsive players (Liu, 2025; Zhang, 2023). Because the game mechanics can trigger spending through either route independently, the presence of one factor (e.g., high engagement) does not necessarily require the other (e.g., high impulsivity) to generate revenue, hence the additive model.

Analysis of the Simple Slope Analysis

User engagement was a significant predictor of microtransactions at all levels of impulsivity, but the strength of the relationship varied. Interestingly, the relationship was strongest among participants with low impulsivity and weakest among those with high impulsivity. This pattern indicates that players with low impulsivity rely predominantly on the reflective system, which requires a "reason" to spend. Their spending is deliberate, frugal, and contingent on their level of engagement; they spend only when fully immersed. Players with high impulsivity have a shallower slope because their spending is more erratic. They spend more, but their purchasing behavior is driven by the impulsive system's rapid response to stimuli, which bypasses the reflective system's need for justification. This randomness introduces "noise" into the relationship, making their spending less predictable based on engagement alone compared to their less impulsive counterparts.

CONCLUSION

This study aimed to examine the relationship between user engagement and impulsivity in predicting microtransactions among emerging adult Genshin Impact players. The results show that user engagement and impulsivity are separate, independent predictors of spending intentions rather than interacting. The hypothesized moderation was also not supported. Instead, the data support an additive model consistent with the Reflective–Impulsive Model (RIM), in which spending behavior is driven by two distinct psychological pathways: a reflective route based on game immersion (engagement) and an automatic route based on trait-level urges (impulsivity).

The lack of interaction and the insights from the simple slope analysis suggest that these two pathways operate differently as a function of the individual's self-regulatory capacity. For players with low impulsivity, spending is highly dependent on their engagement; they need the "reason" of deep game involvement to justify a purchase, representing a highly active reflective pathway. For players with high impulsivity, the link between engagement and spending is weaker. They have a higher baseline spend due to internal urges, so their purchasing behavior is less dependent on how "engaged" they are with specific game mechanics, as the impulsive pathway dominates the behavioral output.

Contextual factors about the sample and game design also explain these findings. The presence of emerging adults suggests that financial constraints may impose a "ceiling effect" on spending, so high-impulsivity players cannot exhibit the exponential spending spikes that a moderation model would predict. Modern Gacha game mechanics appear effective at targeting both pathways simultaneously yet separately, using progress systems to capture reflective, engaged players and sensory triggers to capture impulsive players. In the end, this study shows that impulsivity increases overall spending but does not change the mechanism by which engagement translates to spending.

Limitations and Recommendations

This study has several limitations. The sample consisted of 215 Filipino emerging adults aged 18–22, predominantly from lower- to middle-income backgrounds, which limits the generalizability of the findings to populations with higher disposable income. Spending behavior in this sample may reflect financial constraints rather than typical consumption patterns. Future research should compare groups across income levels to clarify the role of socioeconomic status in engagement–spending relationships.

The cross-sectional design also restricts causal inference, making it unclear whether impulsivity precedes spending or if sustained engagement drives expenditure. Longitudinal studies incorporating playtime logs and purchase histories are recommended to capture temporal patterns.

The non-significant moderating effect may be attributable to the use of a broad impulsivity measure. Cognitive and affective impulsivity may function differently in gaming contexts and should be examined separately in future studies. Additionally, reliance on self-reported data introduces recall and social desirability bias; integrating objective behavioral records would strengthen validity.

Findings may also be game-specific, as Genshin Impact's "pity system" encourages strategic planning. Comparative studies across gacha and non-gacha games are necessary to determine the generalizability of the results. Future models should further consider financial literacy, fear of missing out (FoMO), and emotion regulation as covariates.

Practically, the results highlight engagement as a robust predictor of spending, underscoring the need for responsible monetization practices. Developers and policymakers should prioritize transparency measures such as clear probability disclosures, spending dashboards,

optional caps, and distinctions between randomized and guaranteed purchases. Although impulsivity remains associated with higher spending, interventions should address it as a baseline vulnerability rather than a primary driver of engagement-related purchases.

The findings also hold implications for mental health and financial education initiatives. Professionals addressing problematic gaming or spending behaviors should consider both impulsivity and high engagement as risk factors. Interventions combining financial literacy and emotion-regulation strategies may be particularly effective. Collectively, this study supports the development of ethically responsible game design and policy frameworks that balance monetization with player well-being.

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