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Determinants of Toxic Behavior Among Mobile Legends Players: Evidence from Players in Indonesia

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Abstract

Toxic behavior remains a persistent concern in competitive online gaming, yet its psychological determinants have received limited empirical attention in Southeast Asian contexts. This study examines the factors influencing toxic behavior among Mobile Legends: Bang Bang players in Indonesia by replicating an integrated framework comprising attitude toward toxic behavior, toxic behavior victimization, behavioral control, and toxic disinhibition. Data was collected through an online self-administered questionnaire between May and June 2026 from active players with experience in competitive team-based matches and in-game communication. The proposed relationships were analyzed using partial least squares structural equation modeling. The results indicate that attitude toward toxic behavior and toxic behavior victimization positively influence toxic disinhibition, whereas behavioral control negatively influences both toxic disinhibition and toxic behavior. Toxic disinhibition is the strongest predictor of toxic behavior. However, attitude toward toxic behavior has no significant direct effect on toxic behavior, suggesting that favorable attitudes toward toxicity are translated into actual behavior primarily through reduced psychological restraint. Toxic disinhibition also significantly mediates the effects of attitude, victimization, and behavioral control on toxic behavior. The model explains 50.8% of the variance in toxic behavior. These findings extend the applicability of the integrated toxic behavior framework to the Indonesian mobile gaming context and suggest that interventions should strengthen players' self-regulation, reduce the normalization of toxic interactions, and promote respectful communication within gaming communities.

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INTRODUCTION

The rise of electronic sports has been dramatic. It has reshaped the global entertainment landscape and has had a significant influence on social practices, youth culture, and digital interaction. Hamari and Max Sjöblom (2017) describe esports as "a rapidly expanding global industry" that merges the boundaries between digital leisure and professional competition. However, esports go beyond their recreational appeal. It is a cultural phenomenon, and its massive growth is driven by media rights, sponsorships, and fan engagement (Seo & Jung, 2016). This transformation highlights how gaming has evolved into a socially embedded activity that influences how individuals communicate, compete, and collaborate in digital environments.

The esports industry continues to expand its reach across continents, reaching audiences on a global scale and transcending geographical boundaries. Rosell Llorens (2017) highlights that esports should be seen not only as entertainment but also as a new form of youth participation, reinforcing its social significance. This global trajectory is also reflected in regional contexts, particularly in Asia, where countries such as Indonesia have increasingly embraced competitive gaming as part of their digital ecosystem. The accessibility of mobile devices and internet connectivity has further accelerated this growth, making online gaming a dominant

activity among younger generations. As a result, gaming platforms are no longer merely spaces for entertainment, but also environments where social interaction and behavioral patterns are continuously formed and reinforced.

Mobile gaming has been at the center of this expansion. Thuy (2025) highlights that the mobile gaming content market value in Asia continues to grow, demonstrating the dominance of smartphones in shaping digital play. In Indonesia, the latest survey by APJII, reported by Mahadewi (2025), shows that Mobile Legends: Bang Bang remains the most played online game, accounting for 48.99% of respondents, far surpassing other games such as Free Fire (23.05%) and PUBG (11.05%). This dominance underscores the game's strong position in Indonesia's gaming culture, particularly among younger generations such as Gen Z, who represent the highest proportion of active gamers. Within this space, Mobile Legends has cultivated virtual environments where players form identities, build relationships, and engage in teamwork, reflecting its influence beyond mere entertainment and into broader digital interaction.

However, alongside its rapid growth, online gaming also presents significant challenges, particularly in the form of toxic behavior. Toxic behavior in online gaming refers to deliberate actions, verbal or behavioral, that harm or harass other players. This includes actions like insults, flaming, trolling, and verbal abuse. Research shows that toxicity is pervasive in multiplayer games and is often normalized as part of competitive culture (Sun et al., 2024; Nexø et al., 2024). These behaviors undermine social interaction and player experience, creating environments where hostility becomes a common mode of communication. Snodgrass et al. (2017) emphasize that online gaming can produce both positive and negative consequences for social identity and psychological well-being, highlighting the dual nature of gaming environments. Similarly, Boudreau (2022) argues that toxic gaming culture is often normalized and treated as an inevitable aspect of competitive play, making it difficult to regulate. The persistence of toxic behavior in online gaming environments suggests that such behavior is not merely incidental but rather influenced by underlying psychological and situational factors. Studies have shown that the absence of direct social accountability in online environments can lead to increased aggression and reduced self-regulation among players (Kordyaka et al., 2020). When individuals participate in matches within Mobile Legends: Bang Bang, anger and arguments grow rapidly because team members are forced to cooperate under limited time. Many researchers believe that toxic behavior does not come solely from sudden provocations, but toxic behavior also originates from internal psychological habits that players already possess.

The author believes to understand the behavioral mechanisms that shape toxic behavior, an understanding of the theoretical foundations of toxic behavior in the gaming world is needed. One theoretical foundation that does so is the Online Disinhibition Effect, which suggests that individuals tend to behave more aggressively in digital settings due to three online conditions: anonymity, invisibility, and reduced social consequences. John Suler (2004) explains that these three conditions can reduce social restraint and accountability. This allows individuals to feel they can express hostility in ways they might otherwise avoid in real-life confrontation. This is further supported by Adam Joinson (2007), who argues that disinhibited behavior in online communication can be increased by perceived anonymity and reduced social cues.

In addition, Social Cognitive Theory explains that behavior can be learned through observation and experience. Albert Bandura (1986) states that individuals tend to imitate behaviors they repeatedly observe or experience within social environments. In online gaming contexts, players who have previously experienced toxic behavior may be more likely to reproduce similar actions, creating a cycle of toxicity within gaming communities. Supporting this perspective, Dorothy Espelage and Susan Swearer (2003) note that aggressive behaviors may become cyclical in environments where hostility is normalized. Human actions can be studied by utilizing the Theory of Planned Behavior. Under this scientific concept, a person's mindset and the power they feel they possess over their own conduct direct their actual deeds. Indeed, experts claim that this is visible in the gaming world, where gamers who believe toxic behavior is normal or correct are highly driven to perform those bad actions. In contrast, those people in the game (players) who have a strong grip on their actions can govern their responses when they face difficulties. As all we know, toxic behavior is shown to be created not by one single element, but toxic behavior is generated through many different forces working together

Recognizing the complexity of this phenomenon, Kordyaka et al. (2020) propose an integrated framework that combines the Online Disinhibition Effect, Social Cognitive Theory, and the Theory of Planned Behavior to

explain toxic behavior in online gaming. This framework identifies toxic disinhibition, toxic behavior victimization, attitude toward toxic behavior, and behavioral control as key determinants of toxic behavior. Among these factors, toxic disinhibition plays a central role, both as a direct predictor and as a mechanism through which other variables influence behavior (Kordyaka et al., 2020). The study by Kordyaka et al. was conducted primarily within Western online gaming communities, with respondents dominated by players from European gaming environments. This integrated approach provides a comprehensive explanation of how psychological, experiential, and cognitive factors interact in shaping toxic behavior.

Despite the large-scale research on esports and online gaming, a holistic theoretical approach is still applied to certain game settings and regional gaming cultures. Also, most present studies look at toxic behavior in general in online spaces, without putting it in the context of the most played games in specific regions. Also, in different cultures, gaming culture, communication, and player interaction play out very differently, which means that what we find in Western gaming communities may not be the full picture for players in Southeast Asia.

In the case of Mobile Legends: Bang Bang, which is very popular and a cultural phenomenon in Indonesia, we see a need to look at what we can learn regarding toxic behavior in that setting. Also, unlike many of the games that past studies have looked at, which had wide appeal, Mobile Legends really takes off in Indonesia and is very much a part of local youth digital culture. The game is all about real-time team play, has a competitive ranking system, and has very intense player communication, which may in turn foster toxic interaction during play. Also, the fact that Indonesia is one of the largest mobile gaming markets in Southeast Asia means that we still have very little empirical research done on toxic behavior within that market.

All of the above highlights the importance of examining whether the relationships between attitude toward toxic behavior, toxic behavior victimization, behavioral control, toxic disinhibition, and toxic behavior remain consistent across different cultural and gaming environments. One way to do so is by replicating the framework developed by Kordyaka et al. (2020). This replication aims to provide more contextualized insights into toxic behavior within online gaming communities in Indonesia, specifically MLBB, which will ultimately contribute to competitive mobile eSports environments.

LITERATURE REVIEW

Attitude toward Toxic Behavior

A key concept in the Theory of Planned Behavior (TPB) is attitude toward behavior. This concept explains how internal psychological factors shape individual actions. In 1991, Ajzen defined attitude as a person's overall evaluation of a behavior as either favorable or unfavorable, which will then affect their likelihood of performing that behavior. Two decades later, Fishbein and Ajzen (2011) further explained that attitudes are formed based on their conception of the expected outcomes of an action; in other words, they assess whether a behavior will lead to positive or negative consequences. Within the Reasoned Action Approach, attitude is considered a strong predictor of behavior, as people are more likely to engage in actions that they perceive as positive (Fishbein & Ajzen, 2011). This highlights the influence that internal evaluations have on decision-making, beyond external influences, even in digital environments.

In online gaming environments, a player's attitude toward toxic behavior influences how they perceive actions such as flaming, trolling, and verbal harassment. Previous studies highlight that competitive gaming environments often contain hostile interactions and aggressive communication between players (Yee, 2006; Kowert, 2020). As toxic interactions become increasingly common, some players may begin to normalize such behavior and consider it acceptable, reasonable, or even justifiable during gameplay.

The findings of Wu et al. (2017) support this, as they found that when individuals perceive hostile online behavior as acceptable, they are more likely to lower their psychological inhibitions. These findings suggest that attitude positively influences toxic disinhibition. Kordyaka et al. (2020) further support this by identifying attitude as the most significant positive predictor of toxic disinhibition in their unified theory of toxic behavior. They found higher levels of disinhibition in players who have more favorable attitudes toward toxicity. Together, these findings suggest that attitude acts as an internal cognitive mechanism that weakens the behavioral restraint players would otherwise maintain during online interactions. Heirman and Walrave (2012) showed a direct relationship between attitude and toxic behavior, finding that individuals who evaluate such

behavior more positively are more likely to engage in it. This suggests that attitude is the strongest predictor of the intention to perpetrate negative online behavior. Similarly, Doane et al. (2014) found that attitude toward cyberbullying was the strongest predictor of cyberbullying intentions and, consequently, actual perpetration. Kordyaka et al. (2020) further explained that players who engage in toxic behavior often do not receive adequate feedback about the negative consequences of their actions on others. This lack of understanding causes them to underestimate the harm associated with their actions and therefore continuously maintain a positive evaluation of toxic behavior. This reduced moral awareness increases the likelihood of directly engaging in and repeatedly exhibiting toxic behavior toward other players during gameplay. The hypotheses that are proposed:
H_1: Attitude toward toxic behavior positively influences toxic disinhibition.
H_2: Attitude toward toxic behavior positively influences toxic behavior.

Toxic Behavior Victimization

Toxic behavior victimization refers to the experience of the player being exposed to harmful actions such as harassment, verbal abuse, exclusion, or intimidation during online interactions. Espelage and Swearer (2003) emphasize that victimization should be understood as a multidimensional phenomenon influenced by broader social systems, rather than being reducible to individual behavior alone.

In many cases, what we are seeing is that which is put up with in online gaming has become the norm. What I have noted is that what may have been considered totally out of line has, over time, become an accepted element of the play experience. Bandura (1986) explains that repeated exposure to aggressive environments may encourage individuals to imitate similar behaviors over time, suggesting that the victims do not simply endure toxicity but may eventually internalize it as an acceptable mode of interaction towards another. Kowert (2020) similarly observes that hostile communication has become deeply embedded within competitive multiplayer communities, to the point where many players no longer recognize it as problematic. Heirman and Walrave (2012) support this by noting a strong correlation between victimization and perpetration, where victims over time develop a higher likelihood of becoming perpetrators themselves.

This normalization process is particularly relevant when examining the relationship between victimization and toxic disinhibition. Players who have been repeatedly targeted may reach a point where they feel that retaliating or behaving toxically is simply justified, which in turn lowers their behavioral restraint in online settings. Kordyaka et al. (2020) explain this through the cycle of violence hypothesis, which shows that experiencing harmful behavior increases the likelihood of producing similar behavior in the future. Their findings confirm that toxic behavior victimization significantly increases toxic disinhibition, and that this effect operates through full mediation, meaning victimization does not directly lead to toxic behavior but first works by eroding a player's sense of restraint online. Espelage and Swearer (2003) similarly note that aggressive behaviors tend to become cyclical in environments where hostility is treated as the norm. The hypotheses that are proposed:
H_3: Toxic behavior victimization positively influences toxic disinhibition.

Behavioral Control

Another key component of the Theory of Planned Behavior is Perceived Behavioral Control (PBC). Ajzen (1991) explains that individuals who think that they have greater control over their behavior are generally more capable of regulating their actions and avoiding undesirable behavior. Further study by Fishbein and Ajzen (2011) notes that perceived behavioral control influence both behavioral intention and actual behavior, which is especially evident in situations demanding self-regulation and emotional restraint.

Competitive gaming creates a unique psychological environment that puts this self-regulation under serious strain. The pressure of ranked matches, the desire to win, and the emotional intensity of real-time competition can push players into a heightened state where rational control gives way to impulsive reactions. Baumeister et al. (2007) describe this through the strength model of self-control, explaining that self-control operates like a limited resource that can become depleted under sustained pressure, leaving individuals more vulnerable to impulsive and aggressive behavior. Anderson and Bushman (2002) add that frustration and emotional provocation function as situational triggers that increase aggressive responses, particularly in competitive settings where failure feels personal and immediate. In Mobile Legends specifically, where a single mistake

can affect the outcome of a ranked match, the heat of competition and the drive to win can easily override a player's ability to communicate respectfully.
Gentile et al. (2011) found that youths with lower emotional regulation are more likely to develop problematic gaming behaviors, suggesting that players who already struggle with managing their emotions will find it even harder to maintain behavioral control when the stakes feel high. Kordyaka et al. (2020) confirm this by finding that perceived behavioral control negatively affects both toxic disinhibition and toxic behavior, meaning that players who feel less capable of controlling themselves are more likely to lose restraint and engage in toxic actions during gameplay. The hypotheses that are proposed:
H_4: Behavioral control negatively influences toxic disinhibition. H5: Behavioral control negatively influences toxic behavior.

Toxic Disinhibition

The concept of the Online Disinhibition Effect explains why individuals in this era tend to behave with less self-control in online environments. Suler (2004) explains that the features of anonymity and reduced social accountability present in online communication facilitate individuals to express themselves more aggressively than they would in face-to-face interactions. This is where toxic disinhibition originates. In the context of online gaming, toxic disinhibition refers to players' tendency to engage in harmful behaviors. One prominent example is the use of offensive communication during gameplay. Competitive multiplayer games, including Mobile Legends: Bang Bang, often provoke frustration and conflict between players, creating emotionally intense situations. These emotionally intense situations, especially in competitive environments, are associated with increased aggressive responses, a relationship noted by Anderson and Bushman (2002). This reduced restraint found in online environments increases the likelihood of aggressive communication and antisocial behavior during gameplay, which Kowert (2020) identified as a key reason why hostile interactions and toxic communication have become common within many online gaming communities. Kordyaka et al. (2020) also identify toxic disinhibition as a mediator that translates individual tendencies into observable toxic actions during online gameplay. This makes toxic disinhibition a key factor linking psychological factors to toxic gaming behavior. Thus, greater levels of toxic disinhibition are associated with an increased likelihood of toxic behavior among players.

Building on this, toxic disinhibition also serves as a mediator between ATTB, TBV, and perceived behavioral control influencing TB. This was noted by Kordyaka et al. (2020), who discovered that the effects of attitude and behavioral control on toxic behavior were largely mediated by toxic disinhibition. Furthermore, they discovered that it completely buffers the impact of toxic behavior victimization. The influence of these psychological and experiential factors on toxic behavior tends to work through the reduction of behavioral restraint in online gaming environments rather than occurring directly. This relationship between higher levels of toxic disinhibition and increased engagement in toxic actions during gameplay is more prevalent among three types of players: those who hold more favorable attitudes toward toxic behavior, those who have been repeatedly exposed to toxic behavior victimization, and those who perceive lower levels of behavioral control.

This mediating effect highlights the important role of toxic disinhibition in linking individual psychological states to actual toxic behavior within competitive online gaming environments. The hypotheses that are proposed:
H_6: Toxic disinhibition positively influences toxic behavior.
H_7: Toxic disinhibition mediates the relationship between attitude toward toxic behavior and toxic behavior.
H_8: Toxic disinhibition mediates the relationship between toxic behavior victimization and toxic behavior.
H_9: Toxic disinhibition mediates the relationship between behavioral control and toxic behavior.

Toxic Behavior

In the gaming world, toxic behavior is mostly understood as actions that are negative and disruptive towards other players. Specifically, flaming, trolling, harassment, verbal abuse, and intentional sabotage are recognized as the main parts of this behavior. Gamers perform these actions simply because they want to harm the gaming experience of other players, reduce cooperation, and create a hostile gaming environment. Toxic behavior is highly visible in many competitive multiplayer games, like MLBB, because player interaction in these games depends on other players and is heavily shaped by factors outside the game itself.

The General Aggression Model explains how aggressive behavior results from the interaction between personal and situational factors. Many factors can increase the likelihood of aggressive responses, with Allen, Anderson, and Bushman (2018) noting aggressive attitudes, frustration, emotional arousal, and low self-control as a few of those factors. These conditions are commonly triggered in online gaming environments by competitive pressure, conflict between teammates, and emotionally charged gameplay situations.

The normalization of aggressive communication within gaming communities can also occur from repeated exposure to toxic interactions. In 2009, Gentile argued that repeated exposure to violent or aggressive content can influence cognitive and behavioral patterns over time. A few years later, Gentile et al. (2011) further emphasized the importance of this issue by highlighting that youths with lower levels of emotional regulation and social competence are more likely to develop problematic gaming behaviors. This suggests that difficulties in self-regulation and problematic gaming patterns are closely interrelated and may contribute to negative interactions between players.

The social nature of multiplayer games is also a factor highlighted by many studies on online gaming environments. Online games are highly social environments, as noted by Yee (2006), where player experiences are greatly shaped by communication and interaction. These interactions encourage teamwork and cooperation, but when coupled with competitive settings, they increase the risk of conflict, frustration, and hostile communication among players. Taking all of these perspectives into account, TB in online gaming can be understood as aggressive interactions encouraged during gameplay as a result of psychological, emotional, and situational processes. This is further reinforced by repeated exposure to toxic communication, which turns it into a behavioral pattern and contributes to its normalization within online gaming communities. Based on the explanation above, the research framework can be determined in Figure 1.

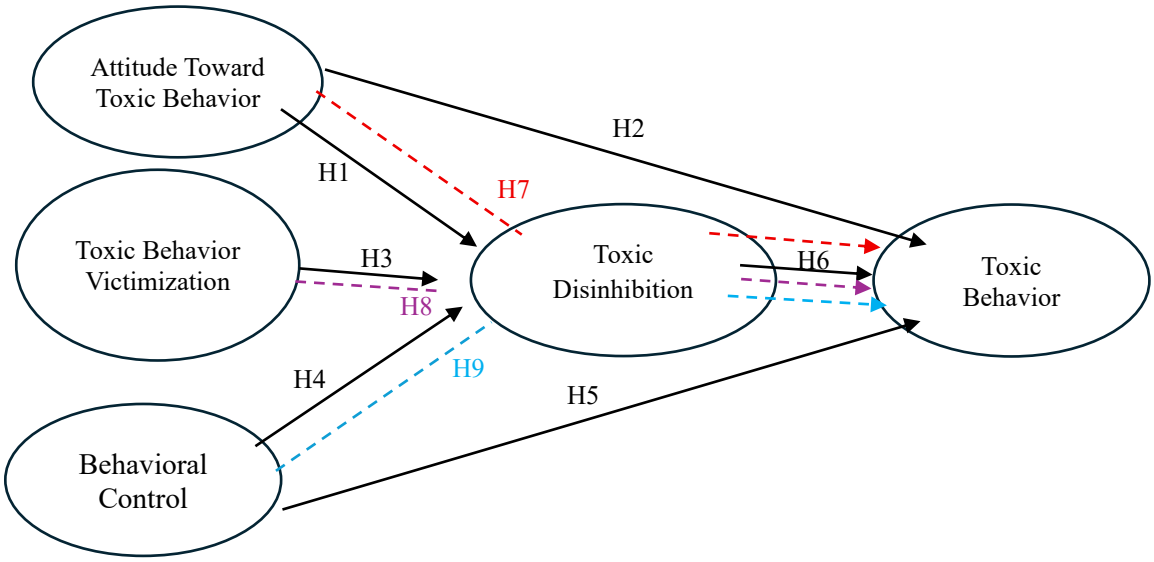

Figure 1. The research framework

RESEARCH METHOD

This study investigated the determinants of toxic behavior among Mobile Legends: Bang Bang players through a self-administered questionnaire. Data collection was conducted online via Google Forms between May and June 2026. To be eligible for participation, respondents were required to meet three criteria: individuals who play Mobile Legends: Bang Bang today. The second criterion is Individuals who have experience playing in team-based or competitive matches, and individuals who have interacted with other players through in-game communication features (both chat and voice). The five main constructs used as research variables in this study are adapted from Towards a Unified Theory of Toxic Behavior in Video Games: Attitude toward Toxic Behavior (ATTB), Toxic Behavior Victimization (TBV), Behavioral Control (BC), Toxic Disinhibition (TD), and Toxic Behavior (TB). All questionnaire items were adapted from Kordyaka et al. (2020) and modified to fit the context of toxic behavior in Mobile Legends: Bang Bang. The questionnaire was administered to respondents using a Likert scale. Each statement was given with closed questions with strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5).

The Attitude toward Toxic Behavior (ATTB) variable was measured. Measurement items that are operationalized according to conditions in Indonesia for the Attitude toward Toxic Behavior (ATTB) variable are: toxic behavior in online games is something acceptable (ATTB1), toxic behavior in online games is reasonable (ATTB2), toxic behavior in online games is appropriate (ATTB3), toxic behavior in online games is justifiable (ATTB4), toxic behavior in online games is something that is not harmful (ATTB5), and toxic behavior in online games is advantageous (ATTB6). Second variable Toxic Behavior Victimization (TBV), with the items measurement are: In the past, other players frequently intentionally interrupted me while I was writing in chat (TBV1), other players frequently held me responsible for mistakes they made themselves (TBV2), other players frequently took away resources (gold, buff, jungle) that belonged to me (TBV3), other players frequently insulted me (TBV4), other players frequently criticized me excessively (TBV5). The third variable, Behavioral Control (BC), with the items measured as: prevent myself from exhibiting toxic behavior, it is very easy (BC1), it is very difficult (BC2), very likely to succeed (BC3), very likely to fail (BC4), and even when I feel frustrated during a game, I can still communicate respectfully (BC5).

The fourth variable is Toxic Disinhibition (TD), with the items measured as: I do not mind writing insulting things about other players online because it is anonymous (TD1), There are no rules online therefore I can do whatever I want (TD2), and writing insulting things online is not toxic behavior (TD3). The last variable is Toxic Behavior (TB), with the items measured as: get mad during a game, intentionally interrupt other players while they are writing in chat (TB1), hold other players responsible for mistakes I made myself (TB2), take away resources (gold, buff, jungle) that belong to other players (TB3), insult other players (TB4) and criticize other players excessively (TB5).

These criteria were established to ensure that respondents had sufficient firsthand experience with the types of interactions this study aims to examine. Regarding sample size, two approaches were used to determine the minimum requirement. First, applying the 10-times rule in PLS-SEM as suggested by Hair et al. (2021), the minimum sample size was calculated by multiplying 10 by the highest number of structural paths directed at any single latent variable. Given that the maximum number of paths directed at one construct in this study is three, the minimum required sample size was 30 respondents. Second, a more conservative estimate was obtained through an a priori power analysis using G*Power 3.1 (Faul et al., 2009), with a significance level of 0.05, a statistical power of 0.80, a medium effect size of $f^2 = 0.15$, and three predictors. A statistical power of 0.80 indicates an 80% probability of detecting a true effect if one exists in the population. This analysis required a minimum sample size of 77 respondents. As the final sample collected in this study exceeded both thresholds, it satisfied the recommended requirements for adequate statistical power and reliable model estimation in PLS-SEM.

RESULTS AND DISCUSSION

Descriptive and Inferential Analysis

Based on the gathered Google Form data, the profile of the respondents shows that most participants are male, with 87.63% of the overall sample. The author contends that rather than being a sample limitation, the gender ratio reflects the true population under study and is consistent with the demographic reality of Mobile Legends: Bang Bang gamers in Indonesia, where the player base is mostly male. In terms of age, the largest percentage of respondents are between the ages of 17 and 22 (56.70% of the sample as a whole), followed by those between the ages of 23 and 32 (31.96%). This finding shows that the younger generation, especially Gen Z, makes up most participants (88.66%). This finding agrees with past studies, which also found that younger age groups make up the largest percentage of active online gamers in Indonesia. That said, individuals are more likely to encounter harmful interactions regularly while playing.

Given that competitive gaming culture has been widely linked to masculine identity and achievement-oriented behavior, which may increase the likelihood of an aggressive attitude followed by toxic interactions in online environments, the study's majority of young male respondents is especially relevant. Additionally, the sample's majority of young people indicates that the respondents are probably still in the early stages of their emotional and behavioral development, which increases the likelihood that they would be impacted by the effects of toxic gaming culture and peer behavior in online forums. Data processing was continued by testing the validity and reliability of the research instrument using the PLS outer model test shown in Table 1.

Therefore, both indicators were retained to preserve the content validity of the Behavioral Control construct and ensure that its full theoretical meaning remains represented in the measurement model. Table 1 shows that all constructs have good internal consistency, with Cronbach's Alpha values ranging from 0.775 to 0.913, exceeding the suggested criterion of 0.70. The (Rho_A) values, which are considered the most appropriate reliability measure in PLS-SEM as they are less biased than both Cronbach's Alpha and Rho_C (Hair et al., 2021), range from 0.781 to 0.917; all of the values gathered are higher than the suggested cutoff point of 0.70. Similarly, the range of Composite Reliability (Rho_C) values is 0.848 to 0.932, also surpassing the recommended threshold of 0.70. Since the true reliability of a construct in PLS-SEM is considered to lie between Rho_A and Rho_C (Hair et al., 2021), the consistent performance of all constructs across both measures provides stronger evidence of reliability than reporting either value alone.

Table 1. Goodness of Fit Model outer model

Measurement Items	Loading Factor
Attitude toward Toxic Behavior (ATTB) **(Composite Reliability = 0.932; Cronbach Alpha = 0.912; AVEs = 0.697)**	-
Toxic behavior in online games is acceptable (ATTB1)	0.863
Toxic behavior in online games is reasonable (ATTB2)	
Toxic behavior in online games is appropriate (ATTB3)	0.817
Toxic behavior in online games is justifiable (ATTB4)	0.840
Toxic behavior in online games is something that is not Harmful (ATTB5)	0.884
Toxic behavior in online games is advantageous (ATTB6)	0.804
Toxic Behavior Victimization (TBV) **(Composite Reliability = 0.912; Cronbach Alpha = 0.877; AVE = 0.677)**	-
Other players frequently intentionally interrupted me while I was writing in chat (TBV1)	0.655
Other players frequently held me responsible for mistakes they made themselves (TBV2)	0.851
Other players frequently took away resources (gold, buff, jungle) that belonged to me (TBV3)	0.834
Other players frequently insulted me (TBV4)	0.881
Other players frequently criticized me excessively (TBV5)	0.870
Behavioral Control (BC) **(Composite Reliability = 0.848; Cronbach Alpha = 0.775; AVEs = 0.531)**	-
Preventing myself from exhibiting toxic behavior is very easy (BC1)	0.827
Preventing myself from exhibiting toxic behavior is very difficult (BC2)	0.744
Prevent myself from exhibiting toxic behavior, very likely to succeed (BC3)	0.755
Prevent myself from exhibiting toxic behavior, very likely to fail (BC4)	0.695
Even when I feel frustrated during a game, I can still communicate respectfully (BC5)	0.602
Toxic Disinhibition (TD) **(Composite Reliability = 0.886; Cronbach Alpha = 0.838; AVEs = 0.611, R^2 = 0.319)**	-
I do not mind writing insulting things about other players online because it is anonymous (TD1)	0.848
There are no rules online; therefore, I can do whatever I want (TD2)	0.890
Writing insulting things online is not toxic behavior (TD3)	0.760
Toxic Behavior (TB) **(Composite Reliability = 0.873; Cronbach Alpha = 0.782; AVE = 0.697, R^2 = 0.523)**	-
Get mad during a game, intentionally interrupt other players while they are writing in chat (TB1)	0.822
Get mad during a game, hold other players responsible for mistakes I made myself (TB2)	0.777
Get mad during a game, take away resources (gold, buff, jungle) that belong to other players (TB3)	0.748
Get mad during a game, insult other players (TB4)	0.909
Get mad during a game, criticize other players excessively (TB5)	0.921

The statistical data show that all constructs' Average Variance Extracted (AVE) values exceed the suggested minimum level of 0.50, because the lowest number is recorded as 0.531 for Behavioral Control and the highest number reaches 0.703 for Toxic Behavior. Indeed, it has been observed that when these Average Variance

Extracted (AVE) values exceed the minimum boundary, each construct can explain more than half of the variance in the indicators. Consequently, this statistical outcome fully confirms that the items within each construct represent the original ideas the researchers want to measure. Among the constructs, Attitude toward Toxic Behavior demonstrates the highest reliability with a Cronbach's Alpha of 0.913 and Rho_C of 0.932, while Behavioral Control shows the lowest values across all measures. However, it still meets all recommended thresholds. In this study, we found that all our variables are very reliable and show enough convergent validity for us to proceed with analysis.

The adjusted R^2 value for Toxic Disinhibition (TD) is 0.297, indicating that 29.7% of the variance in toxic disinhibition can be explained by Attitude toward Toxic Behavior (ATTB), Toxic Behavior Victimization (TBV), and Behavioral Control (BC), which represents a moderate level of explanatory power. Meanwhile, Toxic Behavior (TB) has an adjusted R^2 value of 0.508, indicating that 50.8% of the variance in toxic behavior can be explained by Attitude toward Toxic Behavior (ATTB), Behavioral Control (BC), and Toxic Disinhibition (TD) which explains the substantial explanatory power threshold and suggests that the proposed model can explain a considerable proportion of toxic behavior among Mobile Legends: Bang Bang players. Path coefficients represent the hypothesized relationships between constructs and indicate both direction and strength. The significance of these relationships is tested through bootstrapping with 5,000 subsamples (Hair et al., 2021). A relationship is considered significant if the t-value > 1.96 and the p-value < 0.05 (Kock & Hadaya, 2016).

Table 2. Structural model assessments for path coefficients

Hypothesis of Research	Path Coefficients	T-Statistics	P Values
ATTB -> TD (H1)	0.373	3.770	0.000
ATTB -> TB (H2)	0.027	0.297	0.383
TBV -> TD (H3)	0.174	2.019	0.022
BC -> TD (H4)	-0.223	2.299	0.011
BC -> TB (H5)	-0.290	2.922	0.002
TD -> TB (H6)	0.537	5.262	0.000
TBV -> TD -> TB	0.093	1.680	0.047
ATTB -> TD -> TB	0.200	3.538	0.000
BC -> TD -> TB	-0.120	2.035	0.021

Table 2: Five of the six proposed relationships are statistically significant. Attitude toward Toxic Behavior (ATTB) has a significant positive effect on Toxic Disinhibition (TD) ($\beta = 0.373$, $t = 3.770$, $p < 0.001$), supporting H1. However, the direct effect of Attitude toward Toxic Behavior on Toxic Behavior (TB) is not significant ($\beta = 0.027$, $t = 0.297$, $p = 0.383$), indicating that H2 is not supported. Through the statistical analysis of data, it has been observed that Toxic Disinhibition (TD) is decreased in a negative direction by the force of Behavioral Control (BC) ($\beta = -0.223$, $t = 2.299$, $p = 0.011$). Toxic Behavior (TB) is also reduced by the force of Behavioral Control (BC) ($\beta = -0.290$, $t = 2.922$, $p = 0.002$), which means H4 and H5 are supported. When examining the next result, experts claim that Toxic Behavior Victimization (TBV) provides a positive push to Toxic Disinhibition (TD) ($\beta = 0.174$, $t = 2.019$, $p = 0.022$), because of which H3 is supported. In the model, the greatest relationship we see is between Toxic Disinhibition (TD) and Toxic Behavior (TB) ($\beta = 0.537$, $t = 5.262$, $p < 0.001$), supporting H6. Overall, the results support five of the six proposed hypotheses (H1, H3, H4, H5, and H6), while H2 is not supported.

As presented in the table, the indirect effect of ATTB on TB through TD is the strongest among the three paths, with a value of 0.200 and a t-statistic of 3.538, which is significant at $p < 0.001$. The indirect effect of BC on TB through TD shows a substantial negative impact, indicated by a coefficient of -0.120, a t-statistic of 2.035, and a p-value of 0.021, meaning that higher behavioral control reduces toxic behavior partially by lowering toxic disinhibition. The indirect effect of TBV on TB through TD yields a sample with a value of 0.093, with a t-statistic of 1.680 and a p-value of 0.047, which is statistically significant at $p < 0.05$, suggesting that toxic disinhibition also partially mediates the relationship between victimization experience and toxic behavior. However, the effect is relatively modest compared to the other two paths.

Most research on esports has been conducted in the West, so most theoretical frameworks have been developed for Western players, including the framework proposed by Kordyaka et al. (2020) that this study uses. Unexpectedly, the results of this research showed that the same theoretical framework was successfully applied to the Mobile Legends: Bang Bang seting in Indonesia. Research conducted by Kordyaka et al. (2020) focused

on European MOBA (Multiplayer Online Battle Arena) players of League of Legends (LOL) and DOTA 2, who represent a group with a different community culture than Mobile Legends players in Indonesia. Despite cultural differences, the specific relationships among ATTB, TBV, BC, TD, and TB remained significant and maintained strong effects. Consequently, it has been observed that the inner psychological dynamics that drive toxic gaming behavior might be more universal across different societies than researchers formerly believed.

However, some elements of the research did not replicate. An interesting deviation occurred because the data did not support the direct link from attitude toward toxic behavior to toxic behavior. Based on these results, experts claim that a positive mindset toward bad behavior is insufficient by itself to cause harmful actions within the Indonesian Mobile Legends context. A secondary psychological transition must occur beforehand, which is identified as toxic disinhibition. Gamers must lose their internal self-control before their personal thoughts are converted into active toxic behavior. This discovery provides a deeper understanding of the original model and suggests that subsequent studies in other Southeast Asian gaming contexts may continue to reveal cultural differences that deserve investigation.

Regarding Moonton as the creator of Mobile Legends: Bang Bang, the company is already on the right track. In May 2025, Moonton Games Indonesia launched the MLBB Teacher Ambassador program in Surabaya, a new global initiative that prepares elementary and middle school instructors so they can guide young students toward better play habits and more peaceful play behavior. Because this research found that self-control is a powerful factor in reducing bad actions and poor self-restraint, this strategy, which focuses on young players through their instructors, is a highly appropriate decision. Many people believe that instructing the younger generation on how to control anger and speak with respect during games solves the problem at the root. Through this method, punishment is not merely given to players after bad behavior has already occurred. At this moment, the MLBB Teacher Ambassador program exists only inside Surabaya. When we see how Mobile Legends is found everywhere in Indonesia, from Jakarta to Makassar, keeping this work inside one city means that many game players are not reached. Indeed, a large portion of the community is excluded from this training. It has been observed that growing the MLBB Teacher Ambassador program to other cities of Indonesia is a correct and strong next step. This expansion can greatly help build a better gaming culture for the whole nation.

To help gaming groups and competitive play organizations, building areas where good respect is normal instead of rare is highly necessary. Because players who receive bad words usually give bad words to others, the environment that the community builds around the game carries a lot of weight. Experts claim that the environment surrounding the game determines how players act. If these organizations do not build respectful spaces, bad behavior will be repeated continuously.

Limitation

Like any other study, several limitations were identified and should be considered when interpreting the findings. First, one of the most prominent limitations is the use of convenience sampling. Due to resource constraints, this study could not obtain a comprehensive sampling frame of the whole target population, in this case the active Mobile Legends: Bang Bang players in Indonesia, preventing the use of probability-based sampling methods. In addition, there is no official registry or database of the entire target population, making it infeasible for this study to apply random sampling techniques. The implications of this limitation are clear in the study. For instance, the sample is dominated by young adult players. As a result, the study does not fully reflect the diversity of the game's player base in terms of age, gaming background, cultural background, regional representation, and more. Hence, the generalizability of the findings to the broader player population is limited.

Second, in this study we used a self-reported online questionnaire that allowed players to report on their own experiences and perspectives. At the same time, though, we see that this method increases the issue of social desirability bias, in which some players may underreport their negative actions or present themselves in a more socially acceptable light. This, in turn, can cause a distortion or underreporting of what goes on in the game. Third, this study aims to identify associations between variables using a cross-sectional research design. While this design is suitable for examining relationships between variables, it collects all the data at a single point in time. It thus cannot capture how these relationships evolve. The influence of attitudes toward toxicity, victimization experiences, and perceived behavioral control is dynamic, meaning that these factors may change as different conditions change. These conditions can range from something as simple as gaining experience and switching roles, to something more significant, such as switching teams and moving to different gaming or even geographical environments. Finally, this study is specific to one game, which is Mobile Legends: Bang

Bang. There are numerous other games available online that feature different community norms, communication systems, and competitive structures, which may shape player behavior in various ways. The findings should therefore be interpreted within the specific context of Mobile Legends: Bang Bang and should not be generalized to other online games or gaming genres.

Future Directions

The results of this study suggest several directions that might be useful for future research. A particularly interesting outcome is that attitude toward toxic behavior was found to influence toxic disinhibition, but not toxic behavior itself. This is something to remember as it suggests players with a positive outlook on toxic behavior do not always act that way. What is less clear is what psychological processes mediate between attitude and action and under what conditions a permissive attitude towards toxicity ultimately translates into actual behavior. Future studies might explore these underlying mechanisms in more detail.

Toxic disinhibition was also found to be a meaningful variable in this study, apparently bridging individual characteristics to behavioral outcomes. It is so strongly related to toxic behavior that it seems reasonable to ask what else might be contributing to it in future research. Issues such as anonymity, emotional regulation, the stress of competitive play, gaming addiction, and the informal norms that develop within gaming communities have not been fully explored in this context. They may help explain why some players are more prone to losing restraint than others.

The finding that behavioral control hurts both toxic disinhibition and toxic behavior also has practical implications. If self-regulation can act as a buffer against toxic conduct, then it is a relevant concern to understand how it can be strengthened among players. Other interventions are also worth investigating in future research, such as awareness programs, clearer community standards, reporting tools, and in-game design features. In the future, we will see what results from these interventions, which may in turn reduce the amount of uncontrolled and disrespectful player behavior. Also worth examining in future studies is how toxic that behavior is in different player groups. This includes, for instance, rank, experience level, role preference, and competitiveness. This additional layer of analysis will add to the present knowledge base of toxic behavior in online games.

CONCLUSION

Replicating the framework developed by Kordyaka et al. in 2020, the study aims to examine what drives toxic behavior among Mobile Legends: Bang Bang players in Indonesia. Through the gathered data, toxic disinhibition was revealed to be the strongest predictor of toxic behavior because toxic disinhibition operates as the central pathway through which attitude, victimization, and behavioral control decide how players behave when they play the game. Regarding the outcomes, behavioral control showed strong strength as a protective element, while the direct impact of attitude on toxic behavior was non-significant.

Experts report that toxic play is very complex, as it involves both what goes on in a player's head and what they end up doing, which may at first appear to be an easy issue. What this study does, in the end, is put to rest the idea that toxic behavior in Mobile Legends is a black-and-white issue of bad players making poor choices. It is a result of psychological, social, and situational issues that play out over time and will not be solved by a simple punishment system. What the game industry, in a market as large and young as Indonesia's, must do is begin to consider the emotional and behavioral development of its players.

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