

Moral disengagement, character strengths, and maladaptive behavior among university students: a structural equation modeling approach

Akhmad Syahri¹, Nimatul Dinawisda², Sri Afsinatun²

¹Postgraduate Program, Universitas Islam Negeri Mataram, Mataram, Indonesia

²Faculty of Tarbiyah and Teacher Training, Universitas Islam Negeri Mataram, Mataram, Indonesia

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ABSTRACT

The increasing integration of digital technology in higher education has raised concerns about students' maladaptive behaviors (MB), including academic dishonesty and cyber aggression. This study aims to examine the structural relationships among moral disengagement (MD), character strengths (CS), and MB, as well as the mediating role of CS in digitally mediated learning environments. A cross-sectional quantitative design was employed using data collected from 500 undergraduate students at a State Islamic University in Indonesia through purposive sampling. Data were analyzed using partial least squares structural equation modeling (PLS-SEM). The results indicate that MD significantly predicts MB ($\beta=0.830$, $p<0.001$). CS are negatively associated with MB ($\beta=-0.411$, $p<0.001$) and partially mediate the relationship between MD and MB ($\beta=-0.225$, $p<0.001$). The structural model demonstrates satisfactory reliability and validity. These findings highlight MD as a significant psychological risk factor, while CS functions as a partial protective mechanism in digital learning contexts. This study contributes to educational evaluation by proposing a structural framework for assessing moral risk and protective factors in higher education.

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Corresponding Author:

Akhmad Syahri

Postgraduate Program, Universitas Islam Negeri Mataram

Gajah Mada Street, No.100 Mataram City, West Nusa Tenggara, Indonesia

Email: akhmadsyahri@uinmataram.ac.id

1. INTRODUCTION

The issue of student morality has become increasingly prominent in the digital age, amid technological disruption, academic pressure, and rapid social change. This phenomenon has given rise to patterns of academic cheating, cyberbullying, and digital intolerance that are no longer incidental but tend to be normalized in online interactions [1]. This phenomenon suggests a weakening of internal moral regulation and a decline in empathy, two key aspects of Bandura's moral disengagement (MD) theory [2], [3]. MD explains the cognitive processes that enable individuals to override moral controls, such as moral justification, distortion of consequences, dehumanization, and attribution of blame, which collectively enable individuals to engage in unethical or amoral behavior without experiencing feelings of guilt. In the college environment, this mechanism manifests as the justification of plagiarism and academic manipulation, and the legitimization of cyber harassment through social reasons such as "everyone else is doing it".

Various studies have confirmed the role of MD in triggering immoral and maladaptive behavior (MB). Romera *et al.* [4] showed that MD contributes to the emergence of adolescent bullying behavior.

Lee and Jun [5] discovered a positive correlation between MD and exposure to hazardous web information, whereas media literacy moderated this association. An extensive meta-analysis by Luo and Bussey [6] reported that MD positively correlates with aggression, academic cheating, and cyber aggression, and is associated with decreased academic engagement and increased counterproductive behavior [1]. This problem is exacerbated in higher education by a lack of academic proficiency in areas such as scientific citation and paraphrasing, as well as easy access to artificial intelligence (AI)-based tools that encourage unethical behavior [7], [8].

However, high MD does not always result in immoral or MB. Recent research indicates that internal protective factors, specifically character strengths (CS), can mitigate the negative impact of MD. CS are positive moral traits that contribute to the development of virtuous character and the pursuit of a meaningful and well-lived life [9], [10]. CS includes positive traits such as honesty, integrity, empathy, responsibility, and self-control, which contribute to increased moral resilience and psychological well-being [10], [11]. Individuals with high CS tend to exhibit strong moral resilience even under social or technological pressure [12], [13]. The negative relationship between MD and CS has also been confirmed by Feraco and Casali [14], who state that CS can reduce the tendency toward disengagement and MB. From the perspective of positive moral psychology, ethical behavior is understood as the result of interactions between risk factors (MD) and protective factors (CS) [15]. MD weakens moral regulation, while CS strengthens it and facilitates prosocial tendencies. Understanding this relationship is increasingly important as AI technologies are rapidly incorporated into higher education, creating new moral dilemmas that influence students' conduct [16], [17].

Although the literature on MD is quite extensive [2], [6], [18], several research gaps remain. First, most studies focus on aggression and academic cheating, but few have examined the relationship between MD and MB more comprehensively. Second, protective factors, such as CS, are rarely included in moral engagement models, despite their potential to mitigate the negative effects of MD and the growing empirical support for them. Third, the majority of studies have been conducted on elementary and middle school students, while studies on college students remain limited [1]. More importantly, existing studies tend to examine these variables in isolation rather than within an integrative structural framework that allows simultaneous evaluation of risk and protective moral mechanisms. As a result, higher education institutions lack empirically grounded structural models to quantify the relative contributions of MD and CS to MB, particularly in AI-mediated learning environments.

To address these gaps, this study proposes an integrative framework that simultaneously examines the interplay among MD, CS, and students' MB within an AI-driven higher education context. Beyond theoretical development, this study contributes to educational evaluation by offering a structural model that enables institutions to assess both risk (MD) and protective (CS) factors influencing MB. By modeling these constructs simultaneously, the study provides an evaluative framework that can inform character education initiatives, digital ethics policies, and AI-integrated learning governance in higher education. Unlike prior research that primarily reports bivariate associations, this study provides a structural evaluation model that estimates direct, indirect, and total effects among MD, CS, and MB. This approach enables a more precise assessment of how institutional character education efforts may buffer disengagement tendencies in digitally mediated academic contexts.

The study further advances theoretical understanding in three ways: i) extending Bandura's MD model through the integration of CS as a protective factor; ii) proposing a dual-process moral regulation framework emphasizing the interaction between risk (MD) and protective (CS) factors; and iii) providing empirical evidence from Indonesian higher education, thereby enriching cross-cultural scholarship in moral psychology and educational research. Therefore, examining the structural interplay between MD and CS is not merely a theoretical endeavor but a necessary evaluative step toward understanding how higher education systems can systematically address MB in the digital era. Based on these gaps and contributions, this study seeks to address three primary research questions:

- What are the levels of MD, CS, and MB among students?
- How does MD relate to CS and MB?
- How do CS function as a mediating construct in the relationship between MD and MB?

To examine these relationships, structural equation modeling (SEM) was employed to provide a comprehensive assessment of the proposed structural model. Accordingly, the following hypotheses were formulated:

- MD positively predicts MB among university students (H1).
- MD negatively predicts CS (H2).
- CS negatively predict MB (H3).
- CS mediate the relationship between MD and MB (H4).

2. METHOD

2.1. Research design

This study employed a quantitative correlational design to examine the relationships among MD, CS, and MB. The research framework was grounded in a theoretically informed structural model derived from the MD theory proposed by Bandura [2]. Data analysis was conducted using partial least squares-structural equation modeling (PLS-SEM) with SmartPLS 4.0. This method was selected due to its robustness in analyzing complex predictive models involving latent constructs and mediation effects, particularly in studies that emphasize variance explanation and theory development rather than strict model confirmation.

All research procedures received ethical approval from the UIN Mataram Research Ethics Committee (Approval No. 729/2025). The study adhered to the principles outlined in the Declaration of Helsinki, including obtaining informed consent, ensuring participant anonymity, and guaranteeing the right to withdraw at any stage of the study. Before participation, respondents provided consent through an online consent form. A total of 500 active students from UIN Mataram were recruited using purposive sampling based on the following criteria: i) enrollment in at least the third semester to ensure sufficient academic maturity; ii) prior completion of courses in religious psychology or ethics to ensure familiarity with moral concepts; and iii) full and honest completion of all research instruments. This sample size meets the recommended requirements for PLS-SEM, which generally suggest a ratio of 5–10 respondents per indicator [19]. Given the 66 indicators included in the model, the sample of 500 respondents exceeds the recommended threshold.

2.2. Validation of the instrument

Before the main data collection, the three measurement instruments were evaluated by a panel of three experts in educational psychology to ensure content validity and conceptual alignment with the constructs under investigation. A pilot study involving 75 students was conducted to evaluate the clarity of the measurement items, response consistency, and preliminary reliability. The pilot results indicated that respondents clearly understood 89% of items and that initial reliability was satisfactory (Cronbach's $\alpha=0.81$) [19]. Based on these findings, the instruments were deemed appropriate for full-scale administration.

The study employed three validated psychological scales: i) the MD scale [2], which measures key mechanisms such as moral justification, displacement and diffusion of responsibility, euphemistic labeling, advantageous comparison, and the minimization of consequences; ii) the CS scale [11], [14], [20], which encompasses six core domains of virtue, including courage, wisdom, justice, humanity, transcendence, and temperance; iii) the MB scale [1], [6], which measures academic dishonesty, aggression, and manipulative tendencies. All items were rated on a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). The instruments were translated, piloted, and revised based on expert feedback to ensure linguistic clarity and cultural appropriateness.

Construct validity and reliability were assessed using confirmatory factor analysis (CFA). Indicators were considered valid when factor loadings were ≥ 0.50 , and convergent validity was established when the average variance extracted (AVE) exceeded 0.50. Reliability was confirmed through composite reliability ($CR \geq 0.70$) and Cronbach's alpha ($\alpha \geq 0.70$). Discriminant validity was further evaluated using cross-loadings and the Fornell-Larcker criterion.

2.3. Data collection and data analysis

Data were collected through an online survey administered via Google Forms. The analytical procedure was conducted in two stages. Initially, descriptive statistics were employed to examine the levels of MD, CS, and MB. Subsequently, inferential analysis was performed using PLS-SEM [21], with SmartPLS 4.0. This stage involved evaluating the measurement model through reliability and validity assessments, assessing the structural model using path coefficients and coefficients of determination (R^2), examining multicollinearity via the variance inflation factor ($VIF \leq 3$), and testing mediation effects using a bootstrapping resampling technique [19].

2.4. Methodological considerations and limitations

This study adopted a cross-sectional survey design and utilized PLS-SEM to analyze theoretically specified relationships among latent constructs. While this approach allows for the examination of complex structural models, it does not permit causal inferences. Therefore, the relationships identified in this study should be interpreted as associative rather than causal. The use of purposive sampling within a single Islamic higher education institution (UIN Mataram) may limit the generalizability of the findings. Participants' prior exposure to ethics-related coursework may also shape their perceptions of CS and moral reasoning, situating the results within a value-based educational context.

Additionally, the use of self-report measures may introduce social desirability bias. Although statistical validity criteria were satisfied, measurement artifacts cannot be completely ruled out. Future research should consider multi-site, longitudinal, and multi-informant designs to strengthen the robustness of the findings.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Descriptive analysis

Descriptive statistics were calculated to examine the overall tendencies of the study variables, namely MD, CS, and MB among university students. These statistics provide an initial overview of the central tendencies and variability of each variable, allowing for a clearer understanding of students' psychological and behavioral profiles. Furthermore, analyzing descriptive data helps identify patterns and potential imbalances among variables, particularly in relation to the dominance of MB or the strength of positive character traits. This preliminary analysis is crucial for informing subsequent inferential testing and for ensuring that the data satisfy the assumptions required for further statistical procedures.

As presented in Table 1, students demonstrate moderate levels of MD, CS, and MB. The relatively high proportion of moral justification (44.7%) indicates that some students tend to rationalize behaviors that violate academic or social norms. Such rationalization may increase vulnerability to maladaptive tendencies.

Table 1. Descriptive data of MD, CS, and MB of students

Variable	Items	Mean (M)	Standard deviation (SD)	Dominant dimension	Percentage (%)
MD	18	2.60	0.62	Moral justification	44.7
CS	24	2.57	0.60	Wisdom strengths	22.0
MB	24	2.50	0.67	Aggression	41.0

In contrast, CS appear at a moderate level, particularly within the wisdom strengths dimension, which reflects cognitive capacities related to ethical reasoning. However, some moral-action dimensions appear weaker, suggesting that students may understand ethical values cognitively but experience difficulty translating them into consistent behavior under social pressure. MB is more frequently reflected in emotional or impulsive responses, such as aggression and frustration, rather than deliberate misconduct. This pattern suggests that emotional regulation and situational stress may influence students' behavioral tendencies in academic environments.

3.1.2. Measurement model evaluation

The measurement model was assessed to examine the reliability and convergent validity of the constructs. This assessment included Cronbach's alpha, CR, and AVE. Cronbach's alpha and CR were used to assess internal consistency, while AVE was used to assess convergent validity, indicating that each construct explains a substantial proportion of the variance in its indicators. The combined use of these indices provides a more rigorous evaluation of measurement quality within the SEM framework. The findings confirm that all constructs meet the required psychometric criteria prior to structural model analysis. Table 2 indicates that all constructs exhibit strong internal consistency reliability, as reflected by Cronbach's alpha and CR values exceeding the recommended threshold of 0.70. Furthermore, AVE values for all constructs are above 0.50, indicating adequate convergent validity in accordance with established PLS-SEM standards.

Table 2. Reliability and construct validity

Construct	Cronbach's alpha	CR	AVE	Interpretation
MD	0.964	0.971	0.847	Reliable and valid
CS	0.945	0.956	0.783	Reliable and valid
MB	0.897	0.936	0.829	Reliable and valid

3.1.3. Structural model

The structural relationships among the latent variables were evaluated using path coefficients, significance levels, and coefficients of determination (R^2). Path coefficients (β) were used to assess the strength and direction of the relationships between constructs. At the same time, t-values and p-values were employed to determine the statistical significance of each hypothesized path. A t-value exceeding 1.96 and a p-value below 0.05 indicate statistical significance of the relationship. Furthermore, the R^2 was examined to

assess the model's explanatory power, with higher values indicating a greater proportion of variance explained by the independent variables. The combined use of these indicators provides a comprehensive evaluation of the structural model in PLS-SEM analysis. Therefore, this analysis ensures that the proposed model adequately explains the relationships among MD, CS, and MB. As presented in Table 3, MD is significantly related to both CS ($\beta=0.548$, $p<0.001$) and MB ($\beta=0.830$, $p<0.001$). The strongest association is observed between MD and MB, suggesting that higher MD levels correspond to increased maladaptive tendencies among students.

Table 3. Structural model results

Path	β	t-value	p-value	Result
MD→CS	0.548	17.993	<0.001	Supported
CS→MB	-0.411	10.167	<0.001	Supported
MD→MB	0.830	27.851	<0.001	Supported

Unexpectedly, MD is also positively associated with CS ($\beta=0.548$). Within the moral self-regulation framework proposed by Bandura [3], this result is paradoxical, as MD is generally expected to weaken moral regulation. This pattern should therefore be interpreted cautiously. The association may reflect several factors, including the inclusion of non-moral attributes within the CS scale (e.g., leadership or creativity), potential social desirability bias in self-report responses, or contextual influences related to cultural and religious identity. CS exhibit a negative relationship with MB ($\beta=-0.411$, $p<0.001$), suggesting that stronger psychological and moral capacities are associated with lower MB levels. The structural relationships among the constructs are depicted in Figure 1.

As depicted in Figure 1, MD is directly associated with both CS and MB/PM or “*perilaku maladaptif*”. The coefficient of determination indicates that MD accounts for 30% of the variance in CS ($R^2=0.300$), while MD and CS jointly explain 48% of the variance in MB ($R^2=0.484$). These findings suggest that the model demonstrates a moderate level of explanatory power in accounting for students' behavioral tendencies.

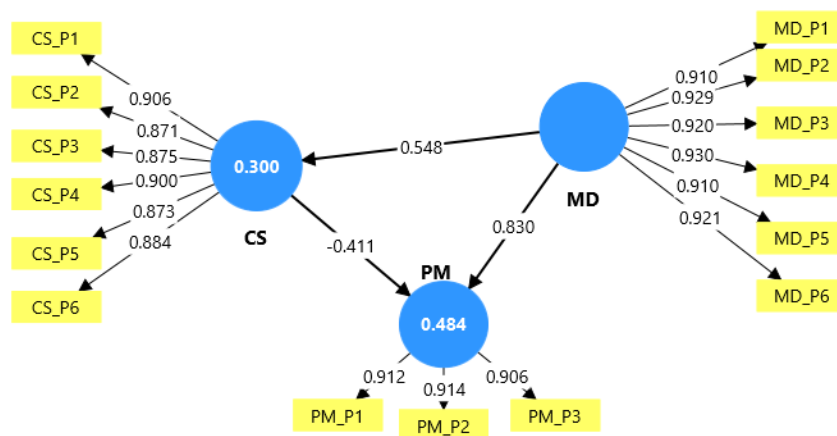


Figure 1. Structural model

3.1.4. Mediation analysis

A mediation analysis was conducted to examine whether CS mediates the relationship between MD and MB. The significance of the indirect effect was assessed using the bootstrapping resampling procedure implemented in SmartPLS. Bootstrapping is widely recommended in PLS-SEM because it does not assume normal data distribution and provides more accurate estimates of indirect effects. The mediation effect was evaluated based on the significance of the indirect path, where a t-value greater than 1.96 and a p-value less than 0.05 indicate a significant mediating role. In addition, the type of mediation was determined by comparing the significance of direct and indirect effects. That mediation analysis is essential for understanding the underlying mechanisms by which independent variables influence dependent variables. Therefore, this analysis provides deeper insight into the role of CS as a psychological mechanism linking MD and MB.

As presented in Table 4, the bootstrapping analysis indicates that the indirect effect of MD on MB through CS is statistically significant ($\beta = -0.225$, $p < 0.001$). This result suggests that CS partially mediates the relationship between MD and MB. Although CS reduces MD's influence, the direct association between the two variables remains significant, indicating partial mediation. The total effect of MD on MB remained positive, indicating that MD continues to play a dominant role despite CS's mediating influence.

Table 4. Mediation effect

Path	β	t-value	p-value	Mediation
MD→CS→MB	-0.225	7.981	<0.001	Partial mediation

3.2. Discussion

3.2.1. Overview of MD levels, CS, and MB in students

Descriptive findings indicate that university students demonstrate relatively high levels of MD. This result aligns with Bandura's moral self-regulation framework [2], [3], which suggests that individuals may temporarily disengage from their internal moral standards through cognitive mechanisms such as diffusion of responsibility, moral justification, and euphemistic labeling. Through these mechanisms, individuals reinterpret unethical behavior as acceptable, thereby reducing moral self-sanctions and facilitating MB.

Within higher education settings, such disengagement mechanisms frequently manifest in academic misconduct and problematic online behaviors. Empirical evidence suggests that students may rationalize actions such as academic cheating, plagiarism, assignment manipulation, and online aggression when disengagement mechanisms are activated [6], [16], [22]–[24]. In particular, moral justification functions as a key cognitive process that allows individuals to frame unethical conduct as necessary or harmless.

Recent studies further demonstrate that the digitalization of learning environments may intensify these mechanisms. Awdry and Ives [25] report that academic pressure combined with digital opportunities increases students' tendency to rationalize contract cheating behaviors, including the use of ghostwriting services or delegating academic work to third parties. Similarly, Stoesz *et al.* [26] found that anonymity and psychological distance in online learning environments increase tolerance toward plagiarism and assignment manipulation. Comparable dynamics are observed in online aggression, where the online disinhibition effect reduces self-regulatory control and strengthens MD, thereby increasing aggressive behavior [27].

However, the relationship between MD and MB is not entirely uniform across contexts. Bussey *et al.* [28] shows that stressful and highly competitive environments increase the likelihood that individuals employ disengagement mechanisms to protect their moral self-image. Conversely, other studies highlight that institutional factors such as digital ethics education, strong academic integrity policies, and supportive learning environments can mitigate tendencies toward disengagement [29]. These findings suggest that the impact of MD becomes stronger when institutional monitoring and ethical norms are weak, but may decrease when universities actively cultivate ethical academic cultures. Within value-based institutions such as Islamic universities, relatively high MD levels may indicate a discrepancy between internalized religious values and everyday academic practices. This discrepancy underscores the importance of integrating character education, spiritual values, and digital ethics literacy to strengthen students' internal moral regulation. In contrast, descriptive findings also indicate that students demonstrate relatively strong levels of CS. CS represent positive psychological attributes that support ethical functioning and personal development. Students who demonstrate higher levels of integrity, perseverance, self-control, and practical wisdom tend to exhibit stronger moral regulation and greater resistance to MB tendencies.

This finding aligns with perspectives from positive moral psychology, which emphasize that ethical behavior emerges from the interaction between psychological risk factors and protective resources. Empirical research consistently identifies CS as a protective factors that support prosocial behavior and psychological well-being. Several studies [11], [14], [30] demonstrate that CS contribute positively to students' resilience, self-efficacy, and prosocial engagement. Nevertheless, the protective role of CS is not unconditional. Several studies indicate that individuals who possess positive character attributes may still activate disengagement mechanisms under conditions of high competition, social pressure, or permissive behavioral norms [31]–[33]. These findings suggest that the effectiveness of CS as a protective factor depends strongly on contextual conditions. Supportive educational environments that promote internalization of values strengthen the protective effect of CS, whereas environments that implicitly justify deviant behavior may weaken it. The influence of CS on students' psychological and behavioral outcomes is also significantly shaped by the cultural context [34], [35]. Overall, the findings suggest that MD is an important psychological risk factor for MB, whereas CS is a protective psychological resource. However, character development initiatives alone may be insufficient without institutional strategies to reduce disengagement through reflective moral education, digital ethics instruction, and robust academic integrity systems.

3.2.2. The effect of MD on CS and MB

The structural model revealed that MD was positively related to both CS and MB. While the strong MD→MB association is theoretically consistent with Albert Bandura's moral self-regulation framework, the positive MD→CS association poses a theoretical paradox [3]. This pattern diverges from conventional theoretical expectations, which would predict a negative or non-significant association between disengagement mechanisms and positive moral attributes [36].

Within Bandura's theoretical framework, CS are considered positive moral resilience (e.g., wisdom, courage, humanity, justice, self-control, and transcendence) that drive individual growth [3]. The wisdom dimension of CS positively contributes to individuals' career outlook and enhances their sense of optimism [37]. Therefore, if high MD means that a person more often justifies unethical actions, then their moral orientation should weaken, and their positive character should diminish. The finding of a positive and significant relationship between MD→CS seems to contradict this expectation. Basically, CS, according to previous studies [10], [38], contains moral components intended to "improve oneself and others", whereas MD legitimizes harmful conduct. Traditionally, the relationship between MD and positive attributes such as CS would therefore be expected to be negative or, at a minimum, non-significant.

Consistency with Bandura's theory is evident in the MD→MB relationship. International literature repeatedly states that MD is strongly correlated with deviant and aggressive behavior. Furthermore, higher MD is associated with higher levels of physical and verbal violence [39]–[41]. Many other studies also show a positive correlation between MD and cyberbullying/online aggressive behavior [4], [6], [18]. In general, MD allows a person to act against moral standards without guilt. Thus, the MD→MB result is consistent with prior findings: the higher the MD, the more frequently students engage in MB (e.g., academic cheating, trolling, or online aggression). This is in line with the literature's statement that MD "positively correlates with cyberbullying perpetration" in general and indeed "increases aggressive behavior" [42].

Bandura conceptualizes MD as a set of self-deceptive mechanisms that allow individuals to preserve their self-esteem and maintain a positive moral self-image while engaging in immoral behavior. For example, by blaming the victim or rationalizing their actions, perpetrators can continue to "maintain their image as good people" even as they engage in harmful acts. In self-report surveys, people with high MD may rate themselves overly positively. This means that they report high CS to maintain consistency in their self-image (e.g., considering themselves honest, strong, and determined), even though their actual behavior deviates from this. This condition is similar to the halo effect or overclaiming bias, in which individuals absorb overly positive impressions of themselves [5].

In addition, the construct of CS itself is complex. CS encompasses various dimensions of positive traits, not all of which are inherently "moral". There are personal values such as ingenuity, leadership, creativity, or self-control that may be interpreted differently by students. If the CS instrument in this study includes elements of leadership or resilience, for example, students with high MD (who may be manipulative) may actually rate themselves as superior in these dimensions. Furthermore, measuring character in students (values in action or VIA youth vs VIA adult) may yield different results, so assessing CS in student groups may lead to age-comparison bias [43]. The complexity of this measurement means that not all CS dimensions will react the same way to MD [44], [45]. The literature shows that CS is closely related to optimism and self-regulation [46]. However, when individuals activate disengagement mechanisms, they may reinterpret morally questionable behavior as justified or defensive, allowing them to continue to rate themselves highly on traits such as courage or wisdom [47].

Therefore, the positive association between MD and CS in this study should be interpreted cautiously. It may reflect self-report bias, conceptual overlap within the CS construct, or culturally reinforced tendencies toward moral self-enhancement rather than a substantive strengthening effect. Furthermore, individuals with strong religious self-perceptions often report higher spirituality and CS [48]. In value-based educational settings, endorsing high CS may serve to maintain a coherent moral identity. These findings suggest that character and religious education should extend beyond cognitive moral instruction and emphasize consistent moral enactment, emotional development, and reflective practice, thereby reducing reliance on MD mechanisms. Importantly, this finding should not be interpreted as suggesting that MD strengthens moral character. Given the cross-sectional design and reliance on self-report instruments, the positive MD→CS association may reflect social desirability bias, self-enhancement tendencies, or conceptual overlap within the measurement model rather than a substantive psychological effect. Future research using multi-method assessments or longitudinal designs is needed to clarify this relationship. From an evaluative perspective, this paradox highlights the limitation of relying solely on self-perceived character indicators in institutional assessments. Universities that measure character development through self-report instruments may overestimate students' moral integrity, even as disengagement mechanisms operate beneath the surface. This calls for more behaviorally anchored evaluation strategies and institutional accountability mechanisms.

3.2.3. The influence of CS as a mediating variable in the relationship between MD and MB

The path analysis identified a partial mediating role of CS in the relationship between MD and MB ($\beta = -0.225$, $p < 0.01$). This finding suggests that although CS mitigates the adverse influence of MD on MB, MD continues to exert a significant direct effect on MB. From a conceptual standpoint, partial mediation occurs when the mediator reduces, but does not fully eliminate, the effect of the independent variable on the dependent variable. In line with this pattern, previous studies [49], [50] found that cyber-moral literacy significantly predicts lower levels of cyberbullying. However, this relationship is only partially mediated by MD.

In that study, the MD pathway was partial: even though high cyber-moral literacy suppressed cyberbullying, the impact of MD still appeared. Similarly, for CS and MD, the partial model indicates that CS partially buffers the influence of MD rather than completely. CS is defined as a positive trait with moral value that contributes to optimal psychological functioning. CS, such as self-control, gratitude, perseverance, enthusiasm, and empathy, are generally considered protective factors that enhance well-being and maintain positive behavior [51]. International empirical evidence shows that CS can suppress the emergence of problematic behavior. Findings from various studies consistently show that CS plays an important protective role in positive adolescent development. Strengthening moral education, appropriate guidance, and coaching that enhance psychological qualities such as gratitude and appreciation for others contribute to increased emotional regulation, social concern, and empathy, thereby reducing adolescents' tendency to engage in risky behavior and online aggression [52]. These positive attitudes weaken negative emotional impulses such as anger or frustration, which often trigger aggressive actions in the digital space [15], [42], [53].

Recent studies consistently show that CS acts as a protective factor, weakening the influence of MD on MB by increasing prosocial tendencies and moral orientation [1], [13], [14]. However, empirical evidence also indicates that the protective capacity of CS is not absolute; its effectiveness depends on the type of CS and the situational context [49]. Certain strengths can function ambiguously under specific conditions, and environmental pressures, particularly in anonymous and permissive digital spaces, can override internal moral control even when CS is relatively high [54]. Thus, CS's mediation is partial due to the complex interaction between internal and situational factors, whereby CS weakens, but does not completely negate, the impact of MD on MB.

The findings indicate that CS play a significant role in mitigating the adverse effects of MD on MB, particularly within digital environments where anonymity is prevalent and mechanisms of MD are further reinforced. Instilling values through character development programs, such as cultivating gratitude, empathy, ethical reflection, and digital moral literacy, has been shown to strengthen adolescents' psychological resilience and help prevent cyber aggression. However, because CS mediation is partial, a holistic approach is needed that not only improves ethical understanding but also fosters the internalization of values and consistent social support. Thus, character education strategies integrated into college culture and an adaptive digital ecosystem are key to reducing tendencies toward disengagement and shaping sustainable prosocial behavior. The partial mediation pattern also carries important policy implications. Strengthening CS alone may not be sufficient if institutional environments simultaneously allow conditions that normalize MD. Higher education policies must therefore address both internal character formation and structural conditions such as competitive pressure, digital anonymity, and weak accountability systems. An integrative model combining character education, digital ethics governance, and transparent academic monitoring may be more effective than isolated character-building initiatives.

4. CONCLUSION

This study indicates that MD represents a key psychological mechanism underlying students' MB in higher education. CS partially reduce this influence, but they do not fully eliminate the effect of MD. Theoretically, these findings extend Bandura's MD framework by integrating CS as a protective factor within a moral regulation model. Practically, the results highlight the importance of integrating character education, digital ethics instruction, and academic integrity policies to strengthen students' moral self-regulation in digitally mediated learning environments. However, the study is limited by its cross-sectional design and single-institution sample. Future research should employ longitudinal and multi-institutional designs to examine the stability of the proposed model across diverse cultural and educational contexts.

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Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Akhmad Syahri	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓			✓
Nimatul Dinawisda	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		
Sri Afsinatun	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			

- C : Conceptualization
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- Vi : Visualization
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CONFLICT OF INTEREST STATEMENT

The authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

ETHICAL APPROVAL

The study involving human participants received approval from the authors' Institutional Review Board (IRB) or an equivalent ethics committee and was conducted in compliance with applicable national regulations and institutional policies, in accordance with the principles of the Declaration of Helsinki.

DATA AVAILABILITY

Data availability does not apply to this paper as no new data were created or analyzed in this study.

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BIOGRAPHIES OF AUTHORS



Akhmad Syahri    is an associate professor at the Postgraduate Program, Universitas Islam Negeri Mataram, Nusa Tenggara Barat, Indonesia. He was appointed a lecturer at the university in 2019. He is passionate about raising the quality of teaching and learning for students and their development in schools and higher education settings. Dr. Syahri's research interests include teacher education, Islamic religious education grounded in interdisciplinary studies, higher education, 21st-century teaching and learning, school-based assessment, character education, religious literacy, religious moderation, learning strategies, PAI learning design, youth practices, and their education. He can be contacted at email: akhmadsyahri@uinmataram.ac.id.



Nimatul Dinawisda    holds a master's graduate in Educational Psychology from the Indonesia University of Education, Bandung, Indonesia. She is currently a lecturer in Educational Psychology at the Faculty of Tarbiyah and Teacher Training, Universitas Islam Negeri Mataram, Nusa Tenggara Barat, Indonesia. She is interested in research on adversity intelligence, personality, study procrastination, moral disengagement, self-regulated learning, and other topics. She can be contacted at email: nimatuldinawisda09@gmail.com.



Sri Afsinatun    is currently pursuing her undergraduate degree in Islamic Education at the State Islamic University of Mataram, after completing her studies at the State Senior High School 1 Sanggar, where she graduated as the best graduate in 2021. That same year, she developed a deep interest in interpersonal and intrapersonal communication. In 2021, she participated in the Regional Youth Creativity Program (Rimpu Festival), which was also supported by the Ministry of Tourism. The combination of an interest in interpersonal communication, sensitivity to others, and expertise in sewing and fashion design can add value across academic and professional contexts. With a strong spirit of learning and dedication, she hopes to make a positive contribution across various aspects of life, including Islamic education. She can be contacted at email: 220101236.mhs@uinmataram.ac.id.