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Chatbot AI Distractions and Academic Triumphs: A Mediation Approach with Self-Control and Coping Skills

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Abstract:

Research aims: This study investigates self-control and coping skill in academic performance moderated by Chabot AI (CAI) Addiction.

Design/Methodology/Approach: This study performed the online survey and archival method, and included 153 accounting students' respondents as the final sample. The Structural Equation Model using Smart-PLS was employed to estimate the relationship of the latent variable test the relationship of each variable.

Research findings: The findings underscore the significant impact of self-control in mitigating addictive tendencies, highlighting the susceptibility of individuals with lower self-control to develop addictive behaviors toward chatbot AI. While coping skills were not found to have a substantial effect on reducing chatbot AI addiction.

Theoretical contribution/ Originality: This research demonstrates that self-control and coping skills play a crucial role in controlling the dependence on AI-based chatbots, ultimately contributing to a better understanding of the relationship between these psychological abilities and managing AI addiction in university accounting students.(Chassignol et al. 2018; Sollosy and McInerney 2022)

Practitioner/Policy implication: The findings have implications for chatbot designers and developers. Understanding the potential for addiction behavior allows for the implementation of behavior detection and prevention mechanisms within chatbot designs.

Research limitation/Implication: This study overlooked diverse forms of self-control and coping skills, along with other factors that contribute to Chatbot AI Addiction. Recommending the exploration of various self-control strategies and coping skills could be a valuable opportunity in future research.

Keywords: Self-Control, Coping, ChatbotAI, Addiction.

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Introduction

This study examines the relationship between psychological abilities, specifically self-control and coping skills, and the academic performance of accounting students, particularly in the context of the mediating influence of Chatbot AI (CAI) addiction. The presence of

Artificial Intelligence (AI) has reshaped various aspects of life. AI has found extensive applications across different sectors, from industry and business to education (Chassignol et al. 2018; Saka et al. 2023; Sollosy and McInerney 2022). This advancement has brought about a notable transformation in our interactions with the world, offering substantial potential to improve effectiveness and productivity in both organizational and individual settings (Cohen, Soffer, and Henderson 2022; Grové 2021). Meanwhile, the transformation in the digital world has resulted in the importance of self-control processes and coping skills in controlling the use of AI Chatbots (citation 20xx; citation 20xx; citation 20xx). Thus, our research explores the self-control and coping skill to mitigate the CAI addiction, and consequently influence the academic performance.

The use of AI in businesses has opened up new opportunities for innovation and efficiency that have never been seen before. In this context, AI is used to automate routine tasks, make data-driven decision-making, and predict business trends. Companies that adopt this technology are generally more competitive and adaptable in a rapidly evolving market (Chen and Yuan 2007; Mikalef and Gupta 2021; Turel, Serenko, and Giles 2011). Similarly, education has experienced a significant revolution with the introduction of AI, which enhances the learning experience (Chassignol et al. 2018; Chen et al. 2020; Cohen et al. 2022). One aspect of AI that is gaining attention in education is Conversational AI (CAI). The use of AI chatbots has the potential to positively impact academic performance. Although the use of AI chatbots has shown positive effects on various aspects of academic performance, it is essential to consider various types of self-control and stress management skills that students may have, as well as other factors; which may contribute to their susceptibility to AI addiction (Dekker et al. 2020; Liu and Zhang 2023).

Conversational AI is a branch of AI that focuses on developing human-machine communication systems capable of interacting with humans in natural language

(Mariani, Hashemi, and Wirtz 2023). In the educational context, CAI can provide personalized learning and support, enriching the academic experience (Alshater 2022). Although CAI has the potential to be a powerful tool for enhancing academic performance, individual factors, such as self-control and coping skills, play a crucial role in academic success. Self-control involves an individual's ability to regulate themselves, control impulses, and maintain focus on long-term goals (De Boer, Van Hooft, and Bakker 2015; Duckworth et al. 2019; Tangney, Baumeister, and Boone 2004), while coping skills encompass the ability to manage stress and maintain emotional balance when facing demanding academic tasks (Barczak and Eklund 2020; Vizoso, Arias-Gundín, and Rodríguez 2019; White 1974).

This research explores the roles played by self-control and coping skills in enhancing the academic performance of accounting students who use CAI as a supporting tool at the Faculty of Economics and Business (Mariani et al. 2023; Mohamed and Lashine 2003). We argue that the used of AI chatbots itself occurs because of their psychological response and intention in seeking convenience to produce satisfactory value (Nicolescu and Tudorache 2022). The research used quantitative research design using a survey and archival method in documenting the mediating role of CAI Addiction in relationship of self-control and coping skill on academic performance. Participants were selected from the accounting students of the Faculty of Economics and Business who voluntarily participated in the study. The study employed a survey questionnaire, including demographic questions assessing age, gender, and year of education. The researchers was measured the levels of self-control, coping skills, and CAI addiction for each participant using Likert scales. A structural equation modeling (SEM) PLS analysis conducted to examine the relationships between these variables and academic performance.

This study seeks to contribute to the literature on the psychological factors influencing academic performance and the role of CAI addiction in this relationship. In the same way, this article deeper analyzes the understanding of the interaction between humans and AI in accounting education, enabling the development of more effective learning models and investigations into their effectiveness. Practically, it sheds light on how CAI can offer concrete solutions to students with limited learning resources, given the right understanding and development of self-control and coping skills, to help students harness the full potential of CAI in their academic endeavors.

The following section discusses the theoretical framework to explain the relationship between self-control, coping skill, and Chatbot AI addiction in academic condition, and the development of research hypotheses. The third section discusses the research method and measurement of each variable in this study. This study presents the results and statistical findings in section four. Finally, it ends with conclusions and suggestions for further research.

Literature Review and Hypotheses Development

Human–Computer Interaction (HCI)

Human–Computer Interaction (HCI) theory define as a interactions between individuals (users) and computers through the design, evaluation, and implementation of user interfaces that are responsive to users' needs and habits (Brey and Søraker 2009). Users interact with computer systems through user interfaces, which comprise both hardware and software components, facilitating user input, system manipulation, and information output. HCI has expanded to incorporate a diverse range of academic disciplines, including social and organizational computing, accessibility considerations for the elderly and those with cognitive and physical challenges, and a commitment to inclusivity for all

individuals (Breideband et al. 2023; Chignell et al. 2023; Sáiz-Manzanares et al. 2023).

The active utilization of smarter technologies, which understand human life, has led to a paradigm shift in the way humans interact with computers, as exemplified by Artificial Intelligence (AI). AI leverages computational capabilities to make computer-based products or systems more intelligent. Hence, HCI can be extended into the realm of Human–AI Interaction (Lee 2022). It posits that Human–AI Interaction design create interactive products or systems that enable people to communicate and interact in their daily lives and work situations. This relationship is applicable across multidisciplinary domains, including education, where the interaction between humans and AI can enhance the learning process and improve students' engagement with educational materials (Chen et al. 2020; Saka et al. 2023).

Self-control and Chabot AI

The self-control theory, popularized by Gottfredson and Hirschi (1990) in "A General Theory of Crime," posits that individuals tend to avoid actions where the long-term costs outweigh the immediate or short-term benefits. In the context of criminality, strong self-control restrains individuals from engaging in criminal activities due to the potential long-term negative consequences. Tangney et al. (2004) define self-control as the ability to overcome or modify one's responses, cease unwanted behavior tendencies, and refrain from deviant actions. This concept encompasses four main domains, including control over thoughts, emotions, impulses, and performance.

In essence, self-control forms an integral part of an individual's affective regulation, involving managing thoughts, resisting unwanted urges, maintaining discipline, sustaining motivation, and persevering through challenges. Individuals

with strong self-control demonstrate better behavioral adjustments, interpersonal control, and emotional responsiveness. Those with weaker self-control are more prone to neglect ethical considerations in their actions, opting for rational choices that bring immediate satisfaction (Baumann et al., 2023). Various literature sources highlight the positive impact of self-control on individual performance. Individuals with strong self-control tend to make wise decisions and manage situations effectively, resulting in positive outcomes (Baumann et al., 2023; De Boer et al., 2015; Honken et al., 2016).

When applied in the context of academic performance, students with good self-control are more likely to have good academic performance. Furthermore, individuals' levels of self-control play a crucial role in their susceptibility to chatbot AI addiction. Research has shown that high self-control is associated with positive outcomes such as increased academic achievement and the ability to resist impulsive behaviors (Alhadabi et al. 2023; Choi et al. 2018; Honken, Ralston, and Tretter 2016; Nielsen and Bauer 2019). On the other hand, individuals with low self-control are more likely to succumb to addictive behaviors, including Internet addiction (Carver 2014; Lee et al. 2023; Sumiyana et al. 2022). Moreover, individuals with low self-control are highly impulsive and seek immediate gratification. This impulsive behavior can lead to addictive patterns, as seen in the case of chatbot AI addiction.

H1a: *There is a positive and significant relationship between individuals' levels of self-control (SC) and their academic performance (AP)*
H1b: *There is a negative and significant relationship between individuals' levels of self-control (SC) and their propensity for chatbot AI addiction (CA)*

Coping Skill and Chabot AI

In a simplified definition, coping mechanisms refer to the adaptive processes individuals employ when faced with challenging situations (White, 1974). Holahan et al. (1996) provide a comprehensive definition of coping as a stability factor aiding individuals in maintaining psychosocial adaptation during stressful periods. Coping includes cognitive and behavioral efforts to reduce or eliminate stress and associated emotional distress. Similarly, Snyder (1999) defines coping as responses aimed at alleviating the physical, emotional, and psychological burdens associated with stressful life events.

Effectiveness in coping is associated with an individual's dual ability to reduce psychosocial distress and, ultimately, enhance long-term psychological stability. Strong coping skills enable individuals to tackle challenges, even under pressure, resulting in optimal performance. Previous literature demonstrates that effective coping mechanisms correlate with optimal task performance, reducing burnout, and ensuring maximal academic performance among students (Freire et al. 2020; Rabenu, Yaniv, and Elizur 2017; Tummers 2017; Vizoso et al. 2019). Moreover, coping skill play a crucial role in individuals' susceptibility to chatbot AI addiction.

According to several studies, individuals with strong coping skills are better equipped to handle stressful situations and reduce emotional distress (Freire et al. 2020; Góngora-Coronado and Vásquez-Velázquez 2018; Rabenu et al. 2017). This ability to manage stress and emotional burdens can act as a protective factor against developing addictive behaviors, such as chatbot AI addiction. Individuals lacking adequate coping abilities may be more inclined to pursue immediate satisfaction and resort to unhealthy coping methods, which can contribute to the emergence of addictive behaviors (Barczak and Eklund 2020; Lee et al. 2023; Liu et al. 2022).

H2a: *There is a positive and significant relationship between individuals' coping skills (CS) and their academic performance (AP)*
H2b: *There is a negative and significant relationship between individuals' coping skills (CS) and their likelihood of developing chatbot AI addiction (CA)*

Lower levels of self-control can have a notable impact on academic performance and the development of addiction to chatbot AI. Duckworth et al. (2019) and Schmeichel and Zell (2007) posits that the crucial role that self-control plays in academic success, as high levels of self-control are connected to improved grades and academic attainment. On the other hand, low self-control has been associated with adverse psychological and behavioral outcomes, including addictive tendencies (Alhadabi et al. 2023; Mei et al. 2016; Tangney et al. 2004; Tibbetts and Myers 1999).

In this understanding of the context of chatbot AI addiction, it becomes evident that lower levels of self-control could lead to higher levels of chatbot AI addiction. Conversational Artificial Intelligence addiction can negatively affect academic performance by diverting students' time and attention away from their studies (Haque and Rubya 2023; Liu et al. 2022; Turel et al. 2011). Instead of focusing on academic tasks and responsibilities, students may become consumed by their addiction to conversational artificial intelligence. This can result in decreased time and effort devoted to studying, leading to poor academic performance.

Furthermore, the impact of low coping skills should not be underestimated (Hewett et al. 2018). As clarified by various research investigations, lower levels of coping skills can indeed lead to higher levels of chatbot AI addiction, subsequently impacting academic performance adversely (Barczak and Eklund 2020). The inability to effectively cope with stress and emotional burdens may drive individuals to seek solace in addictive behaviors such as chatbot AI

interaction, thus diverting their attention from academic responsibilities (Abouammoh, Irfan, and AlFaris 2020; Freire et al. 2020; Lee et al. 2023). Additionally, the reliance on conversational artificial intelligence as a source of emotional support and instant gratification can create a cycle of addiction that further hinders academic performance.

H3a: *Lower levels of self-control (SC) lead to higher levels of chatbot AI addiction (CA), subsequently impacting academic performance (AP) adversely.*
H3b: *Lower levels of coping skills (CS) lead to higher levels of chatbot AI addiction (CA), subsequently impacting academic performance (AP) adversely.*

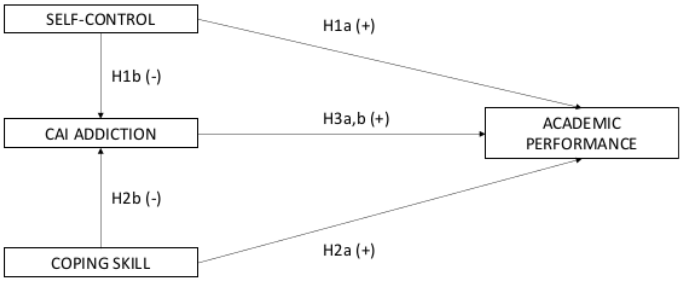

Figure 1 Research Model

Research Method

This research employs a quantitative research design with a survey and archival method. Participants selected for this study are students from the Department of Accounting at the Faculty of Economics and Business, who voluntarily follow the prescribed procedures. The rapid advancement of technology necessitates a positive response from accounting students as an opportunity to expand their knowledge. Simultaneously, ethical and responsible attitudes are crucial for accounting students, given the high emphasis on ethics in the practical world (Iorga, Ciuhodaru, and Romedea 2013; Mohamed and Lashine 2003). Therefore, it is essential to examine compliance with ethics and honesty among accounting students in the midst of technological advancements.

The selection of respondents is based on predetermined criteria. After collecting the responses, the researcher administered a questionnaire through Google Forms. The questionnaire includes demographic questions assessing age, gender, and year of education. The researcher measures the levels of self-control, coping skill, and CAI addiction for each respondent. By measuring the three variables, the researcher can determine the influence of individual characteristics on academic performance. The Likert scale is used to measure each variable. Then, by operating Smart-PLS 3.0, this study tested the hypotheses of models 1 and 2 using Structural Equation Modeling (SEM) to identify cause-and-effect relationships between variables built in this research model.

This study measures independent variable, namely self-control and Coping Skill. The researcher formulates questions in the questionnaire related to these two variables. The measurement of self-control is depend on Tangney et al. (2004), where a higher score indicates better self-control. For measuring an individual's coping skill, the researcher adopts the measurement from Vizoso et al. (2019). The higher the level of stress an individual experiences, the lower their coping skill score. When an individual can effectively manage problems, they can cope with various challenges and achieve their intended goals. The available response options are: (1) Never, (2) Rarely, (3) Occasionally, (4) Often, and (5) Always.

The mediating variable used in this study is CAI Addiction. The measurement of CAI addiction aims to assess how often an individual uses a specific technology or technology platform. To measure CAI addiction, the researcher adopted the measurement developed by (Chen et al. 2020). This study developed an appropriate measure for individuals with frequent used and addiction of social media. The scale used in this study is as follows: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree.

The dependent variable in this study is academic performance. The measurement of this variable is adopted from (Vizoso et al. 2019), where academic performance is measured through the average grade point at the end of the semester (GPA). The researcher use the GPA measurement standard based on the last semester grades completed. It is assumed that when an individual's score is at level 4, their academic performance is maximum.

After collecting the data, this study examined the data validity and reliability. In addition, the statistical test of this study also considers the validity and reliability of the questionnaire items through Confirmatory Factor Analysis (CFA) (Abrahim et al. 2019; Aiken 1980). Furthermore, the items in each questionnaire that are indicated to be valid and reliable are used to further test the correlation. To gauge validity, we assessed loading factor values, categorizing each item as valid when its loading factor exceeded 0.5. Convergent validity was evaluated through Average Variance Extracted (AVE) values for each variable, and discriminant validity was confirmed when the sum of square roots of AVE values was lower than factor loadings.

The study also considered the proportion of variance explained by the latent variable indicator, assuming support for both discriminant and convergent validity when it surpassed half of the variance. Reliability was examined using Cronbach's alpha, with values above 0.5 indicating reliable data collection for each variable. Composite reliability was employed to measure the realism of representing investor behavior, and values exceeding 0.5 were considered reflective of reliability. Finally, the research analyzed relationships between variables in all models, ensuring that validity and reliability met established normative criteria as per (Babin and Svensson 2012; F. Hair Jr et al. 2014).

Finally, this research provided key descriptive statistics for respondents, including minimum, maximum, mean, and standard deviation values. Skewness and kurtosis

were examined to ensure the statistical normal distribution of each variable. The emphasis on these descriptive measures is crucial in establishing that the research data adhere to standard statistical criteria. This comprehensive approach purposes to substantiate each hypothesis and research model constructed (F. Hair Jr et al. 2014; Hu et al. 2019).

Result and Discussion

Descriptive Statistics

This research collected responses over a period of one month and conducted cumulative data checks to examine the obtained results. Absolutely, the researcher acquired 168 respondents, reflecting the behaviors, characteristics, and academic performance of accounting students. The researcher excluded 15 responses, specifically from first-semester students who had not yet obtained GPA results. Consequently, the final sample for the study comprised 153 responses. Finally, informasi demografi responden pada Tabel 1.

Table 1 Demographic Data

Respondent Data	Frequency	Percentage (%)
Gender		
Male	68	44%
Female	85	56%
Age		
< 20 years old	12	8%
20-25 years old	113	74%
26-30 years old	17	11%
> 30 years old	11	7%
N: 153		

Table 2 presents the descriptive statistics of the research model. The collected data represent measurements of individual characteristics and behaviors, with values ranging from a minimum of 1 to a maximum of 5 for each variable.

Meanwhile, the GPA has a minimum value of 2.13 and a maximum of 3.97. Meanwhile, the data indicates that the variables have average values ranging from 2.4 to 3.9. On the other hand, the average academic performance of students is 3.53, reflecting optimal academic performance during their study (Alyahyan and Düştegör 2020; Mohamed and Lashine 2003) Finally, this study asserts that all variables exhibit statistically normally distributed, as indicated by the quality of mode and median values.

Table 2 Descriptive Statistics

	MEAN	MIN	MAX	STANDARD DEVIATION	EXCESS KURTOSIS
Self-Control	3.34	1.00	5.00	0.94	-0.57
Coping Skill	3.96	1.00	5.00	0.93	0.74
CAI Addiction	2.44	1.00	5.00	1.02	-0.60
Academic Performance (GPA)	3.53	2.13	3.97	0.35	2.55

Furthermore, the researcher tested the levels of validity, reliability, convergence, and discriminant of each item using the standard criteria generated by the simultaneous model in Table 3. The results indicate that the factor loading values for each item used are above 0.5, allowing the conclusion that each questionnaire item is valid. Additionally, the reliability test results demonstrate that all variables have values above 0.7, confirming that all items are reliable and consistently exhibit strong reliability. Regarding the Average Variance Extracted (AVE) values, each variable has values exceeding 0.6, indicating that the convergent validity meets the criteria (F. Hair Jr et al. 2014). In other words, latent variables can explain more than half of the variance in their indicators. AVE values are obtained by summing the squares of factor loadings divided by the error. Therefore, the test results conclude that the measurements in each model show that the variables are highly reliable, convergent, and discriminant. However, the researcher eliminated item CS3 to achieve standard measurements. Finally, all statistical results indicate valid and reliable indicators, and the variables align with the designed model.

Table 3 Result of Validity and Reliablity Test

Variable	Item	Factor Loading	AVE	Cronbach's Alpha	Composite Reliability
Self-Control	SC1	0.875	0.899	0.991	0.991
	SC2	0.996			
	SC3	0.925			
	SC4	0.858			
	SC5	0.971			
	SC6	0.952			
	SC7	0.988			
	SC8	0.929			
	SC9	0.957			
	SC10	0.989			
	SC11	0.970			
	SC12	0.948			
	SC13	0.955			
Coping Skill	CS1	0.732	0.632	0.909	0.923
	CS2	0.849			
	CS4	0.763			
	CS5	0.849			
	CS6	0.776			
	CS7	0.847			
	CS8	0.737			
CAI Addiction	CAI1	0.896	a0.743	0.912	0.935
	CAI2	0.895			
	CAI3	0.916			
	CAI4	0.842			
	CAI5	0.752			

Notes: N = 153 for all the variable, Factor loadings (pattern matrix) and unique variance.

Table 4 show that the NFI (Normed Fit Index) value for the research model is 0.693, which is greater than 0.1. In other words, the model constructed in this study is considered a good fit. Furthermore, the SRMR (Standardized Root Mean Square Residual) value obtained from this research model is 0.102, indicating that the research model meets the appropriate standards (Abrahim et al. 2019; F. Hair

Jr et al. 2014). Thus, it is concluded that the constructed model is suitable for further statistical testing.

Table 4 Goodness-of-Fit

	Saturated Model	Estimated Model
SRMR	0.102	0.102
d_ULS	3.637	3.637
d_G	4.447	4.447
Chi-Square	2462.050	2462.050
NFI	0.693	0.693

The analysis revealed the different results, particullary regarding to the hypothesized positive association between self-control and academic performance (H1a). Contrary to with the hypothesis, the regression coefficient was 0.029, and at the 1% significance level, failed to support the anticipated positive link ($p = 0.728$). On the other hand, the negative association posited between self-control and chatbot AI addiction (H1b) garnered robust support, with a significant coefficient of -0.358 at the 1% level ($p = 0.000$). This indicates that higher levels of self-control correspond to diminished tendencies toward chatbot AI addiction (Alhadabi et al. 2023; Choi et al. 2018).

The other results shows that the positive relationship between coping skills and academic performance (H2a) found empirical support, as evidenced by a significant coefficient of 0.240 at the 1% level ($p = 0.003$). Conversely, the anticipated negative link between coping skills and chatbot AI addiction (H2b) was not substantiated, with a non-significant coefficient of 0.043 at the 1% level ($p = 0.667$). The sequential hypotheses (H3a and H3b) proposed a mediated effect of chatbot AI addiction between self-control, coping skills, and academic performance. The findings supported the sequential negative relationship in H3a, with a significant coefficient of -0.064 at the 1% level ($p = 0.030$), while H3b did not find empirical support, yielding a non-significant coefficient of 0.008 at the 1% level ($p = 0.702$). With a robust sample size of 153 respondents, these

statistical results provide substantive contributions to the understanding of the intricate dynamics between self-control, coping skills, chatbot AI addiction, and academic performance.

Table 5 Statistical Results

Hypotheses	Causalities	Coeff.	P-value	Results
H1a (+)	SC -> AP	0.029	0.728	Not-Supported
H1b (-)	SC -> CA	-0.358	0.000***	Supported
H2a (+)	CS -> AP	0.240	0.003***	Supported
H2b (-)	CS -> CA	0.043	0.667	Not-Supported
H3a (+)	SC -> CA -> AP	-0.064	0.030***	Supported
H3b (+)	CS -> CS -> AP	0.008	0.702	Not-Supported

Notes: ***Significant at level < 1%; ** 5%; *10%, n: 153 respondents

Discussion

The findings from the analysis highlight the complexity of the relationship between self-control, coping skills, chatbot AI addiction, and academic performance. Specifically, the results indicate that higher levels of self-control are associated with lower tendencies towards chatbot AI addiction, which suggests that individuals with better self-control are less likely to become addicted to conversational artificial intelligence platforms. The significance of this discovery extends widely, providing insights into the potential influence of self-regulation on usage patterns and addictive behaviors associated with emerging technologies (Abrahim et al. 2019; Cohen et al. 2022; Taylor, Boat, and Murphy 2020). These findings are consistent with previous research that has emphasized the importance of self-control in alleviating addictive tendencies, expanding beyond conventional domains to include contemporary technological platforms.

It is important to highlight that the findings suggest that self-control plays a significant role in mitigating addictive tendencies towards emerging technologies such as conversational artificial intelligence platforms (Carver 2014; Sumiyana et al. 2022). Furthermore, the impact of self-control on academic performance might not be as substantial. While a positive relationship was observed between coping

skills and academic performance, the significance of this relationship did not manifest in the context of self-control. The expected negative association between coping skills and chatbot AI addiction was not supported, suggesting that possessing coping skills did not decrease the likelihood of chatbot AI addiction (Abouammoh et al. 2020; Labrague 2023).

Furthermore, the significant mediated effect of chatbot AI addiction between self-control and academic performance suggests that chatbot AI addiction plays a detrimental role in academic performance, acting as a mediator between self-control and academic success. This implies that individuals with lower levels of self-control are more susceptible to developing chatbot AI addiction, which in turn negatively impacts their academic performance (Mei et al. 2016; Tibbetts and Myers 1999; Vizoso et al. 2019). These findings support prior research that has highlighted the negative effects of technology addiction on academic performance.

Meanwhile, the link between coping skills and academic performance remains unclear in the context of chatbot AI addiction (Freire et al. 2020). It becomes evident that developing and enhancing coping skills may not directly impact the reduction of chatbot AI addiction. Contrary to initial expectations, the presence of coping skills did not display a significant correlation with a decreased likelihood of developing addictive behaviors towards conversational artificial intelligence platforms (Barczak and Eklund 2020; Góngora-Coronado and Vásquez-Velázquez 2018; Hewett et al. 2018). Instead, the focus should be on the significant role of self-control in influencing addictive behaviors, particularly in the context of emerging technologies like chatbot AI.

Conclusion

This study investigates the mediating role of Chabot AI (CAI) addiction in the relationship of Self-control and coping skill with academic performance. The

findings shed light on the crucial role of self-control in mitigating addictive tendencies towards emerging technologies such as chatbot AI. The results support the notion that individuals with lower levels of self-control are more susceptible to developing addictive behaviors towards conversational artificial intelligence platforms, which subsequently negatively impacts their academic performance. While coping skills were found to have a positive relationship with academic performance, their role in reducing chatbot AI addiction was not substantiated. This demonstrate that the importance of addressing self-control as a key factor in understanding and addressing addictive behaviors related to emerging technologies (Mei et al. 2016; Sumiyana et al. 2022; Taylor et al. 2020). Therefore, it is crucial for chatbot designers and developers to be aware of these potential addictive behaviors and implement proper behavior detection and prevention mechanisms in their design to mitigate chatbot AI addiction (Nicolescu and Tudorache 2022; Sáiz-Manzanares et al. 2023; Vancouver 2008)

This study makes significant contributions to academic literature and its practical implications. In academia, it is recommended that universities establish robust curricula and ethical standards to monitor students' unethical behavior. Moreover, in practical terms, universities can introduce a diverse range of assignments to provoke critical thinking. Additionally, the university's role can involve organizing initiatives to educate about the risks of excessive dependence on CAI, alongside emphasizing the importance of nurturing self-control and coping skills in every student (Ibrahim et al. 2023; Sáiz-Manzanares et al. 2023).

This study is not entirely exhaustive in capturing the characteristics determining AI Chatbot Addiction. It highlights limitations by not considering various types of self-control and coping skills, as well as other antecendent of AI Chatbot addiction. Future research could explore these factors to gain a more comprehensive understanding of the impact of AI-based chatbots on academic performance. Measuring GPA as an academic achievement, it may not fully

reflect students' academic performance. Future research could consider experimental studies to explore the impact of AI Chatbot addiction on a broader range of academic performance measures.

Appendix

Variables and Questionnaires Items

Variabel	Questionnaires Item
Self-Control (Tangney et al. 2004)	1. I engage in certain behaviors that are harmful to me, even if they are enjoyable. 2. I struggle to break bad habits. 3. I am unmotivated to study or attend classes. 4. I act without considering all alternatives. 5. I am adept at resisting the worst temptations that disrupt 2 lectures. 6. I reject things that are harmful to me. 7. I am capable of working effectively to achieve long-term goals. 8. People would say that I have high self-discipline. 9. Pleasure and excitement hinder me from completing tasks. 10. I have difficulty concentrating. 11. I wish I had more self-discipline. 12. I cannot resist the urge to do something, even though I know it is wrong for me. 13. I say inappropriate things.
Coping Skill (Vizoso et al. 2019)	1. I make an effort to solve problems related to lectures or in challenging situations. 2. I convince myself that everything is not as bad as it seems. I engage with my feelings and let them go. 4. I find someone who is a good listener. 5. I avoid thinking about or doing anything about unfavorable situations in lectures. 6. I hope unfavorable situations in lectures or the environment will pass or end. I blame myself. 8. I avoid socializing with others.
CAI Addiction (Chen et al. 2020)	1. I intend to continue using AI chatbots (such as ChatGPT, Google Bard, Bing Chat, etc.) to complete academic tasks. 2. I use AI chatbots to address academic issues and enhance learning outcomes.

	3. Despite attempts, I find it challenging to reduce interactions with AI chatbots. 4. I feel anxious when unable to use AI chatbots for academic tasks. 5. I need to manage my time wisely in the use of AI chatbots.

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