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Decoding EFL Learners' Intention to Use ChatGPT for Academic Writing: Cognitive and Emotional Drivers

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Abstract. ChatGPT, a groundbreaking open artificial intelligence technological development, is revolutionizing academic writing practice across the globe. The effectiveness of technology integration in language learning depends on learners' attitudes toward it. Hence, the current research investigated Bangladeshi English as a Foreign Language (EFL) learners' cognitive and affective attitudes and their behavioral intentions to utilize ChatGPT for academic writing. The study was conducted among 159 first-year students in Bangladeshi public and private universities. Data were collected by implementing a Likert scale questionnaire. The study used a quantitative approach to explore individual relationships between cognitive and affective attitudes and behavioral intentions. Also, it probed the mediating role of affective and cognitive attitudes on their relationship with behavioral intention. The Pearson correlation coefficient, multiple regression analysis, and bootstrapping were used for data analysis. Findings reveal that both cognitive and affective attitudes, as independent constructs, significantly influenced the EFL learners' behavioral intentions to use ChatGPT for academic writing. Cognitive and affective attitudes significantly predicted EFL learners' intentions to use ChatGPT in academic writing, and the affective attitude was found to be the stronger predictor. Results

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indicate that affective attitude moderately mediates the relationship between cognitive attitude and behavioral intentions. Likewise, cognitive attitude has a moderate influence on the relationship between affective attitude and behavioral intention to use ChatGPT for EFL academic writing. The study suggests that educators promote the use of ChatGPT in academic writing as a cognitive and emotional support tool. Education policymakers are recommended to create a supportive environment for fostering positive attitudes to ChatGPT as an academic writing tool.

Keywords: Academic writing; Behavioral intention; ChatGPT; EFL learners; Mediation analysis

1. Introduction

English as a Foreign Language (EFL) in higher education has evolved radically with the incredible developments of modern technologies over the last three decades. The open-source artificial intelligence (AI) tool ChatGPT is the newest development of technology integration in EFL education. Studies advocate for integrating ChatGPT in teaching and learning EFL academic writing (Han et al., 2023; Octavio et al., 2024; Rezai et al., 2024; Teng, 2024; Xu et al., 2024; Zaiarna et al., 2024). While ChatGPT can be a useful tool for developing academic writing skills, an appropriate attitudinal orientation is vital to ensure its effective implementation (Dizon, 2024; Vo & Nguyen, 2024).

Academic writing is an integral part of university education. Learners' academic success depends on their ability to produce quality academic papers. Gabi (2022, p. 2) defines academic writing as "focused, impersonal, open-minded, objective, precise, clear, engaging, thorough and consistent with convention within its specific discipline," Academic writing differs from creative writing (Oshima & Hogue, 2007). Academic writing is constructed according to a writer's analytical, critical, persuasive, and empirical research approaches (Ahmed, 2022). It is claimed that modern technologies, such as ChatGPT-integrated EFL writing practice, could help learners master the skills of academic writing (Lin et al., 2024; Losi et al., 2024).

Attitude is an aspect of human psychology. It refers to the exhibition of reactions generated from the human mind's interaction with the body and its surroundings (Gaiseanu, 2020). Attitude is a propensity expressed by evaluating an object and approving or disapproving of it (Riemer et al., 2014). Students' attitudes to technology such as ChatGPT encompass their enjoyment, its perceived usefulness, their preferences for book-based versus technology-based learning, and their preferred technology tools (Andrew et al., 2018). Positive attitudes to ChatGPT determine learners' willingness to employ it in their writing processes (Acosta-Enriquez, Arbulú Ballesteros et al., 2024) and heighten the possibilities for language learning (Abdaljaleel et al., 2024; Arini et al., 2022; Liu & Ma, 2024; Wesely & Plummer, 2022). The potential of ChatGPT to hone EFL learners' academic writing skills has stimulated research on learners' attitudes to using it (Artiana & Fakhrurriana, 2024; Mahapatra, 2024).

In Asian and South Asian contexts (Malik et al., 2024; Younes et al., 2024), studies that explored the prospects of and barriers to ChatGPT in academic writing report that we know little about Bangladeshi university EFL learners' attitudes to using ChatGPT for academic writing. Against the Bangladeshi backdrop, where the implementation of modern technologies in education is still evolving (Jibon, 2024), understanding EFL learners' attitudes to using ChatGPT for academic writing could unlock paths to effective writing skill development, in contrast to the prevailing traditional teaching-learning scenario. Additionally, though emotions, as both independent and mediating influencers, can determine behavioral intentions (Bagozzi et al., 1999; Venkatesh & Bala, 2008), studies on attitudes to ChatGPT (Jeong, 2024; Klimova et al., 2024; Phuong, 2024) have overlooked the mediating effect of affective attitude on the relationship between cognitive attitude and behavioral intention. Likewise, little evidence is available on the mediating role of cognitive attitude on the relationship between affective attitude and behavioral intention.

Furthermore, despite the increasing number of studies on EFL learners' attitudes to using ChatGPT for EFL academic writing (Al-Alami, 2024; Hidayat & Surjawati, 2024; Mun, 2024; Siregar et al., 2024; Song & Song, 2023; Xu & Jumaat, 2024; Werdiningsih et al., 2024), there remains a gap in recognizing the contribution of the technology acceptance model, hedonic motivation and attitude theory to the field. Therefore, the present study intended to address these theoretical, methodological, and knowledge gaps. Most importantly, the studies that employed qualitative approaches (Hidayat & Sujarwati, 2024; Siregar et al., 2024; Werdiningsih et al., 2024), and studies that employed quantitative and mixed methods approaches (Al-Alami, 2024; Alkamel & Alwagieh, 2024; Rahim et al., 2023; Xu & Jumaat, 2024), did not involve mediation analysis of students' attitudes to ChatGPT, which left a gap in the development of a nuanced understanding of the complicated interaction between the various aspects of attitude.

By keeping the knowledge, theoretical, and methodological gaps in mind, this study explored the correlation between and predictive power of EFL learners' cognitive and affective attitudes on their behavioral intentions. Additionally, the study investigated the mediating roles of cognitive and affective attitudes on the relationships between other attitudinal components and the behavioral intention to use ChatGPT for academic writing. To address these objectives, the study explored four research questions.

RQ1: To what extent do Bangladeshi EFL learners' cognitive and affective attitudes correlate with their behavioral intentions to use ChatGPT for academic writing?

RQ2: To what extent do Bangladeshi EFL learners' cognitive and affective attitudes predict their behavioral intentions to use ChatGPT for academic writing?

RQ3: To what extent do Bangladeshi EFL learners' affective attitudes mediate the relationship between their cognitive attitudes and behavioral intentions to use ChatGPT for academic writing?

RQ4: To what extent do Bangladeshi EFL learners' cognitive attitudes mediate the relationship between their affective attitudes and behavioral intentions to use ChatGPT for academic writing?

The study findings are expected to contribute to the field by providing deeper insight into EFL learners' attitudes to using ChatGPT for academic writing. It highlights our understanding of the way cognitive and affective attitudes influence behavioral intentions and imparts valuable implications for educators and policymakers.

2. Literature Review

2.1. Role of Artificial Intelligence in Education

Artificial Intelligence (AI) has revolutionized education in all disciplines and has shifted the roles of learners and educators. With the assistance of AI, learners can become knowledge creators instead of merely knowledge receivers (Oranga, 2023). Ouyang and Jiao (2021) categorize the roles of AI in learning into three models: AI-directed, AI-supported, and AI-empowered learning. In the AI-directed model, the learner receives the knowledge produced by the AI application. AI can be compared to a teaching machine that possesses the subject knowledge and shares it with learners without integrating learners' schema into the learning process and addressing customized learning needs. The AI-supported model is learner-centered because the learner uses AI as a learning tool. In this model, the learner interacts with AI by providing individualized inputs, and AI generates the best information by collecting information about the learners from multiple sources. Thus, the learner and AI collaborate to maximize learning outcomes. Finally, the AI-empowered model involves a human-centered AI in education. Educators, equipped with comprehensible, explicable, and customized AI, facilitate learner-centered education (Ouyang & Jiao, 2021).

The rise of AI has stimulated much discussion on the effect of AI in higher education. Begum (2024) contends that integrating AI into higher education will model the internal architecture of the academic system. Because it is likely that AI is going to become a part of everyday life, including business and entertainment, and become a core attraction for younger generations, higher education institutions are going to have to mold their systems to cater to the needs of their students. AI is likely to not only make teaching more enjoyable and effective (Ismail et al., 2024), but could also promote research by facilitating data analysis, research modeling, hypothesizing, research collaboration, and subsequent critical thinking development (Jacques et al., 2024). Therefore, since the research of university teachers and students is at the core of higher education in the 21st century (Abramowitz et al., 2024), AI is undoubtedly going to have a significant place in the education system.

2.2. Impacts of ChatGPT on EFL Academic Writing

Because of the rise of the English-medium higher education system across the globe, the need to improve university learners' academic writing skills in various disciplines has become more urgent (Lekamge & Rajavarathan, 2024; Macaro et al., 2018; Zhou et al., 2022). In some countries, writing courses are offered in the

first year to help students improve their academic writing, with little effect (Sağlamel & Aydoğdu, 2022). Empirical studies report that ChatGPT enhances language proficiency (Roisah et al., 2024; Yuan & Sawaengdist, 2024; Zakaria & Ningrum, 2023) by reducing grammatical errors (Werdiningsih et al., 2024), increasing vocabulary (Mugableh, 2024), overcoming writer's block, helping with brainstorming, finding relevant literature, generating new insights, translating, and widening the scope of essays by giving feedback on wider perspectives of students' writing (Wang, 2024; Werdiningsih et al., 2024). Moreover, ChatGPT does outlining, editing, revising, and proofreading (Li, Huang et al., 2024). Furthermore, ChatGPT has been found to have increased learners' motivation to do English academic writing (Song & Song, 2023; Tica & Krsmanović, 2024).

Particularly, in research manuscript writing, ChatGPT helps non-native English article writers meet the linguistic and stylistic standards that are required by journals (Kayaalp et al., 2024). In addition, it helps to generate and organize ideas, manage and analyze data, maintain ethical compliance, and promote communication and outreach (Khalifa & Albadawy, 2024). In this regard, Gruda (2024) asserts that ChatGPT assists writers in increasing the quality of research manuscripts through language refinement, review of articles, and producing editorial feedback on others' manuscripts. Because of the widespread use of ChatGPT in academic journal writing, research writing styles are transforming too (Malik et al., 2024). AI helps writers of scientific articles by improving consistency, clarity, and precision (Hosseini et al., 2024; Huang & Tan, 2023)

While ChatGPT activates critical thinking and learners' voices (Hikmah & Walida, 2024; Tseng & Lin, 2024), learners' reliance on ChatGPT for processing knowledge and producing ready-made answers could adversely affect their cognitive and critical thinking (Yuan & Sawaengdist, 2024; Zhai et al., 2021) and creative thinking abilities (Baidoo-Anu & Ansah, 2023). Moreover, there is increasing concern about the threats to academic integrity caused by ChatGPT-supported writing, which could lead to plagiarism and cheating (Cotton et al., 2024; Eke, 2023; Karkoulian et al., 2024). Likewise, journal editors are concerned about using ChatGPT in academic publishing, and researchers are concerned that it could reduce the integrity of scholarly articles (Bin-Nashwan et al., 2023). There has been a recent surge in exploiting AI to produce academic manuscripts, and it is becoming more difficult to spot the role of AI in those texts (Kayaalp et al., 2024). The concerning issue is that ChatGPT acts predatorily by producing misinformation and biased results (Kim, 2024; Saeidnia, 2023). Hence, users must be prudent when employing ChatGPT for academic writing.

2.3. Studies on EFL Learners' Attitudes to the Use of ChatGPT for Academic Writing

Students usually possess positive attitudes toward using ChatGPT for academic writing (Xu & Jumaat, 2024). For instance, Indian, Yemeni, Malaysian, Thai, Vietnamese, and Indonesian undergraduate language learners showed positive attitudes about using ChatGPT (Alkamel & Alwagieh, 2024; Mahapatra, 2024; Rahim et al., 2023; Xu & Jumaat, 2024). Nonetheless, learners are aware of the negative effects, such as its negative effect on academic integrity and the potential

for cheating (Aljabr, 2023; Alkamel & Alwagieh, 2024). Likewise, Indonesian undergraduate EFL learners were positive about using ChatGPT for their academic writing because it assisted them in accomplishing tasks quickly and efficiently. They also reported that using ChatGPT in writing increased their confidence by reducing pressure and helping to produce well-organized, well-structured arguments (Artiana & Fakhurriana, 2024). Moreover, Xu and Jumaat (2024) found that Chinese undergraduate EFL learners had highly positive attitudes toward ChatGPT in academic writing in terms of providing writing templates, saving time, analyzing and synthesizing data, organizing ideas, and providing language services; in fact, 62% of students believed that ChatGPT is a powerful tool for academic writing.

Despite the benefits, learners using ChatGPT for academic writing face challenges. According to Xu and Jumaat (2024), Chinese EFL learners, for instance, reported that ChatGPT provided irrelevant and generalized answers to prompts. By fabricating false literature reviews, ChatGPT affected the integrity and quality of their writing. In addition, Bok and Cho (2023) found that South Korean undergraduate EFL students reported that using ChatGPT is challenging because it provides inadequate descriptions of the mistakes and difficult words and insufficient and irrelevant feedback, uncertain learning outcomes because it is not known if the learning will be effective, and a risk of the original text being replaced completely. Thus, ChatGPT fails to address learners' academic writing needs, which is likely to curb the learners' engagement with the tool.

2.4. Academic Writing and ChatGPT in Bangladeshi EFL Education

Academic writing courses are offered in first-year undergraduate programs at Bangladeshi universities to help students improve their academic writing skills (Muniruzzaman & Afrin, 2024; Rahnema, 2023). Owing to their poor language exposure in pre-university education, students struggle to perform well in academic writing (Rahman & Hasan, 2019). Students face difficulties related to grammar, content, conceptualization, vocabulary, and style (Muniruzzaman & Afrin, 2024). Bangladeshi learners use technological tools such as Grammarly to improve the quality of their academic writing (Rahim et al., 2023), and Bangladeshi academics and learners are ready to engage in research activities to enhance their academic writing skills (Jamil, 2023).

However, scholars have investigated Bangladeshi university students' use of ChatGPT without a particular focus on the EFL domain (Naher et al., 2023; Rahman et al., 2023). Some Bangladeshi university students intend to use ChatGPT positively, for learning purposes (Rahman et al., 2023). In addition, Bangladeshi university students' intention to use ChatGPT is regulated by their performance expectancy, social factors, and whether they have supportive environments (Amin et al., 2024). Karu and Hoque (2024) found that Bangladeshi EFL learners benefited from ChatGPT by developing writing skills, although they sometimes received incorrect and confusing answers. In contrast, a study on Bangladeshi undergraduate students' operation of ChatGPT emphasizes that plagiarism resulting from using ChatGPT considerably impedes students'

creative thinking abilities. Moreover, it harms their learning motivation, limits authentic learning experiences, and affects academic integrity (Tanvir et al., 2023).

3. Underpinning Theories

Several theories, such as the theory of attitude, the technology acceptance model 3, and the hedonic theory of motivation refer to the association between learners' attitudes and their behavioral intentions to use ChatGPT for academic writing. Ajzen's (1989) theory of attitude illustrates the relationship between learners' cognitive and affective attitudes and intention to use AI for writing activities. Human attitudes comprise three categories: cognitive attitudes, affective attitudes, and behavioral attitudes (Ajzen, 1989). Cognitive attitude is a belief about the attitude object. Affective attitude is the expression of feelings or emotions such as happiness and anger (Ajzen, 2001). Behavioral attitude refers to expressing the intention to behave in a particular way with the attitude object (Ajzen, 1989). Ajzen and Cote (2008) propound that cognitive and affective attitudes determine an individual's behavioral intentions, which motivates behavior. Ajzen (2001) contends that a positive cognitive attitude or evaluation of the attitude object influences an individual's intention to perform a task. In this case, the evaluation is based on the expectancy-value model, which means the perceived importance of the task plays a crucial role in task performance. Likewise, an individual's positive or negative feelings, moods, and emotions determine task performance. However, the role of cognitive and affective attitudes is a joint venture. When cognitive and affective attitudes are consistent with one another, the possibility of predicting behavior becomes stronger. The theory aligns with all the research questions of this study because it views cognitive and affective attitudes as individual and mutual determinants of behavioral intention. Acosta-Enriquez, Arbulú Ballesteros, Huamaní Jordan et al. (2024) found that college students' cognitive and affective attitudes determine their intention to use ChatGPT in their writing activities. In particular, Sallam et al.'s (2024) study among 520 Arab undergraduate students reveals that positive cognitive attitude, lower perceived risk, and higher perceived usefulness increase the learner's intentions to use ChatGPT. Similarly, Ajlouni et al. (2023) conducted a study among 623 undergraduate students in Jordan and found that Jordanian university students' affective and cognitive attitudes determine their intention to use ChatGPT as a learning tool.

The technology acceptance model 3 considers emotions, particularly perceived enjoyment, to be a key factor in determining the intention to use technology (Venkatesh & Bala, 2008). An individual's perceived enjoyment significantly affects perceived usefulness and perceived ease of use. These cognitive perceptions affect behavioral intention (Davis, 1993). Therefore, it can be argued that affective attitudes mediate the relationship between cognitive attitude and behavioral intention. Thus, this theory's propositions support RQ3 and, partially, RQ1 because it considers affective attitude to be a mediator between cognitive attitude and behavioral intention. Vo and Nguyen (2024) investigated 369 Vietnamese EFL learners' attitudes to using ChatGPT for language learning according to the TAM framework. The findings reveal that the learners had negative cognitive attitudes to using ChatGPT for language learning; however,

they exhibited positive affective attitudes and behavioral intentions. Likewise, Jeong's (2024) study among 261 South Korean university English learners found that the perceived usefulness and satisfaction of learners significantly influenced their use of ChatGPT for learning English. Moreover, within the framework of the theory, studies report that cognitive attitude can mediate the relationship between affective attitude and behavioral intention (Porter & Donthu, 2006; Yang & Yoo, 2004).

The hedonic theory of motivation proposes that individuals' pleasure and displeasure, satisfaction, and enjoyment, which equate to positive and negative experiences, influence their intentions to engage in relevant actions (Becker et al., 2019). The technology acceptance framework indicates that an individual's feeling of security and comfort builds their trust in AI, while the feeling of risks and uncertainties reduces their acceptance of AI. Therefore, someone's motivation to use AI is based on their cognitive judgment and affective arousal from their experiences with AI (Li, Wu et al., 2024). Therefore, research questions that address the correlation, prediction, and mediation of the variables comply with the principles of this theory, as it counts cognitive and affective variables as a duo. A study that used the hedonic motivation theory found that students' emotions strongly determined their acceptance of using AI for educational purposes (Acosta-Enriquez, Farroñan et al., 2024). Qu and Wu (2024) conducted a study among 189 Chinese undergraduate international students at British universities. Their study was based on the hedonic motivation theory, and by employing structural equation modeling they revealed that EFL learners' enjoyment, boredom, and sense of control strongly influenced their adoption of ChatGPT for language learning. Similarly, a study among 266 Chinese university EFL students revealed that their emotions strongly predicted their willingness to use ChatGPT for EFL learning (Zhou et al., 2024).

4. Methodology

4.1. Research Design

The study employed a quantitative approach. The study intended to explore the multidimensional relationships between the dependent variable—behavioral intention—and independent variables—cognitive and affective attitudes. A survey-based research design was appropriate for addressing the study's objectives and research questions, which relate to investigating the correlations, predictive power, and mediating roles of cognitive and affective attitudes on behavioral intention to use ChatGPT for academic writing. According to Cohen et al. (2018), attitudes and behaviors can be investigated using quantitative approaches. Moreover, several other studies used surveys to investigate attitudes and behavioral intentions (Dai, 2015; Rachmi et al., 2023; Venkatesh et al., 2012).

4.2. Participants

The study included 159 first-year EFL students at one public and six private universities in Bangladesh. The study used purposive sampling that allowed the researchers to include participants who were geographically accessible and willing to participate (Etikan et al., 2016). According to the University Grants Commission of Bangladesh, there are 55 public and 115 private universities in

Bangladesh and the number of universities determines the ratio of public to private university students. Students who attended EFL writing courses during the data collection were included in the study. Originally, 161 participants responded, but two responses were eliminated after the participants did not provide consent to participate. A two-way ANOVA test was conducted to find the sample size's statistical power (Cohen, 1988; Field, 2018), which was revealed as $R^2 = .962$ ($F = .771$, $p < .001$), which indicates a large effect size and strong correlation among the variables. Thus, 159 participants for the present study are justified. A standard multiple regression analysis was conducted to determine the relationships among the variables and to account for the prediction of the independent variables to dependent variables and their mediation between the variables.

4.3. Data Collection Tool

The researchers used a 6-point Likert scale questionnaire (see Appendix). The Likert scale items were Strongly Agree = 6, Agree = 5, Slightly Agree = 4, Slightly Disagree = 3, Disagree = 2, and Strongly Disagree = 1. The questionnaire consisted of three sections: cognitive attitudes (13 items), affective attitudes (11 items), and behavioral attitudes (14 items). Table 1 shows the Cronbach values of the items of the questionnaire.

Table 1. Cronbach scores of questionnaire items

Questionnaire variables	Cronbach scores
Cognitive attitude	.881
Affective attitude	.876
Behavioral intention	.919

Table 1 indicates that the Cronbach scores for all variables range from .876 to .919, which are highly reliable (Taber, 2018). This confirms the high internal consistency of the questionnaire items (Hasan & Nomnian, 2021).

4.4. Data Collection Method

The research questionnaire was shared with the participants via Google Forms. The faculty members with whom students took the writing courses were requested to share the questionnaire link with their students during lessons. While some students responded during the lessons, some responded later.

4.5. Data Analysis

To answer RQ1, data was analyzed using the Pearson correlation coefficient, which is a widely accepted method for finding the relationship between dependent and independent variables (Field, 2018). The answers to RQ2 were generated through multiple regression analysis. SPSS 27 was used to analyze the data. Multiple regression calculates the unique relationships between individual predictors, such as cognitive attitude and affective attitude, and provides a clearer perspective on their effect on the dependent variable. Moreover, the analysis of the total variance and combined prediction provides a holistic perspective (Field, 2018). While the Pearson correlation coefficient provides straightforward information about the existence of the relationship between the variables (Field, 2018), multiple regression analysis provides a more precise estimation of each

predictor's contribution to the dependent variable (Tabachnick & Fidell, 2019). Finally, multiple regression analysis with bootstrapping was conducted to answer RQ3. After performing the bootstrap, indirect effect, total effect, direct effect and mediation proportion formulas were used to estimate the mediation effect of cognitive and affective attitudes. Bootstrapping is a robust and reliable approach to estimating the indirect relationship (Hayes, 2017; Preacher & Hayes, 2008).

4.6. Ethical Considerations

While conducting this study, the researchers took several measures to ensure the ethical transparency of the study. Firstly, the participants were thoroughly informed about the contexts, objectives, and anticipated outcomes of the study; the researchers ensured that they understood the aims and scope of the research. In addition, they were granted the right to withdraw from the study at any moment without negative consequences, which guaranteed their voluntary participation. Their participation in the study was anonymous, which safeguarded their privacy and confidentiality. Furthermore, their informed consent before involvement in the study confirmed their awareness of their rights and the way the data would be used. Moreover, the responses of participants who responded negatively in the consent form were removed from the dataset before the data analysis. All these measures attest to the ethical standard of the study, which prioritized participants' freedom, privacy, and well-being throughout the research procedures.

5. Findings

5.1. Bangladeshi EFL Learners' Cognitive and Affective Attitudes and Their Behavioral Intentions to Use ChatGPT for Academic Writing

The Pearson correlation coefficient examined the linear relationships between cognitive and affective attitudes and behavioral intention. The data in Table 2 provide an overview of the relationships.

Table 2. Correlation between cognitive attitudes and behavioral intention to use ChatGPT for academic writing

		Cognitive attitude	Behavioral intention
Cognitive attitude	Pearson correlation	1	.786**
	Sig. (2-tailed)		.000
	N	159	159
	Sig. (2-tailed)	.000	
	N	159	159

Note. ** Correlation is significant at the .01 level (2-tailed)

Table 2 indicates a strong, positive, and statistically significant correlation ($r = .786$, $p = < .01$, $N = 159$) between EFL learners' cognitive attitudes and behavioral intention to use ChatGPT for academic writing. This means the higher the level of cognitive attitude, the higher the level of their behavioral intention.

Table 3. Correlation between affective attitudes and behavioral intention to use ChatGPT for academic writing

	Affective attitude	Behavioral intention
Affective attitude	Pearson correlation	.847**
	Sig. (2-tailed)	.000
	N	159
	Sig. (2-tailed)	.000
	N	159

Note. ** Correlation is significant at the .01 level (2-tailed)

Table 3 shows a strong correlation ($r = .847$) between affective attitude and behavioral intention. The finding is statistically significant ($p = .01$). This demonstrates that, as the learners' affective attitude increases, their behavioral intention to use ChatGPT for academic writing increases too.

5.2. Extent to Which Bangladeshi EFL Learners' Cognitive and Affective Attitudes Predict Their Behavioral Intentions to Use ChatGPT for Academic Writing

A multiple regression analysis was conducted to calculate the predictive relationship between cognitive and affective attitudes as individual and combined entities. Figures 1 and 2 and Tables 4 and 5 illustrate the regression, including coefficient estimates and statistical significance.

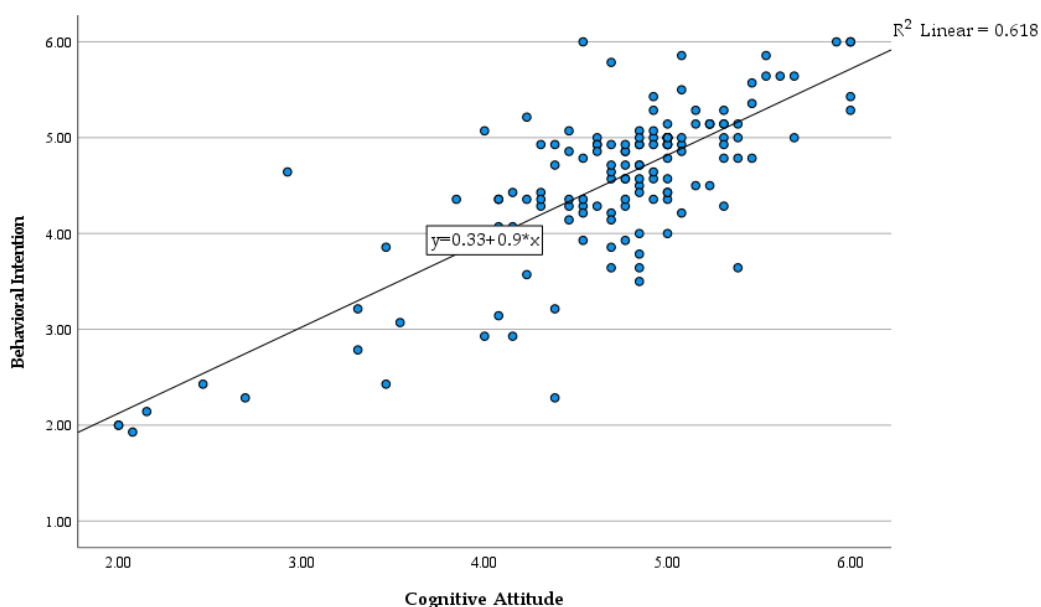


Figure 1. Predictive relation between cognitive attitude and behavioral intentions

According to Figure 1, the R^2 linear score is 0.618 ($p < .001$). This indicates a moderate positive prediction between Bangladeshi university EFL learners' cognitive attitude and behavioral intention to use ChatGPT for academic writing. Learners' beliefs about the usefulness of ChatGPT determine whether they intend to use ChatGPT for academic writing. This indicates that Bangladeshi EFL

learners' 61.8% behavioral intention to use ChatGPT is predicted by their cognitive attitude or the perceived ease of use of ChatGPT for academic writing. The other 38.2% of intention may be predicted by factors such as affective attitude and factors not part of the present study. The regression analysis, furthermore, specifies that, with each unit increase in the cognitive attitude, the predicted behavioral intention increases by 0.9 units. Also, the intercept 0.33 indicates that, when cognitive attitude is zero, the predicted value of behavioral intention is 0.33.

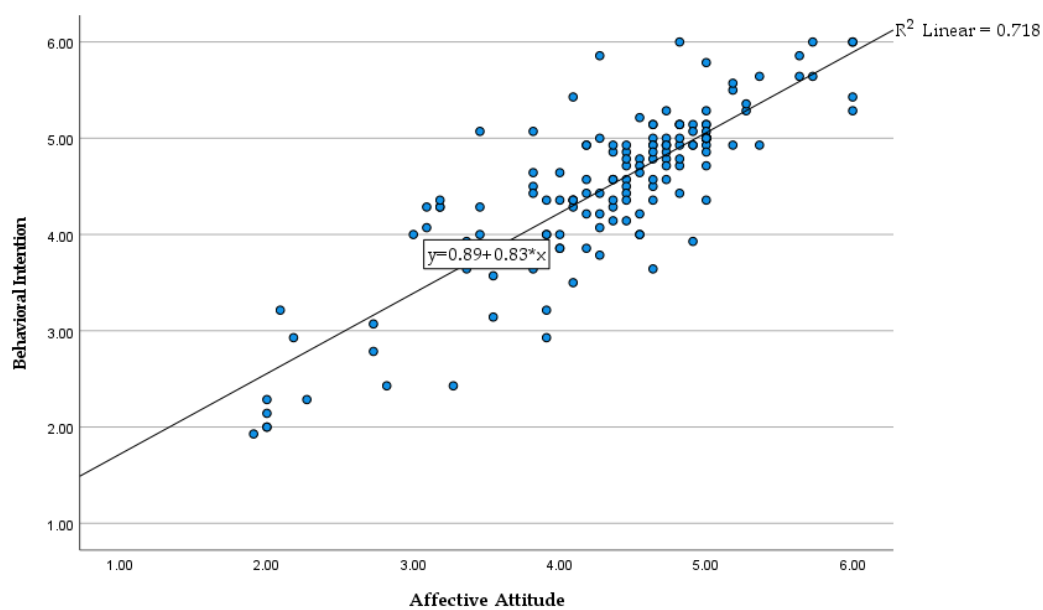


Figure 2. Predictive relation between affective attitudes and behavioral intentions

As Figure 2 shows, the R^2 linear score is 0.718 ($p < .001$). This indicates a stronger positive prediction between Bangladeshi tertiary EFL learners' affective attitude and behavioral intention to use ChatGPT for academic writing. This means that Bangladeshi EFL learners' 71.8% willingness to use ChatGPT for academic writing is predicted by their affective attitude. The arousal of learners' feelings and emotions, such as enjoyment, satisfaction, boredom, ease, discomfort, anxiety, and doubt, influence the extent of their ChatGPT use in academic writing. In other words, their positive emotions reinforce the behavioral intention to use ChatGPT. However, the other 28.2% of willingness is predicted by other factors, including cognitive attitude. In addition, the analysis presents that, a one unit increase in affective attitude is accompanied by a 0.83 unit increase in behavioral intention. Moreover, the intercept 0.89 suggests that, when affective attitude is zero, the predicted value of behavioral intention is 0.89.

Table 4. ANOVA of cognitive attitude, affective attitude and behavioral intention to use ChatGPT for academic writing

	Model	Sum of squares	df	Mean square	F	Sig.
1	Regression	81.770	2	40.885	236.864	.000 ^b
	Residual	26.927	156	.173		
	Total	108.697	158			

Note. ^a Dependent variable: Behavioral; ^b Predictors: (Constant), affective attitude, cognitive attitude

Table 4 shows that the regression model is statistically significant, with an F value of 236.864 and a *p*-value of .000. This means both cognitive and affective attitudes strongly predict behavioral intention to use ChatGPT for EFL academic writing. The sum of squares is 81.770, which stipulates the variance explained by the model. However, the residual sum of squares (26.927) indicates that unexplained variance also predicts the behavioral intention, separate from cognitive and affective attitudes toward the use of ChatGPT.

Table 5. Coefficients of cognitive and affective attitudes and behavioral intention to use ChatGPT for academic writing

	Model	Unstandardized coefficients		Standardized coefficient	T	Sig.
		B	Std. error	Beta		
1	Constant	.300	.215		1.395	.165
	Cognitive attitude	.349	.075	.306	4.652	.000
	Affective attitude	.595	.065	.604	9.183	.000

Note. ^a Dependent variable: Behavioral intention

Table 5 shows that both cognitive attitude ($\beta = 0.306$, $p < .001$) and affective attitude ($\beta = 0.604$, $p < .001$) significantly predict EFL learners' behavioral intention to use ChatGPT for academic writing. This highlights the important contribution of cognitive and affective attitudes to the behavioral intention to use ChatGPT for academic writing. Furthermore, the model explains 75.2% of the variance in behavioral intention to use ChatGPT for EFL academic writing, with $R^2 = 0.752$. This indicates that a 24.8% variance is predicted by other factors that are not part of this model. Moreover, the results show that affective attitude ($\beta = 0.604$) is a stronger predictor than cognitive attitude ($\beta = 0.306$).

5.3. Extent to Which Bangladeshi EFL Learners' Affective Attitude Mediates the Relationship Between Their Cognitive Attitude and Behavioral Intention

To assess the mediating role of affective attitude in the relationship between cognitive attitude and behavioral intention, a multiple regression analysis containing three paths was conducted. Table 5 presents the results of the analysis with the estimated indirect effect of EFL learners' cognitive attitude on behavioral intention to use ChatGPT for academic writing.

Table 6. Mediating effect of affective attitude on the relationship between cognitive attitude and behavioral intention to use ChatGPT for academic writing

Paths	B	Bias	Std. error	Bootstrap ^a		
				Sig (2-tailed)	95% Confidence interval	
					Lower	Upper
1 Cognitive attitude → Affective attitude	.923	.000	.055	.000	.816	1.029
2 Affective attitude → Behavioral intention	.834	-.003	.046	.000	.733	.917
3 Cognitive attitude → Behavioral intention	.898	-.001	.056	.000	.776	.996

Note. ^a Unless otherwise noted, bootstrap results are based on 5 000 bootstrap samples

The indirect effect of cognitive attitude on behavioral intention is represented by Path 1, followed by Path 2. The indirect effect was found to be $.923 * .834 = .770$. The total effect (1.668) is the sum of Path 3 and the indirect effect. So, the proportion of mediation is $.462 = .770/1.668$. Therefore, 46.2% of the total effect of cognitive attitude, which is moderate, is mediated by affective attitude.

5.4. Extent to Which Bangladeshi EFL Learners' Cognitive Attitude Mediates the Relationship Between Their Affective Attitude and Behavioral Intention to Use ChatGPT for Academic Writing

To analyze the mediating effect of cognitive attitude on the relationship between affective attitude and behavioral intention to use ChatGPT for academic writing, multiple regression with bootstrapping consisting of three paths was conducted. The findings of the analysis are shown in Table 7.

Table 7. Mediating effect of cognitive attitude on the relationship between affective attitude and behavioral intention to use ChatGPT for academic writing

Paths	B	Bias	Std. error	Bootstrap ^a		
				Sig (2-tailed)	95% Confidence interval	
					Lower	Upper
1 Affective attitude → Cognitive attitude	.686	-.003	.063	.000	.556	.803
2 Cognitive attitude → Behavioral intention	.898	-.001	.056	.000	.779	.996
3 Affective attitude → Behavioral intention	.834	-.002	.046	.000	.739	.914

Note. ^a Unless otherwise noted, bootstrap results are based on 5 000 bootstrap samples

The indirect effect of affective attitude on behavioral intention is created through Path 1, followed by Path 2. The effect is $.686 * .898 = .616$ and the direct effect of affective attitude on behavioral intention is $.834$. Therefore, the total effect is $1.450 = .616 + .834$. The proportion of mediation of cognitive attitude between affective attitude and behavioral intention is $.425 (.616 / 1.450)$. This means cognitive attitude moderately (42.5%) mediates the relationship between affective attitude and behavioral intention to use ChatGPT for EFL academic writing.

6. Discussion

The present study investigated the correlations between EFL learners' cognitive and affective attitudes and their predictive power for their behavioral intention to use ChatGPT for academic writing. Moreover, the study explored the mediating roles of cognitive and affective attitudes on the relationships of cognitive and affective attitudes with behavioral intentions.

The study results provide valuable insights into the relationships among Bangladeshi university EFL learners' cognitive and affective attitudes and behavioral intentions to use ChatGPT for academic writing. The findings uncovered that cognitive and affective attitudes significantly influence and predict EFL learners' intention to use ChatGPT for academic writing. Also, cognitive and affective attitudes moderately mediate the relationships of cognitive and affective attitudes with EFL learners' intention to use ChatGPT for academic writing.

The moderate correlation between the cognitive attitude and behavioral intentions to use ChatGPT for academic writing implies the learners' perception of ChatGPT as an effective tool for developing their academic writing skills. The finding is congruent with the findings of Song and Song (2023), which indicate that learners are inclined to use ChatGPT because it works; it is an effective tool to enhance the language quality and the content of writing. In addition, the theory of attitudes indicates that a positive cognitive attitude propels behavioral intentions (Ajzen & Cote, 2008). This implies that cognitive attitude plays a key role in determining the intention to use ChatGPT for academic writing in the EFL context.

The strong correlation between the affective attitude and the participants' behavioral intention reflects the role of emotion in shaping the behavioral motive of the learners. This result is corroborated by Ajlouni et al.'s (2023) finding that positive affective attitude correlates with greater behavioral intentions. Likewise, Al-Kfairy (2024) found that learners' positive emotions increase their willingness to use ChatGPT. Moreover, the attitude theory suggests that positive emotional feelings are crucial predictors of behavioral intentions (Ajzen, 1989, 2005). Therefore, affective attitude as an individual entity significantly contributes to shaping EFL learners' intention to use ChatGPT for academic writing.

Cognitive and affective attitudes, both as individual and combined entities, strongly predict EFL learners' behavioral intention to use ChatGPT for academic writing. Rahman et al. (2023) found that learners' cognitive and affective attitudes

can significantly predict the learners' behavioral intention to use ChatGPT for educational purposes. Additionally, results show that Bangladeshi EFL learners' affective attitude is the strongest predictor of their behavioral intention to use ChatGPT for academic writing, and this indicates the significance of emotions in the arena of technology acceptance. In this regard, Acosta-Enriquez, Farroñon et al. (2024) found that affective attitude has stronger predictive power concerning the behavioral intention to use ChatGPT for learning.

The mediation analysis reveals that affective attitude partially influences the relationship between cognitive attitude and behavioral intention to use ChatGPT for academic writing. Though cognitive attitude has a direct influence on behavioral intentions, affective attitude strengthens the relationship. Other studies report that emotions play a mediating role in establishing the connection between an individual's behavioral intentions and cognitive attitude (Bagozzi et al., 1999; Venkatesh & Bala, 2008; Yang & Bahli, 2015). Similarly, the findings comply with the technology acceptance model 3 and Ajzen's theory of attitude (2001), which suggests that the relationship between cognitive attitude and behavioral intentions is mediated by affective attitudes. In addition, cognitive attitude moderately influences the relationship between affective attitude and behavioral intention to use ChatGPT for academic writing. The finding is compatible with other findings (Porter & Donthu, 2006; Yang & Yoo, 2004). Moreover, the findings are corroborated by Ajzen's theory of attitude (2001), according to which the combined effect of cognitive and affective attitudes have stronger predictive and influential impacts on behavioral intention, instead of being individual elements. Likewise, the hedonic motivation theory indicates that learners' use of AI is a combined influence of their cognitive and affective attitudes. Therefore, the mediating roles of the EFL cognitive and affective attitudes indicate students' strong intention to use ChatGPT for academic writing. However, as over-reliance on ChatGPT can be detrimental, setting ethical boundaries is crucial for maintaining a balanced use of AI (AlGhamdi, 2024). Hence, we can conclude that cognitive and affective attitudes together are better determinants of intention to use ChatGPT for EFL academic writing.

7. Pedagogical Implications

The study explains the imperative nature of cognitive and affective attitudes for conditioning students' behavioral intentions to use ChatGPT, which underscores the mediating effect of affective attitude and cognitive attitudes on corroborating effective acceptance. Educators should promote ChatGPT, not only as a cognitive support, but also as a tool to ensure the emotional well-being of the learners. Educators can utilize ChatGPT to promote students' confidence and satisfaction by reducing negative emotions, such as anxiety, self-doubt, and boredom. In this regard, Fan and Zhang (2024) indicate that language learners' emotional well-being is often overlooked. Therefore, attention must be paid to upholding an environment that promotes learners' enjoyment of language learning through the use of AI.

Education policymakers and institutions should provide a conducive environment for nurturing positive attitudes to using ChatGPT for academic writing. They should make the necessary technological tools, guidance, and support available to ensure students experience the cognitive and affective benefits of using ChatGPT in academic writing. Above all, education architectures, including infrastructure, curriculum, and teaching-learning mindsets, should be upgraded to harvest the benefits of ChatGPT for academic writing. At the same time, caution must be exercised to avoid the side effects of over-reliance and ethical issues.

An understanding of measures to ensure that ethical standards are upheld when integrating AI into EFL learning can result in effective learning outcomes, without curbing integrity, creativity, and critical thinking. Therefore, further research on the measures to maintain ethical standards while using ChatGPT for academic writing is required. Furthermore, future investigations could focus on the socio-cultural and regional elements of shaping EFL learners' attitudes toward using ChatGPT for academic writing.

8. Limitations of the Study

Despite the study's contribution to knowledge, theoretical, and pedagogical gaps, it has limitations. The findings may not represent the attitudes of all similar populations because students from all institutions were not included in the study. As a result, the results of the present study cannot be generalized.

9. Conclusion

The Open AI tool ChatGPT has proved to benefit EFL academic writing in terms of language, ideation, and organization. However, the fruitful use of technology depends on the users' attitudes and intentions to use it. Since Bangladeshi EFL learners are among the stakeholders of this AI tool, understanding their attitudes to using ChatGPT can pave the way for its effective and ethical integration into EFL academic writing practices. The findings of the study suggest that cognitive and affective attitudes have positive correlations with EFL learners' behavioral intentions to use ChatGPT for academic writing. Moreover, the mediating role of affective attitude and cognitive attitude refers to the interwoven nature of the learners' thoughts and emotions and how it affects their motivation to use integrated ChatGPT in academic writing. Therefore, educators and policymakers should promote ChatGPT as a cognitive and emotional support tool for fostering EFL learners' motivation to use it in academic writing. Nurturing a positive attitude to ChatGPT can improve learners' academic writing skills and overall academic performance. Moreover, by adopting ChatGPT as a teaching and learning tool that meets learners' cognitive and affective needs, teachers can ensure a more personalized and supportive environment. The holistic approach can empower learners with the ability to utilize technology as a tool for adaptability and self-directed learning. At the same time, it is crucial to enhance awareness of ethical standards and to motivate students to use ChatGPT responsibly, by avoiding dishonesty in the academic writing context. Hence, educators and policymakers should guide learners to recognize ethical boundaries and uphold the culture of integrity in the era of AI.

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Appendix Questionnaire

Project Title: *Decoding EFL Learners' Intention to Use ChatGPT for Academic Writing: Cognitive and Emotional Drivers*

The Open AI ChatGPT has been revolutionizing academic writing. It has proved to be beneficial for EFL academic writing in terms of language, ideation, and organization. However, the effective use of this technology depends on the users' attitudes and intentions to use it. Since Bangladeshi EFL learners are the stakeholders of this AI, it is imperative to know their attitudes and intentions to use ChatGPT for academic writing. Hence, the study aims to investigate the complexities of Bangladeshi EFL learners' cognitive and affective attitudes and their connections with the learners' behavioral intention to use ChatGPT for academic writing.

The findings of this study will guide educators and policymakers to effectively integrate this AI into the EFL academic writing curriculum. Also, this will help them navigate the AI toward more self-directed learning. Moreover, the findings can lead to an understanding of the ethical issues in integrating ChatGPT in EFL academic writing.

Considering the anticipated impacts of the study, your participation is going to be a valuable contribution to the field of EFL teaching and learning. Hence, you are requested to respond to the following questionnaire items using the scores given below:

Strongly Agree = 6
Agree = 5
Slightly Agree = 4

Slightly Disagree = 3
Disagree = 2
Strongly Disagree = 1

Variable Items	Scores					
	1	2	3	4	5	6
Cognitive Attitude						
1. I believe ChatGPT improves my writing skills						
2. ChatGPT assists me generate better ideas for writing English assignments and other activities.						
3. ChatGPT assists me develop an organized piece of writing.						
4. ChatGPT improves my vocabulary.						
5. ChatGPT helps me identify and correct my grammatical errors.						
6. ChatGPT supports me in understanding complex writing topics better.						

7. ChatGPT helps me develop my creative writing.						
8. ChatGPT improves my logical writing abilities.						
9. ChatGPT always suggests me relevant ideas for English writing topics.						
10. I can finish my writing task faster using ChatGPT.						
11. I prefer to use ChatGPT instead of Google search, dictionaries, and books while completing English writing tasks.						
12. Dependence on ChatGPT will hamper my independent writing skills.						
13. I should not always use ChatGPT.						
Affective Attitudes	1	2	3	4	5	6
1. I enjoy using ChatGPT when completing English writing tasks						
2. ChatGPT reduces my anxiety during English writing.						
3. I feel more confident about my English writing performance when I use ChatGPT.						
4. ChatGPT motivates me to write in English.						
5. ChatGPT increases my concentration while performing English writing tasks.						
6. I feel relaxed when I use ChatGPT to write English tasks.						
7. I feel satisfied with my English writing with the help of ChatGPT.						
8. ChatGPT ignites my curiosity for experimenting with my English writing.						
9. I think using ChatGPT is not morally right.						
10. ChatGPT increases my doubt about my writing abilities.						
11. I feel uncomfortable to use ChatGPT in front of English teachers.						

Behavioral Intention	1	2	3	4	5	6
1. I frequently use ChatGPT in my English assignment writings						
2. I frequently use ChatGPT when I do writing tasks in English						
3. I try to avoid ChatGPT in EFL writing						
4. I use ChatGPT for different types of English writing like essays, emails, SMS, and online chatting.						
5. I use ChatGPT when I feel anxious about English writing tasks.						
6. I use ChatGPT to generate idea about my English writing topics.						
7. I use ChatGPT to improve my English vocabulary.						
8. I use ChatGPT to edit my English writing.						
9. I use ChatGPT to organize my writing ideas.						
10. I include the suggestions of ChatGPT in my English writing						
11. I carefully think about ChatGPT's suggestions before utilizing them in my English writing.						
12. I use ChatGPT to improve the quality of English writing.						
13. I express the ideas taken from ChatGPT with my own words and sentences.						
14. I will recommend my classmates to use ChatGPT for English writing.						