

Technology In Educational Context: Chatgpt Usage, Academic Procrastination, Conscientiousness, And Academic Self-Efficacy



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Abstract: *This study examined the relationship between conscientiousness, academic procrastination, and academic self-efficacy in relation to ChatGPT usage among university students. Using a mixed correlation and causal-comparative design, data were collected from 384 participants through validated self-report measures. Multiple regression analysis revealed that both academic procrastination and conscientiousness significantly predicted ChatGPT usage, with procrastination positively and conscientiousness negatively associated with reliance on the tool. The results from T-test further revealed that students with lower academic self-efficacy were found to be more frequent users of ChatGPT, as revealed by a significant mean difference between high and low users. These findings suggest that while conscientious students tend to use ChatGPT less, students with higher levels of procrastination are more likely to depend on it, potentially as a means of delaying academic tasks. The study contributes to emerging literature on AI integration in education, highlighting the importance of personality traits and self-regulatory behaviors in shaping technology use.*

Keywords: Conscientiousness, Academic procrastination, Academic self-efficacy, ChatGPT usage, AI.

Introduction

During the past ten years educational practices have witnessed major shifts because of innovations in technology, particularly artificial intelligence (AI). Artificial Intelligence aims to enable a machine that mimics human cognitive processes through diverse technologies which improves learning experiences (Lo, 2023). The rising use of artificial intelligence (AI) in teaching and learning has created both enthusiasm and alarm, due to tools like ChatGPT becoming more common in academic contexts. These AI tools have given pupil newer methods of accessing information, generating ideas, and completing projects. ChatGPT (OpenAI, 2022) is among one of the AI tools which is used for multiple tasks like generating manuscript or code development, research sustenance, and

finalizing homework assignments etc. (Bahroun, Anane, Ahmed, & Zacca 2023). While these functions can support learning, they also raise concerns about academic integrity, including AI-assisted cheating and fabricated citations (Cooper, 2023; Sullivan, Kelly, & McLaughlan, 2023; Crawford, Cowling, & Allen, 2023), prompting some institutions to restrict its access (Dibble, 2023). Scholars have noted that ChatGPT can complete assignments and tests on students' behalf (Dwivedi et al., 2023), highlighting the need to examine psychological factors such as conscientiousness, academic procrastination, and academic self-efficacy that shape whether the tool is used for genuine learning or as a shortcut (Abbas, Jam, & Khan, 2024).

Conscientiousness, a core personality quality distinguished by diligence, organization, and reliability, has long been associated with scholastic success and time management. Highly conscientious students tend to manage their time effectively and approach their studies with diligence, potentially using ChatGPT as a supplementary learning tool rather than a shortcut (Swaraswati, Winarno & Goeritno, 2017). Reduced levels of conscientiousness are linked to increased procrastinating behaviors (Conrad & Patry, 2012).

Likewise, ChatGPT is also associated with academic self-efficacy, which involves the conviction that one can accomplish academic assignments successfully. The relationship between the usage of AI tools and self-efficacy is complex; although students with low levels of self-efficacy might depend on ChatGPT to make up for perceived shortcomings, those with strong self-efficacy may use it to enhance their learning (Yildiz, 2023).

Research shows that ChatGPT can influence students' academic self-efficacy by enhancing engagement, learner autonomy, and confidence through regular interaction (Yildiz, 2023) and by reducing stress, which can indirectly boost self-efficacy (Khanthavit & Khanthavit, 2023). According to *Self-Efficacy Theory* (Jackson et al., 2019), students with low academic confidence are more likely to struggle with assignments and turn to accessible tools like ChatGPT for assistance. Academic self-efficacy defined as one's belief in their ability to achieve academic success has been found to positively influence ChatGPT use (Bin-Nashwan, Sadallah, & Bouterra, 2023). Empirical findings from Moroccan postgraduate students revealed that ChatGPT use can improve writing self-efficacy by providing continuous feedback and fostering a sense of accomplishment (Bouzar et al., 2024). However, students with low self-efficacy are more likely to rely on AI under academic pressure, even though self-efficacy does not directly predict problematic AI use (Zhang, Zhao, Zhou, & Kim, 2024).

Contrary to academic self-efficacy, academic procrastination is defined as the needless postponement of academic tasks, can negatively

affect both performance and wellbeing. According to research, students with past online learning experience and positive accomplishment emotions are less prone to delay their academic tasks. The correlation between procrastination and the adoption of AI tools such as ChatGPT is complex; although some students may use AI to properly manage their time, others may use it to avoid engaging with difficult subject (Chang et al., 2023). Studies have identified a positive link between ChatGPT usage and academic procrastination. Increased reliance on ChatGPT is associated with higher procrastination levels, potentially due to reduced autonomy and overdependence on instant information (Uppal & Hajian, 2024). While ChatGPT can help optimize study time, it may also encourage unproductive habits and task delays. Research further shows a significant negative relationship between ChatGPT use and task commencement, with frequent users more likely to delay starting work, whereas non-users tend to begin tasks promptly, possibly as a compensatory time-management strategy (Bouzar, Idrissi, & Ghouddou, 2024). This reliance on shortcuts may reinforce procrastination, as students perceive assignments as tasks that can be completed quickly and effortlessly with AI support (Abbas et al., 2024).

Rationale

AI technologies like ChatGPT are increasingly integrated into education, attracting attention from both media and academia. While ChatGPT can enhance academic confidence and self-control (Tanveer, Iqbal, & Hussain, 2024), concerns exist over its overuse contributing to procrastination, memory decline, and reduced academic performance (Abbas et al., 2024; Korn & Kelly, 2023). Excessive reliance may foster dependency and limit self-reliance in problem-solving (Mahande et al., 2025), highlighting the need to explore whether students use ChatGPT as a supportive tool or a compensatory strategy for motivation and time management deficits.

Ethical issues around undisclosed ChatGPT use and potential wrongful accusations of cheating remain significant (Dutsinma et al., 2023). However, the role of academic self-efficacy in

shaping ChatGPT use is underexplored (Bouteraa et al., 2024). This study focuses on conscientiousness, academic procrastination, and academic self-efficacy key factors linked to academic behavior and technology use. Conscientiousness may reduce avoidance and shortcut reliance (Cheng, Chang, Garza, & Gutierrez, 2023), while procrastination, often driven by fear or low self-efficacy, may increase dependence on tools like ChatGPT (Bandura, 1997).

Given the ethical challenges, examining personality traits like conscientiousness may provide insight into responsible ChatGPT use (Dutsinma et al., 2023). This research addresses a gap in understanding ChatGPT adoption among Pakistani students and compares high and low users to inform educators on optimizing AI use in academic settings and beyond.

Objectives

1. To find the impact of Conscientiousness, and Academic procrastination and ChatGPT usage.
2. To investigate the difference in the Academic self-efficacy of High and low ChatGPT users

Hypotheses

1. Academic Procrastination and Conscientiousness will have an impact on ChatGPT usage.
2. There will be a significant difference in the Academic Self-efficacy between High and Low ChatGPT users

METHODOLOGY

Sample

The total student population in the University of Peshawar is 16000. Using Cochran's formula (Cochran, 1977) the present study included a purposive sample of 376 participants of BS, MS/MPhil, and PhD students studying in various departments of University of Peshawar. The age range of the sample was between 17 to 35 years. To make the sample representative from each faculty two departments were randomly selected through fishbowl technique.

32 participants including 16 males and 16 females were then approached within those departments through convenience sampling. For inclusion in the study the sample must have an access to an electronic device (such as a smartphone, laptop, or desktop) on which they had used the AI tool ChatGPT.

Instruments

Demographic sheet

The demographic sheet was used to gather information regarding age, gender, education, program of study, faculty, department, and the like. It also noted the duration from which ChatGPT was in their use.

Academic Procrastination Scale

The Academic Procrastination Scale (McCloskey, 2011), is designed to assess academic procrastination. It is composed of 25 items in Likert format with responses from "strongly disagree" as 1 to "strongly agree" as 5. The scale has good internal consistency ($\alpha = 0.94$) suggesting high reliable. Convergent validity of the scale is established by comparing it with other validated procrastination scales (Tuckman's Procrastination Scale, 1991) which shows strong positive association.

Academic Self Efficacy Scale

The Academic Self-Efficacy Scale (Ghafoor & Ashraf, 2006), is composed of 40 items with five responses options from "Exactly True," to "Exactly False." Expert ensures the content validity of the scale, by the inclusion of items from every facet of the scale's construct. Both split-half ($r=0.90$) and the test-retest ($r=0.85$) values ensures the high reliability of the scale (Ghafoor et al., 2006). Concurrent validity is estimated by correlating ($r = 0.68$) it with General Self-Efficacy Scale (Jerusalem, & Schwarzer, 1995) which also yielded positive correlation between the two measures.

Unfolding Five Factor Model (UFFM-I) Conscientiousness Scale

The UFFM-I Conscientiousness Scale (Carter & LoPilato, 2014), is a 20-item scale including six conscientiousness-related characteristics. Being a Likert scale, the response options vary between

strongly disagree to strongly agree. The UFFM-I Conscientiousness questionnaire included five items from the original 20-item UFFM-I scale, which demonstrated internal validity with a Cronbach's alpha of 0.63.

ChatGPT Scale

ChatGPT usage scale (Abbas et al. 2024) is composed of eight items that measure ChatGPT usage. It is a six-point Likert scale ranging from responses range from never to always (1 for ever and 6 for always). Greater usage of ChatGPT is demonstrated by high scores on the scale. The scale has high reliability ($\alpha = 0.91$), convergent validity is also supported by the average variance extracted (AVE) score (0.61), which exceeds the 0.5 (Abbas et al., 2024).

Procedure

Results

Table 1

Psychometric Properties of ChatGPT, Unfolding Five factor Model Inventory Conscientiousness, Academic Self-Efficacy and Academic procrastination Scales

Instruments	<i>M</i>	<i>SD</i>	Range	Cronbach's α
ChatGPT Scale	27.81	8.42	8-47	.91
UFFMI	68.32	10.60	49-98	.73
Conscientiousness Scale				
ASE scale	131.76	25.64	94-189	.91
AP Scale	79.41	21.13	30-122	.96

Note. UFFMI = Unfolding Five factor Model Inventory; ASE= Academic Self-Efficacy; AP= Academic Procrastination.

Table 1 shows that all the scales have high internal consistency ranging from .73 to .96

Table 2

Multiple Regression Predicting ChatGPT Usage from Conscientiousness and Academic Procrastination

Variables	<i>B</i>	β	<i>SE</i>
Constant	33.970		3.363
Conscientiousness	-.208	-.262	.038
Academic Procrastination	.101	.255	.019
R^2	.166		
ΔR^2	.162		

Table 2 shows that Academic Procrastination positively predicted ChatGPT usage ($B = 0.101$, $SE = 0.019$, $\beta = .255$, $p < .001$), suggesting that

To carry out the research initially two departments from each faculty of Peshawar University were selected through fishbowl technique. A convenient sample of 384 students was then selected from departments offering these programs (BS, MPhil/MS, and PhD programs). 32 participants were selected from each discipline including equal number of males and females. Informed consent was gathered to ensure the voluntary participation in the study. The scales of the study were then applied on the sample. Participant were informed that their data will be kept confidential and anonymous, only accessible to the researcher and the supervisor. Debriefing was done after the data was gathered. High and low ChatGPT users were compared on the basis of median score on ChatGPT usage scale.

higher procrastination scores were associated with greater ChatGPT use. Conversely, Conscientiousness negatively predicted

ChatGPT usage ($B = -0.208$, $SE = 0.038$, $\beta = -.262$, $p < .001$), indicating that more conscientious students tended to use ChatGPT less frequently. The overall model was

statistically significant $p < .001$, with an $R^2 = .166$, indicating that 16.6% of the variance in ChatGPT usage was explained by the predictors.

Table 3

Mean, Standard Deviation and t values of Low and High ChatGPT users on Academic Self-Efficacy scale

High Users			Low Users		<i>t</i> (382)	<i>p</i>	Cohen's <i>d</i>
Measures	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
ASE	128.14	25.38	135.60	25.43	-2.87	.004	0.3

Note. ASE= Academic Self-efficacy.

Table 3 manifest significant differences between low and high ChatGPT users $t(382) = -2.87$, $p =$

.004) on academic self-efficacy scale with a medium effect size (Cohen's $d = .3$).

DISCUSSION

In recent years, the integration of generative artificial intelligence (AI) has significantly influenced multiple aspects of higher education. Among these tools, ChatGPT (OpenAI, 2022) has gained substantial recognition in academic settings, being employed for a variety of purposes including code generation, text creation, research assistance, and the completion of assignments, essays, and academic projects (Bahroun et al., 2023; Strzelecki, 2023). To address these developments, the present study examined the influence of selected psychological factors on university students' use of AI, offering an interpretation and contextual analysis of the findings presented in the results section. The study aimed to explore how psychological factors specifically conscientiousness, academic procrastination, and academic self-efficacy influence ChatGPT usage among university students.

The first hypothesis, which proposed that academic procrastination and conscientiousness influence ChatGPT usage, was supported by the data. Results indicated a significant positive effect of academic procrastination ($\beta = .255$, $p < .001$) and a significant negative effect of conscientiousness ($\beta = -.262$, $p < .001$) on ChatGPT use. These findings suggest that procrastinators may turn to ChatGPT either to address academic challenges or to avoid cognitively demanding tasks, consistent with

evidence that procrastinators favor assistive technologies to meet deadlines (Steel & König, 2006). *Temporal Motivation Theory* explains this tendency by highlighting procrastinators' preference for immediate rewards such as ChatGPT's instant assistance over delayed outcomes like academic achievement (Steel & König, 2006). Similarly, *Self-Regulation Theory* underscores that low self-efficacy and poor self-control can foster reliance on AI tools (Bandura, 1991; Chen & Lyu, 2024).

From a *cognitive perspective*, procrastination is linked to irrational beliefs, low self-esteem, and decision-making difficulties (Ferrari et al., 1995; Siaputra, 2010). ChatGPT may serve as a compensatory resource, offering perceived competence for students with low academic confidence (Judge & Bono, 2001; Lindsley et al., 1995). Empirical studies align with these results; for instance, higher internet addiction has been associated with greater academic procrastination (Hayat et al., 2020).

Conversely, conscientiousness was negatively related to ChatGPT usage, reflecting the trait's core aspects such as self-discipline, orderliness, dutifulness, deliberation, and competence (Costa & McCrae, 1992; Roberts et al., 2014). Highly conscientious students are more likely to plan, persist, and adhere to academic integrity standards, reducing reliance on AI (Greitemeyer & Kastenmüller, 2023; Deng et al., 2025).

Previous research further indicates that conscientiousness is protective against academic dishonesty, even when AI tools make cheating easier (Crawford et al., 2023). Recent studies confirm that students with high conscientiousness scores are less inclined to use generative AI for academic purposes and prefer self-directed learning (Azeem & Abbas, 2025; Ruiz et al., 2024).

The second hypothesis, proposing a significant difference in academic self-efficacy between high and low ChatGPT users, was supported. High ChatGPT users scored significantly lower in academic self-efficacy compared to low users ($t(382) = -2.87, p = .004, \text{Cohen's } d = 0.30$). This aligns with Bandura's theory, which posits that self-efficacy influences persistence, emotional responses, and the ability to handle challenges (Turgut, 2013). Students with high academic self-efficacy tend to approach academic challenges confidently and independently, perceiving AI tools like ChatGPT as unnecessary or even detrimental to skill development. Conversely, students with low self-efficacy are more likely to doubt their capabilities and seek external aids, potentially creating a negative feedback loop that reduces opportunities for mastery experiences the primary source of self-efficacy (Pajares, 1996; Schunk & Pajares, 2002).

Empirical evidence supports these findings, with high self-efficacy students relying on their abilities, while low self-efficacy students often overuse AI tools (Honicke & Broadbent, 2016). Self-efficacy also predicts intrinsic motivation, fostering self-reliance and reducing dependence on rapid solutions like ChatGPT (Celcima et al., 2024). Overreliance on AI can undermine academic self-efficacy (Odaci, 2013), although some studies found no direct correlation when academic stress was considered as a mediator (Zhang et al., 2024).

Low self-efficacy students, prone to frustration, may prefer quick answers from ChatGPT for short-term gains, risking overuse in the long term (Jackson et al., 2019; Rahman & Watanobe, 2023). Other research confirms that higher self-efficacy and intrinsic motivation predict lower AI usage, while avoidance motives

predict greater reliance (Daha & Altelwany, 2025). Excessive use, though beneficial for fluency, may weaken confidence in independent skills (Bouzar et al., 2024). Emotional reactions, such as AI anxiety, may also influence this relationship. Furthermore, habitual ChatGPT use has been linked to procrastination and lower academic performance (Yilmaz & Yilmaz, 2023; Abbas et al., 2024).

Limitations and Suggestions

Although the current study provides meaningful insights into how conscientiousness, academic procrastination, and academic self-efficacy relate to ChatGPT usage among university students, a few limitations should be taken into account when interpreting the findings.

- As the research used a cross-sectional design, it limits causal inference; future studies should use longitudinal designs to track changes in ChatGPT usage, procrastination, and self-efficacy over time.
- The research used self-report questionnaires, it may have introduced bias. Participants may have misjudged or misrepresented their actual ChatGPT use, procrastination habits, or personality traits; combining surveys with interviews or behavioral observations could improve accuracy.
- Additionally, the research took the sample from a single university, it limits generalizability; including participants from diverse institutions, regions, and cultural contexts would broaden applicability.
- As the research measured only the frequency of ChatGPT use, it overlooks purpose; future research should explore students' motivations and specific usage patterns.
- The research focused solely on conscientiousness, while this trait is highly relevant to academic behavior, other traits like openness to experience, neuroticism, or extraversion could also influence how students engage with AI

tools in learning environments. A broader personality assessment could offer a more complete picture.

- This research did not account for factors like academic discipline, digital literacy, and stress, it omits important influences; including these variables would clarify their role in AI-assisted learning.
- As the research lacked tailored measurement tools for AI-based learning behavior, it limits precision; developing specific instruments for educational AI platforms could enhance accuracy.

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