

The Impact of Attitudes Toward Artificial Intelligence and Problematic Internet Use on Cognitive Function and Mental Health Among Young Naga Adults

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Abstract

Artificial Intelligence (AI) has quickly become a part of daily life, changing how people think, remember, and make decisions. The present study examines whether use of AI and PIU impact memory function and mental health among young adults in Kohima and Dimapur, Nagaland. Data were obtained from 306 college-going students through convenience sampling. A structured Google Form comprising standardized scales was used to collect data: the General AI Attitude and Usage Scale (GAAIS), Problematic Internet Use Questionnaire (PIUQ-18), the Mental Health Inventory-5 (MHI-5), the Prospective and Retrospective Memory Questionnaire (PRMQ). The study's findings aim to shed light on how increased reliance on AI and internet use affects cognitive functioning and mental health. The study found that AI use and PIU significantly predicted both cognitive function and mental health. This study adds to the growing body of literature on the psychological repercussions of emerging technologies, emphasizing the importance of promoting balanced, mindful engagement with AI and PIU.

Keywords: Artificial Intelligence, Problematic Internet Use, Cognitive Impact, Memory, Mental Health.

Introduction

Artificial intelligence (AI) has quickly become an essential aspect of daily life, influencing how people learn, work, communicate, and make decisions. From recommendation systems and virtual assistants to educational platforms and mental health applications, AI-powered technologies are increasingly mediating human interactions with information and the environment. As a result, people's attitudes towards artificial intelligence—both positive and negative have a significant impact on how these technologies are embraced, trusted, and used. According to surveys, people's opinions of AI are largely positive, especially when they believe it is helpful and advantageous. Positive attitudes toward new technologies, particularly AI-based systems, are strongly influenced by perceived utility and perceived ease of use, as shown in the Technology Acceptance Model (TAM) (1). In the Unified Theory of Acceptance and Use of Technology (UTAUT), discovered that favorable attitudes and behavioral intentions toward sophisticated technology are highly predicted by performance expectancy (2). Research shows that when AI tools improve learning outcomes and classroom efficiency, students' perceptions of them are positive. For instance, students thought AI technologies helped them with their academic work, increasing their understanding and productivity (3). AI applications in medical diagnostics increased precision and effectiveness, which boosted healthcare personnel's positive opinions (4). Furthermore, studies have noted that AI is frequently framed in public discourse as revolutionary and transformative, especially in fields like automation, data analysis, and smart technology (5). Attitudes are generally favorable when AI is linked to convenience and a higher standard of living. Notwithstanding these advantages, research also raises important issues. According to a comprehensive study conducted on individuals, who are concerned about economic inequality and job displacement, even though they acknowledge the benefits of AI (6).

Negative perceptions also revolve around issues of trust and ethics. People frequently mistrust algorithmic decision-making, especially when there is little openness, according to (7). Research on surveillance capitalism demonstrates how concerns about privacy invasion and exploitation of personal data are heightened by AI-driven data collection methods. These worries fuel resistance and skepticism about AI technologies (8).

Through cognitive offloading, frequent use of artificial intelligence (AI) tools can affect memory in both the short- and long-term. When people rely too much on AI systems to store and retrieve information, their ability to recall prior events (retrospective memory) may deteriorate. The "Google effect"—the idea that knowledge would be

accessible online—makes people less likely to recall it (9). Storing information externally reduces the need for deep encoding, which may, in turn, affect long-term memory (10). Prospective memory, or remembering to carry out future goals, may also be impacted by frequent reliance on AI reminders. While technology aids lower cognitive load, it may impair engagement in internal memory methods (11). Although AI reminders can help with task completion, overreliance can undermine self-initiated monitoring mechanisms necessary for prospective memory functioning (12). Overall, evidence indicates that while AI improves performance and convenience, overreliance may diminish active memory involvement. Artificial intelligence solutions such as search engines, digital reminders, and automated decision aids can reduce the cognitive burden of remembering information, potentially improving productivity and effectiveness. Given the prevalence of AI in modern life, it is critical to investigate attitudes about AI and their association with cognitive processes such as memory, as well as broader mental health effects. A 2025 study on AI-related techno stress discovered that people who are stressed out about rapid AI adoption, regular system changes, and the pressure to adapt to AI technologies have greater levels of anxiety and depression symptoms. The findings imply that cognitive overload, ambiguity, and a lack of control associated with AI use can negatively impact mood and overall mental well-being (13). Understanding these interactions can provide important insights into how AI technologies can be built and used to promote cognitive health and psychological well-being while minimizing potential negative consequences.

Problematic Internet Use

PIU has become a major public health problem because of the negative effects it can have on psychological well-being, cognitive performance, and daily living. PIU were more likely to experience psychosomatic symptoms, a lack of physical energy, physiological dysfunction, weakened immunity, emotional symptoms, behavioural symptoms, and social adaptation issues (14). Individuals with problematic internet use have limited control over their internet use, which disrupts academic, occupational, and social functioning (15). Maladaptive internet use is connected with psychosocial issues, particularly among persons who utilise online connections to moderate unpleasant emotion (16). A meta-analysis revealed that PIU is consistently associated with poorer mental health and lower subjective well-being across diverse populations (17). Also, PIU is connected with greater levels of depression, anxiety, stress, loneliness, and social isolation (18). Neuroimaging research also suggests that problematic internet use is linked to structural and functional brain changes. Individuals with internet addiction displayed aberrant functional connectivity in the cognitive control, default mode, and visual attention networks (19).

PIU had lower cognitive control and decision-making ability than healthy controls (20). Individuals with internet addiction also showed lower grey matter density in brain areas crucial for attention, executive functioning, and emotional regulation (21). Also, deficits in executive functions, including inhibitory control, working memory, and cognitive flexibility, play a central role in the development and maintenance of problematic internet use (22). Understanding the impact of AI use and PIU, the present study was carried out to explore the effect of attitudes toward AI and PIU on cognitive function and mental health among young adults.

Methodology

The purpose of the present study was to examine the use of Artificial Intelligence and Problematic Internet Use and their impact on memory and mental health among young Naga adults.

Objective

- To assess gender differences in attitudes towards AI, cognitive function, and mental health.
- To examine the effect of AI use on cognitive function and mental health.
- To assess gender difference in PIU and examine whether PIU predicts cognitive function and mental health.

Research Design

The current study used a descriptive, quantitative research approach to investigate the use of artificial intelligence and its effects on memory function and mental health among young Naga adults. The study employed a non-probability convenience sampling technique.

Sampling

The study was conducted on 306 college-going students from Kohima and Dimapur districts of Nagaland. The participants were selected from various colleges across the two districts using an appropriate sampling technique. The sample consisted of young Naga adults aged 18 to 25.

Procedure

Standardized self-report questionnaires were used to collect data, which were administered using a survey (Google Forms). Prior authorization was obtained from the relevant institutional authorities before data collection began. Following approval, the Google Form containing the standardized questions was mailed to the approved faculty members. Faculty members then sent the survey link to the students via email. Before completing the questionnaire, participants were informed about the study's purpose and provided informed consent. Participation was completely voluntary, and the responses were kept strictly confidential.

Measures

General Artificial Intelligence Attitudes Scale (GAAIS). Participants' attitudes towards artificial intelligence were evaluated using the General Artificial Intelligence Attitudes Scale (GAAIS), developed by Schepman and Rodway (14,15). The scale measures positive and negative attitudes towards AI. A 5-point Likert scale, ranging from strongly disagree (1) to strongly agree (5), measures 12 items of the positive attitude and a reverse scoring for the negative attitude, measuring 8 items. Stronger favorable or negative views towards AI were indicated by higher subscale scores, calculated independently. The GAAIS Cronbach's alpha ranged from 0.85 to 0.93.

Problematic Internet Use Questionnaire-18 (PIUQ-18). Demetrovics et al. (2008) developed the Problematic Internet Use Questionnaire-18 (PIUQ-18), an 18-item self-report measure for assessing problematic internet use among adults. It has three dimensions: obsession, neglect, and control disorder. Items are scored on a 5-point Likert scale, from 1 (never) to 5 (always), with higher ratings suggesting more problematic internet use. The PIUQ-18 scale demonstrated good internal consistency, with a Cronbach's alpha of .87(23).

Prospective and Retrospective Memory Questionnaire (PRMQ). Everyday Cognitive functioning (memory) was evaluated using the Prospective and Retrospective Memory Questionnaire (PRMQ), developed by Smith et al. (2000) (16). Eight of the sixteen items on the scale measure prospective memory, and eight items measure retrospective memory. A 5-point Likert scale, from never (1) to very often (5), is used to record responses. Higher scores indicate a higher frequency of memory lapses. Cronbach's alpha scores for the PRMQ range from 0.79 to 0.88, indicating strong reliability.

Mental Health Inventory-5 (MHI-5). To evaluate mental health, a scale developed by Berwick et al. (1991) was used. The five items on the scale measure positive affect, depression, anxiety, and behaviour/emotional control. It is a 5-point Likert scale. Higher scores indicate better mental health. MHI-5 demonstrated strong internal consistency, with reliability coefficients ranging from 0.80 to 0.85.

Results

Table 1: Gender difference on their attitude toward use of AI (positive and negative attitude)

Variables	Gender	N	Mean	SD	t	df	p
Positive attitude towards AI	Male	127	37.00	2.987	.914	303.971	.361
	Female	179	36.63	4.173			
Negative attitude toward AI	Male	127	23.401	3.089	-1.414	292.813	.158
	Female	179	23.944	3.589			

Welch t-tests (equal variance not assumed) were used to compare male and female attitudes toward artificial intelligence. The results, as shown in Table 1, indicate that males ($M = 37.00$, $SD = 2.99$) reported higher on positive attitude towards AI than females ($M = 36.63$, $SD = 4.17$). However, the difference was not statistically significant, $t(303.97) = 0.91$, $p = .361$.

Negative attitudes towards AI: male ($M = 23.40$, $SD = 3.09$) and female ($M = 23.94$, $SD = 3.59$) means did not differ $t(292.81) = -1.41$, $p = .158$). Overall, the results show that gender has no significant influence on either positive or negative attitudes toward AI in the current sample.

Table 2: Gender difference on Problematic Internet Use

Variable	Gender	N	Mean	SD	t	df	p
PIU	Male	127	39.5827	6.0191	.632	267.864	.528
	Female	179	39.1453	5.8905			

Table 3: Gender difference on the Cognitive Function

Variables	Gender	N	Mean	SD	t	df	p
Prospective memory	Male	127	26.566	3.9068	.349	262.811	.728
	Female	179	26.413	3.7125			
Retrospective memory	Male	127	29.007	3.5152	2.739	291.973	.007
	Female	179	27.787	4.0543			

Table 2 presents the results on gender differences in Problematic Internet Use (PIU). The findings indicate that there was no significant gender difference in PIU between male ($M = 39.58$, $SD = 6.01$) and female ($M = 39.15$, $SD = 5.89$), $t(262.81) = .632$, $p = .528$ participants. Welch's t-test was used to investigate gender differences in cognitive function, specifically prospective and retrospective memory. The findings as shown in (Table 3) revealed no significant gender difference in prospective memory between males ($M = 26.57$, $SD = 3.91$) and females ($M = 26.41$, $SD = 3.71$), $t(262.81) = 0.35$, $p = .728$.

Whereas, there was a significant gender difference in retrospective memory between males ($M = 29.01$, $SD = 3.52$) and females ($M = 27.79$, $SD = 4.05$), $t(291.97) = 2.74$, $p = .007$ (Table 3). The result indicates that gender differences were significant, with males demonstrating better retrospective memory performance than females. Examining gender differences in mental health, the results as shown in (Table 4) revealed that females ($M = 15.76$, $SD = 2.58$) had a higher mental health level than males ($M = 14.40$, $SD = 2.33$). A significant gender difference was found in mental health $t(287.14) = 4.82$, $p < .001$.

Table 4: Gender difference on Mental Health

Variable	Gender	N	Mean	SD	t	df	p
Mental health	Male	127	14.401	2.3308	- 4.818	287.14	.000
	Female	179	15.765	2.5857			

Table 5: Effect of attitude towards of AI (positive and negative attitude) on Cognitive function (memory)

Predictor	B	SE	Beta	t	Sig
Positive attitude	1.707	.035	.951	48.827	.000
Negative attitude	.493	.039	.247	12.664	.000

$R^2 = .888$, Adjusted $R^2 = .887$

A multiple regression analysis was conducted to determine the impact of positive and negative attitudes towards AI predict cognitive function (memory). As shown in Table 5, the regression model was highly significant and explained 88.8% of the variance in cognitive function ($R^2 = .888$, Adjusted $R^2 = .887$). A positive attitude towards AI significantly predicted cognitive function ($B = 1.707$, $\beta = .951$, $t = 48.83$, $p < .001$). Similarly, negative attitude

toward AI significantly predicted cognitive function ($B = 0.493$, $\beta = .247$, $t = 12.66$, $p < .001$). Overall, the findings indicate that both positive and negative attitudes towards AI significantly predict cognitive function among participants.

Table 6: Effect of attitude towards of AI (positive and negative attitude) on mental health

Predictor	B	SE	Beta	t	Sig
Positive attitude	-.247	.034	-.373	-7.287	.000
Negative attitude	.178	.038	.241	4.711	.000

$R^2 = .240$, Adjusted $R^2 = .235$

Table 7: Effect of Problematic Internet Use (PIU) on cognitive function (memory) and mental health

Dependent variable	Predictor	B	SE	Beta	T	Sig	R^2	Adj. R^2
Cognitive function	PIU	.953	.067	.633	14.270	.000	.401	.399
Mental health	PIU	.968	.055	.709	17.539	.000	.503	.501

Table 6 presents the multiple regression analysis examining the effects of positive and negative attitudes towards artificial intelligence (AI) on mental health. The regression model accounted for 24.0% of the variance in mental health. Positive attitudes towards AI significantly predicted on mental health scores ($B = -0.247$, $\beta = -.373$, $t = -7.29$, $p < .001$). In contrast, negative attitude towards AI significantly and positively predicted mental health ($B = 0.178$, $\beta = .241$, $t = 4.71$, $p < .001$).

A linear regression was also conducted to examine the effect of problematic internet use (PIU) on mental health and cognitive function (memory). The findings of the present study as presented in (Table 7) indicates that PIU significantly predict cognitive function (memory) ($\beta = .633$, $t = 14.27$, $p < .001$), accounting for 40.1% of the variation. Similarly, PIU significantly predicted mental health ($\beta = .709$, $t = 17.54$, $p < .001$), explaining 50.3% of the variance.

Discussion

The aim of the present study was to investigate college students' attitudes towards AI use and its impact on memory and mental health. The results found no significant gender difference either in positive or negative attitudes towards AI. Students' attitudes toward artificial intelligence tools and their perceived usefulness did not differ significantly by gender, age, or experience (24). A comparative study of Arab countries and the United Kingdom discovered no significant gender differences in attitudes toward artificial intelligence in the Arab sample, but significant gender differences were observed in the UK, with males reporting more positive attitudes and females exhibiting higher negative attitudes toward AI, implying that gender effects on AI attitudes vary across cultural contexts (25).

The present study is consistent with previous research, which found no significant gender difference in PIU among university students (26). Gender differences in problematic internet use varied across educational levels. Specifically, male students exhibited significantly higher generalized problematic internet use than female students at the elementary, junior high, and university levels, gender differences depended on the specific online activity, with males reporting higher internet gaming and online pornography use, while females reported higher online shopping and social networking site use (27).

In the current study, no gender difference was found in prospective memory, but a significant difference was found in retrospective memory. Research using the Prospective and Retrospective Memory Questionnaire (PRMQ) has reported mixed findings on gender differences, demonstrating that females reported more prospective

memory failures than males in a large Chinese sample (28), while studies also found no significant gender differences in prospective or retrospective memory complaints in the original PRMQ normative study (29).

Previous population-based studies using standardized mental health measures (e.g., MHI-5 and psychological distress indices) have shown that women tend to report poorer mental health outcomes than men across diverse adult and adolescent samples, which is consistent with the current finding that males reported significantly better mental health than females (30,31). The present study found that attitude toward AI has a significant impact on cognitive function. A study found a substantial association between artificial intelligence and cognitive functioning and revealed that cognitive flexibility and cognitive reappraisal significantly predict both positive and negative attitudes toward AI, accounting for 7% of the variance in positive attitudes and 4% in negative attitudes (32). These findings imply that people with greater cognitive flexibility and adaptive cognitive regulation are more likely to have positive attitudes and fewer negative perceptions of AI. In the current study, both positive and negative attitudes toward artificial intelligence significantly predicted poorer mental health. Studies have reported that positive attitudes toward artificial intelligence are associated with considerably lower levels of AI-related anxiety, while negative attitudes were connected with higher anxiety and psychological discomfort (33). Positive views toward artificial intelligence were found to strongly predict increased satisfaction of basic psychological demands, such as autonomy, competence, and relatedness, which were then positively correlated with the mental health outcome of artificial intelligence (AI) users (34).

Present study found that PIU is a significant predictor of mental health. The observed association is supported by earlier studies indicating that PIU is moderately and positively associated with depressive symptoms, anxiety, loneliness, and other mental health outcomes (35). Multiple logistic regression analysis revealed that being female, poor sleep quality, ADHD tendencies, depressive symptoms, and trait anxiety were significant predictors of PIU (36). The present study found that PIU significantly effect cognitive function (memory). Individuals with PIU had significant impairments in working memory, inhibitory control, attention control, and decision-making when compared to healthy controls (37). A study on the relationship between emotional regulation and cognitive variables (i.e., experiential avoidance, desire thinking, and intolerance of uncertainty) factors in predicting the PIU. The model found that, except for intolerance of uncertainty, other cognitive variables played a full mediating role in the relationship between difficulties in emotion regulation and PIU, accounting for 57% of the variance (38). Problematic Internet Use exhibited impaired executive functioning with prominent deficits in working memory and inhibition (39).

Conclusion

The current study discovered that the use of Artificial Intelligence (AI) and Problematic Internet Use (PIU) were strongly predictive of cognitive functioning and mental wellbeing. Individuals' responses to AI may differ depending on their attitudes toward AI, previous experiences, level of technological literacy, and patterns of engagement with AI-based devices. Persistent and unregulated Internet use can impair cognitive skills such as attention, concentration, and memory, as well as cause problems with emotional regulation and psychological well-being. However, Internet use is not intrinsically bad, as digital technologies offer significant educational, social, and informational benefits. The possible negative consequences are mostly determined by the volume, goal, and manner of Internet use.

Understanding how AI use and problematic Internet use affect cognition and mental health is critical for fostering balanced and responsible interaction with digital technology. Rather than forbidding the use of AI or the Internet, there should be a greater emphasis on promoting digital literacy, self-regulation, and understanding of good technology usage habits. Future research should look into aspects like age, educational background, technical literacy, usage patterns, and long-term exposure to AI and Internet technologies in order to better understand their impact on human cognition and mental health.

Limitations

1. The study employed a cross-sectional research design, with data collected at a single point in time; therefore, a causal relationship between the variables cannot be established, and findings only reflect associations rather than a cause-and-effect relationship.
2. The study was evaluated by self-report questionnaires. This may result in response biases, such as social desirability and faulty memory.

3. The sample may not be representative of the overall population due to an online survey. As a result, the applicability of the findings cannot be generalized.
4. Uncontrolled factors such as age, education level, technical literacy, frequency, and type of AI usage may have affected the study.
5. Memory-based tests were primarily used to assess cognitive processes. Other critical domains such as attention, executive processes, and problem-solving, are tested, limiting the comprehensiveness of cognitive testing.

Abbreviations

AI: Artificial Intelligence, PIU: Problematic Internet Use, MHI-5: Mental Health Inventory 5, PRMQ: Prospective and Retrospective Memory Questionnaire, GAAIS: General AI Attitude and Usage Scale, M: Mean, SD: Standard Deviation

Acknowledgement

The authors would like to thank all the participants for their valuable time and cooperation in completing this study.

Author Contribution

Avi Nuh: Conceptualization, data collection, analysis, discussion, Mahuya Deb: supervision, validation, manuscript review Vijaysen Pandey: review, feedback.

Conflict of interest

The authors declare no conflicts of interest regarding the publication of this paper.

Data Availability

Due to ethical and confidentiality considerations, the data supporting the findings of this study are not publicly available. However, de-identified data may be made available by the corresponding author upon reasonable request.

Declaration of Artificial Intelligence (AI)

The authors acknowledge the use of a generative AI tool to assist with language editing and grammar refinement. All content has been reviewed and verified by the authors, and take full responsibility for the final version of the manuscript.

Ethical Approval

Ethical committee approval was not required for this study. Data were collected using Google Forms following standard ethical research guidelines. Informed consent was obtained from all the participants prior to participation, and confidentiality, anonymity, and voluntary participation were ensured throughout the study.

Funding

The authors declare that no financial support or funding was received for the conduct of this research.

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