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Artificial Intelligence anxiety and professional identity among Filipino hospital nurses: The moderating role of positive AI attitudes

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Abstract

Aim: This study examined the moderating role of positive attitudes toward artificial intelligence (AI) in the relationship between AI anxiety and professional identity among nurses in a public hospital in Bulacan, Philippines. The study addressed a critical gap in understanding how AI-related psychological responses influence professional identity in clinical nursing practice.

Methods: A quantitative cross-sectional correlational design with moderation analysis was employed. From 271 eligible nurses, 123 were selected through simple random sampling. Data were collected using the Artificial Intelligence Anxiety Scale, General Attitudes towards Artificial Intelligence Scale, and an adapted Macleod Clark Professional Identity Scale. Data were analyzed using Spearman rho and Hayes' PROCESS Model 1 at a .05 level of significance. Ethical approval was obtained from the appropriate institutional review board.

Results: Nurses demonstrated moderate AI anxiety, neutral attitudes toward AI, and high professional identity. AI anxiety was negatively associated with professional identity, whereas positive AI attitudes showed a stronger positive relationship. Moderation analysis revealed that positive AI attitudes significantly weakened the negative relationship between AI anxiety and professional identity. However, the majority of respondents had not reached the level of positive attitudes required to activate this buffering effect.

Conclusion: Positive AI attitudes function as a protective factor that mitigates the impact of AI anxiety on professional identity. Findings highlight the need for healthcare institutions to implement AI education and attitude-building interventions to support nurses' professional identity and adaptability in technology-driven clinical environments.

Keywords: *artificial intelligence, nursing practice, professional identity, technology attitudes, healthcare systems, moderation analysis*

INTRODUCTION

Artificial intelligence is rapidly transforming healthcare delivery, and the nursing profession is not exempt from its reach. As AI-driven tools are integrated into clinical documentation, triage, diagnostics, and patient monitoring, nurses worldwide face a dual challenge: adapting to emerging technologies while preserving the human-centered values that define their profession. Wang and Wang (2019) introduced the construct of AI anxiety — defined as an emotional response involving fear, apprehension, or agitation toward AI technologies — and identified four dimensions: learning, job replacement, sociotechnical blindness, and AI configuration. Recent evidence from nurses and nursing students confirms the relevance of this construct, with AI anxiety inversely related to innovation behaviour, technology readiness, and adoption intention (Cho & Seo, 2024; Li et al., 2024; Ünal & Avcı, 2024). At the same time, professional identity — the internalized sense of belonging, value, and commitment to one's profession — has emerged as a critical variable in understanding how nurses respond to technological disruption, with AI integration raising pressing questions for identity formation and professional value preservation (Geoghan Marold et

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al., 2025). What remains underexplored is whether nurses' attitudes toward AI, particularly positive attitudes, can buffer the potential negative effects of AI anxiety on professional identity.

In the Philippines, AI adoption in healthcare remains in its early stages but is accelerating. The Department of Trade and Industry launched the National AI Strategy Roadmap in 2021, a national framework identifying healthcare as a priority sector for AI adoption and workforce upskilling, followed by an expanded version (National AI Strategy Roadmap 2.0) in July 2024 (Department of Trade and Industry, 2021, 2024). A recent narrative review published in *npj Digital Medicine* noted that AI deployment in the Philippine healthcare sector is largely concentrated in Metro Manila and Cebu, with limited reach in provincial settings, and that nursing and medical programs have yet to systematically integrate AI education (Sarmiento et al., 2025). Despite these national initiatives, no published study has examined how Filipino nurses psychologically experience the introduction of AI — specifically, whether AI anxiety affects how they identify with their profession. Philippine nursing leaders have acknowledged the tension between technological readiness and compassionate care (Philippine Information Agency, 2025), yet empirical data on nurses' AI-related anxiety and its relationship to professional identity in the Philippine context do not exist in the published literature.

This absence constitutes a convergence of three research gaps: an empirical gap, as no study has tested the relationship between AI anxiety and professional identity among nurses; a contextual gap, as the Philippine healthcare context remains unexamined in the AI anxiety literature; and a methodological gap, as no study has tested whether positive AI attitudes function as a moderator of the AI anxiety-professional identity relationship. This study addressed all three gaps by testing a moderation model using the PROCESS computational macro (Hayes, 2022, Model 1) — a regression-based tool for testing interaction effects — in which positive AI attitudes were hypothesized to moderate the relationship between AI anxiety and professional identity among Filipino hospital nurses. Findings may inform hospital-level strategies for AI integration that account for nurses' psychological readiness and identity concerns, and guide nursing regulatory bodies in designing AI literacy curricula that strengthen professional identity during technological transitions. Because professional identity has been linked to quality of patient care, job satisfaction, and retention among nurses (Geoghan Marold et al., 2025; Landis et al., 2025), understanding its relationship with AI anxiety also carries implications for maintaining care quality and workforce stability during technological transitions in healthcare settings.

Review of Related Literature and Studies

Research on AI anxiety in nursing has expanded substantially since Wang and Wang (2019) developed the Artificial Intelligence Anxiety Scale (AIAS), which operationalized the construct across four dimensions: learning, job replacement, sociotechnical blindness, and AI configuration. Among practicing nurses, studies consistently report moderate to high levels of AI anxiety, though the pattern of dominant dimensions varies by clinical context. Ünal and Avcı (2024), in a study of 107 Turkish neonatal nurses, found a significant negative correlation between AI anxiety and AI readiness ($r = -0.549$, $p < .01$), suggesting that anxiety may function as a barrier to technology acceptance. Li et al. (2024), studying 368 Chinese hospital nurses, similarly found that AI anxiety negatively correlated with innovation behaviour ($r = -0.321$, $p < .01$) and served as a mediating pathway between explainable AI exposure and innovation behaviour. Among nursing students, the evidence converges: Yigit and Acikgoz (2024) reported high AI anxiety levels in a Turkish sample of 552 students, with students holding negative feelings toward AI scoring significantly higher on the AIAS. Cho and Seo (2024), using Hayes' PROCESS Model 6, found that AI anxiety and acceptance attitudes serially mediated the relationship between AI perception and intention to use AI among 180 Korean nursing students. Across these studies, two patterns emerge: AI anxiety inversely relates to technology-related outcomes, and the specific mechanisms — whether mediation, moderation, or direct effects — remain underexplored, particularly in relation to constructs beyond technology acceptance.

Parallel to the study of AI anxiety, measurement of AI attitudes has advanced through the General Attitudes towards Artificial Intelligence Scale (GAAIS) developed by Schepman and Rodway (2020) and confirmatorily validated in a second study (Schepman & Rodway, 2023). The GAAIS distinguishes between positive attitudes — reflecting perceived societal and personal utility — and negative attitudes — reflecting concerns and discomfort. This two-dimensional structure has been cross-validated across multiple cultural contexts and is increasingly used in nursing research alongside the AIAS. Notably, Özçevik Subaşi et al. (2025), in a study of 170 Turkish paediatric nurses using both the GAAIS and AIAS, found that GAAIS scores significantly predicted 50% of the variance in AI anxiety and AI literacy scores ($p < .001$), establishing that attitudes are not merely correlates of anxiety but strong predictors of it. Liu et al. (2025), studying 478 Chinese hospital nurses using the same three instruments (AILS, AIAS, and GAAIS), confirmed that AI anxiety mediated the relationship between AI literacy and attitudes toward AI, further reinforcing the centrality of the anxiety–attitudes link. What none of these studies has tested, however, is whether positive AI

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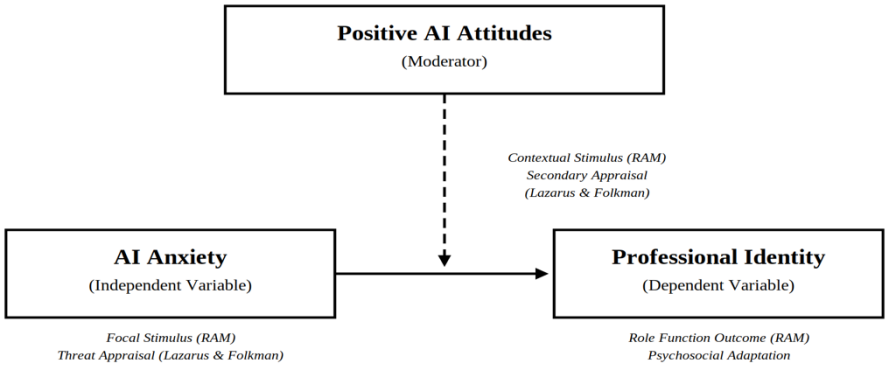
attitudes moderate — rather than simply correlate with or mediate — the effect of AI anxiety on a professional outcome such as professional identity.

The construct of professional identity in nursing — defined as the internalized sense of belonging, value, and commitment to the profession — has been the subject of renewed theoretical attention. Geoghan Marold et al. (2025), in a narrative review of the International Society for Professional Identity in Nursing (ISPIN) framework, noted that AI integration raises specific concerns for value and ethics acquisition within professional identity formation, characterizing this as a more pressing issue that cannot be assumed as an automatic assimilation. Yet despite this theoretical recognition, no empirical study has tested the relationship between AI anxiety and professional identity among nurses. The existing literature has linked AI anxiety to innovation behaviour (Li et al., 2024), technology readiness (Ünal & Avcı, 2024), and adoption intention (Cho & Seo, 2024), but professional identity remains unexamined as a dependent variable in AI-related research. Moreover, AI anxiety studies have been conducted predominantly in Turkey and East Asia, and positive AI attitudes have been treated as mediators or correlates rather than tested as a moderator. The present study addressed these gaps by employing moderation analysis (Hayes, 2022, PROCESS Model 1) to test whether positive AI attitudes conditionally alter the relationship between AI anxiety and professional identity among Filipino hospital nurses.

Theoretical Framework

This study draws on two theories: the Roy Adaptation Model (RAM) and the Transactional Model of Stress and Coping. The RAM (Roy, 2009) proposes that persons are adaptive systems responding to environmental stimuli across four modes: physiological-physical, self-concept, role function, and interdependence. Roy classifies stimuli as focal (the immediate demand), contextual (factors that shape how the focal stimulus is processed), and residual (background influences). In this study, AI integration is the focal stimulus, AI anxiety is the response to that stimulus, and professional identity maps onto the role function adaptive mode. Positive AI attitudes function as a contextual stimulus: they do not directly determine professional identity but conditionally shape how AI anxiety affects it. The RAM thus predicts that the same level of anxiety may produce different role function outcomes depending on contextual conditions — which is the definition of a moderation effect.

The Transactional Model of Stress and Coping (Lazarus & Folkman, 1984) specifies the cognitive mechanism underlying this interaction. Lazarus and Folkman argued that stress outcomes depend on two appraisal processes: primary appraisal (evaluating whether a stimulus is threatening) and secondary appraisal (evaluating available coping resources). AI anxiety reflects a primary appraisal of AI as threatening (Wang & Wang, 2019), while positive AI attitudes reflect a secondary appraisal — recognition that AI also offers utility and benefit (Schepman & Rodway, 2020). Psychological outcomes depend not on threat appraisal alone but on the interaction between primary and secondary appraisal. Both theories converge on the same structural prediction: the effect of AI anxiety on professional identity is conditional, dependent on whether positive AI attitudes buffer the appraisal process. This convergence provides the theoretical rationale for testing moderation (Hayes, 2022, PROCESS Model 1), with AI anxiety as the independent variable (focal stimulus / threat appraisal), positive AI attitudes as the moderator (contextual stimulus / secondary appraisal), and professional identity as the dependent variable (role function outcome / psychosocial adaptation). The conceptual framework is illustrated in Figure 1.



Note. Dashed arrow represents the moderating effect. Based on Hayes (2022) PROCESS Model 1.
RAM = Roy Adaptation Model.

Figure 1 Conceptual Framework of the Moderating Role of Positive AI Attitudes in the AI Anxiety–Professional Identity Relationship

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Statement of the Problem

This study addresses the emerging challenge of integrating artificial intelligence (AI) into clinical nursing practice and its psychological implications for the nursing workforce. While AI technologies are increasingly utilized in healthcare systems, nurses must adapt to these innovations while maintaining a strong professional identity grounded in patient-centered care. However, the introduction of AI may generate anxiety among nurses, potentially affecting their perception of their professional roles and responsibilities.

Existing literature has established that AI anxiety is associated with reduced technology readiness, innovation behavior, and adoption intention among nurses. At the same time, professional identity remains a critical factor influencing nursing practice, job satisfaction, and quality of patient care. Despite these developments, no empirical study has examined the relationship between AI anxiety and professional identity among nurses, particularly in the Philippine healthcare context.

Furthermore, although attitudes toward AI have been identified as important psychological factors in technology acceptance, their role as a moderating variable in the relationship between AI anxiety and professional identity has not been investigated. This gap limits the ability of healthcare institutions to design effective interventions that support nurses during technological transitions.

Given the increasing integration of AI in healthcare systems and the need to sustain a competent and resilient nursing workforce, it is essential to examine how AI anxiety influences professional identity and whether positive AI attitudes can mitigate its effects. This study seeks to address these gaps and provide evidence-based insights to inform nursing practice, education, and healthcare policy.

Objectives

This study examined the moderating role of positive attitudes toward artificial intelligence in the relationship between artificial intelligence anxiety and professional identity among nurses at a public hospital in Bulacan, Philippines. Specifically, this study aimed to:

1. Determine the level of artificial intelligence anxiety among the respondents in terms of: 1.1. learning; 1.2. job replacement; 1.3. sociotechnical blindness; and 1.4. AI configuration.
2. Determine the level of positive artificial intelligence attitudes among the respondents.
3. Determine the level of professional identity among the respondents.
4. Examine the relationship between the overall level of artificial intelligence anxiety and professional identity among the respondents.
5. Examine the relationship between positive artificial intelligence attitudes and professional identity among the respondents.
6. Determine the moderating role of positive artificial intelligence attitudes in the relationship between the overall level of artificial intelligence anxiety and professional identity among the respondents.

The demographic profile of the respondents and the level of negative artificial intelligence attitudes were analyzed descriptively as part of sample characterization and complete instrument scoring, respectively.

All hypotheses were tested at a 0.05 level of significance.

Ho_1: There is no significant relationship between the overall level of artificial intelligence anxiety and professional identity among the respondents.

Ho_2: There is no significant relationship between positive artificial intelligence attitudes and professional identity among the respondents.

Ho_3: Positive artificial intelligence attitudes do not significantly moderate the relationship between the overall level of artificial intelligence anxiety and professional identity among the respondents.

Research Questions

This study sought to answer the following questions:

1. What is the level of artificial intelligence anxiety among the respondents in terms of: 1.1 learning; 1.2 job replacement; 1.3 sociotechnical blindness; and 1.4 AI configuration?
2. What is the level of positive artificial intelligence attitudes among the respondents?
3. What is the level of professional identity among the respondents?
4. Is there a significant relationship between the overall level of artificial intelligence anxiety and professional identity among the respondents?

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5. Is there a significant relationship between positive artificial intelligence attitudes and professional identity among the respondents?
6. Do positive artificial intelligence attitudes significantly moderate the relationship between the overall level of artificial intelligence anxiety and professional identity among the respondents?

METHODS

Research Design

A quantitative, cross-sectional, correlational design with moderation analysis was used. This design is appropriate when the purpose is to describe variables, examine relationships among them, and test whether a third variable conditionally alters the strength or direction of an observed relationship — all at a single point in time without manipulation of variables (Creswell & Creswell, 2018; Polit & Beck, 2021). The cross-sectional approach was selected because the study collected data from respondents at one point in time rather than tracking changes over time. The correlational component addressed Objectives 4 and 5, which examine bivariate relationships between the overall level of AI anxiety and professional identity, and between positive AI attitudes and professional identity. The moderation component addressed Objective 6, which tests whether positive AI attitudes conditionally alter the AI anxiety–professional identity relationship using Hayes' (2022) PROCESS Model 1. This design does not establish causation — a limitation inherent to non-experimental research (Polit & Beck, 2021) — but it is the appropriate design for testing interaction effects among naturally occurring variables in an intact group. No variables were manipulated, no control group was used, and respondents were not randomly assigned to conditions, which distinguishes this study from experimental and quasi-experimental designs (Creswell & Creswell, 2018).

Population and Sampling

The target population comprised all registered nurses employed at a public hospital in Bulacan, Philippines. As of the data collection period, the facility's Nursing Service Department had a total of 376 nursing personnel across permanent, casual, and job order appointment statuses. Inclusion criteria were: (a) possession of a valid Philippine nursing license, (b) active employment at the facility during data collection, and (c) a minimum of six months of clinical experience. The six-month threshold ensured that respondents had completed institutional orientation and were actively functioning in independent clinical roles, providing a minimum baseline for both technology exposure and professional identity formation. Nurses on extended leave during the collection period and those with fewer than six months of clinical experience - primarily those under short-term job order contracts (a non-permanent government appointment without security of tenure, typically renewed on a semester or annual basis) - were excluded. After applying inclusion and exclusion criteria, 271 nurses were eligible.

Simple random sampling was employed using a computer-generated random number sequence applied to the roster of eligible nurses, ensuring equal probability of selection (Polit & Beck, 2021). Of the 123 randomly selected nurses, all agreed to participate and returned complete questionnaires; no nurse declined or withdrew, yielding a 100% response rate. The on-site, researcher-administered distribution during non-peak duty hours facilitated full participation.

Sample size was determined a priori using G*Power 3.1.9.7 (Faul et al., 2009). Two computations were conducted corresponding to the study's primary and secondary analyses. For the moderation analysis (Hayes, 2022, PROCESS Model 1), an F-test for linear multiple regression (R^2 increase) was specified: effect size $f^2 = 0.10$ (small-to-medium; Cohen, 1988), $\alpha = .05$, power = .80, tested predictors = 1 (interaction term), total predictors = 3 (AI anxiety, positive AI attitudes, interaction), yielding a minimum of 83. For the bivariate correlations (Objectives 4–5), an exact test for the bivariate normal model was specified: $r = .25$, $\alpha = .05$, power = .80, two-tailed, yielding a minimum of 123. The larger value of 123 was adopted as the minimum sample size threshold. The obtained sample of 123 met this requirement at .80 statistical power.

Instruments

Data were collected using a four-part, 55-item survey questionnaire. Part I gathered demographic data through five researcher-developed items on age, sex, highest educational attainment, years of clinical experience, and area of assignment. Parts II through IV employed standardized instruments measuring the study's three variables. All instruments underwent content validation by three experts in nursing research and AI in healthcare prior to administration. Experts evaluated items for relevance, clarity, and cultural appropriateness; all items were rated as acceptable with no items flagged for revision.

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Part II: Artificial Intelligence Anxiety. AI anxiety was measured using the 21-item Artificial Intelligence Anxiety Scale (AIAS) developed by Wang and Wang (2019). The AIAS comprises four subscales: learning (8 items), job replacement (6 items), sociotechnical blindness (4 items), and AI configuration (3 items), rated on a 7-point Likert scale (1 = *Strongly Disagree* to 7 = *Strongly Agree*). Scores are computed as subscale and overall means, with higher scores reflecting greater AI anxiety. The original validation (N = 301) reported total α = .964 and subscale α ranging from .917 to .974, with CFA confirming the four-factor structure (Wang & Wang, 2019). Cross-cultural validations have yielded α = .96 in Turkey (Terzi, 2020) and α = .916 in Indonesia (Ramadini & Pratiwi, 2025). The scale has been applied to hospital nurses (Tarsuslu et al., 2025; Özçevik Subaşi et al., 2025). Published under CC BY-NC-ND 4.0, the AIAS was adopted without modification. In the present sample, internal consistency was acceptable: overall α = .848; learning α = .787; job replacement α = .749; sociotechnical blindness α = .841; AI configuration α = .792. Verbal interpretation followed a researcher-developed equal-interval scale in which the total scale range was divided into equal segments corresponding to verbal descriptors, a convention used in Philippine nursing and health sciences research for Likert-type instruments where no standardized interpretive norms exist (Polit & Beck, 2021). For the 7-point AIAS, each of seven levels spans 0.857 points across the 1–7 range (e.g., 3.58–4.42 = Moderate).

Part III: Attitudes towards Artificial Intelligence. AI attitudes were measured using the 20-item General Attitudes towards Artificial Intelligence Scale (GAAIS) by Schepman and Rodway (2020, 2023), comprising positive (12 items) and negative (8 items) subscales rated on a 5-point Likert scale (1 = *Strongly Disagree* to 5 = *Strongly Agree*). Subscale scores are computed as means. The positive subscale served as the moderator variable; the negative subscale was analyzed descriptively for complete instrument scoring. EFA and CFA across two UK samples confirmed the two-factor structure (Schepman & Rodway, 2020, 2023), and meta-analytic reliability generalization across 19 studies confirmed α consistently above .70 for both subscales (Şahin & Yıldırım, 2024). Deposited on Figshare by the original authors, the GAAIS was adopted without modification. In the present sample, Cronbach's α was .846 for the positive subscale and .700 for the negative subscale. Verbal interpretation followed a researcher-developed equal-interval scale: each of five levels spans 0.80 points across the 1–5 range (e.g., 2.61–3.40 = Neutral).

Part IV: Professional Identity. Professional identity was measured using an adapted version of the 9-item Macleod Clark Professional Identity Scale (MCPIS-9; Adams et al., 2006), rated on a 5-point Likert scale (1 = *Strongly Disagree* to 5 = *Strongly Agree*). Items 3, 4, and 5 are reverse-scored. The overall score is the mean of all items after reverse scoring, with higher scores indicating stronger professional identity. The MCPIS-9 has demonstrated acceptable reliability across health professions populations (α = .83, Worthington et al., 2013; α = .835, Shu et al., 2025). Since the original scale targeted students, items 3 and 5 were contextually modified — "studying for/to be part of" was changed to "working in/as part of" — to reflect practicing nurses. No items were added or deleted. Items were verified from Shu et al. (2025) and corroborated from Mainous et al. (2018). In the present sample, Cronbach's α was .871. Verbal interpretation followed the same equal-interval scheme as the GAAIS (e.g., 3.41–4.20 = High).

Each instrument maps to a specific variable in the conceptual framework: the AIAS measures the independent variable (AI anxiety), the GAAIS positive subscale measures the moderator (positive AI attitudes), and the MCPIS-9 measures the dependent variable (professional identity). Estimated completion time was approximately 15 minutes.

Data Collection

Upon approval from the Research Ethics Committee, data collection was conducted at the public hospital from January to February 2026. Nurses selected through simple random sampling were approached during non-peak duty hours. Written informed consent was obtained prior to questionnaire administration. The self-administered questionnaire — comprising 55 items across four parts: demographic profile (5 items), the Artificial Intelligence Anxiety Scale (21 items), the General Attitudes towards Artificial Intelligence Scale (20 items), and the adapted Macleod Clark Professional Identity Scale (9 items) — was distributed and retrieved on-site, with completion taking approximately 15 minutes. Of the 123 questionnaires distributed, all were returned complete and deemed usable; no respondent declined participation or returned an incomplete form, yielding a 100% response rate.

Treatment of Data

All data were analyzed using jamovi version 2.6 (The jamovi project, 2024) with the jmv module. Descriptive statistics — frequency counts, percentages, means, and standard deviations — were used to address Objectives 1 through 3, as well as the demographic profile and negative AI attitudes analyzed as supplementary descriptive data. Normality of the continuous variables was assessed using the Shapiro-Wilk test to determine the

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appropriate correlation technique (Field, 2018). For Objectives 4 and 5, bivariate correlation — Pearson's *r* if normality was met, or Spearman's *ρ* if violated — was used to examine the relationships between artificial intelligence anxiety and professional identity, and between positive artificial intelligence attitudes and professional identity, respectively.

For Objective 6, moderated regression analysis was conducted using the PROCESS macro for jamovi (Hayes, 2022), which replicates the computational procedures of the SPSS/SAS PROCESS macro within the jamovi environment. PROCESS Model 1 was specified with artificial intelligence anxiety as the independent variable, professional identity as the dependent variable, and positive artificial intelligence attitudes as the moderator. Prior to analysis, the independent variable and moderator were mean-centered to reduce nonessential multicollinearity in the interaction term (Hayes, 2022). Assumptions of linearity and homoscedasticity were assessed through residual plots, and multicollinearity was evaluated using variance inflation factors (VIF), with values below 5.0 considered acceptable (Hair et al., 2019). Influential cases were screened using Cook's distance; cases exceeding the $4/N$ threshold (0.033) were flagged but retained if Cook's D remained below 1.0, following convention (Cook & Weisberg, 1982). Although OLS regression assumes normally distributed residuals, the technique is robust to modest violations of this assumption when sample sizes exceed 50 and residual shape indices (skewness, kurtosis) remain within acceptable thresholds (Hayes, 2022). A significant interaction term ($p < .05$) indicated the presence of moderation, probed using simple slopes at ±1 SD of the moderator and the Johnson-Neyman technique — a procedure that identifies the exact value of the moderator at which the conditional effect of the independent variable on the dependent variable transitions from statistically significant to nonsignificant (Hayes, 2022).

Demographic variables were analyzed descriptively and were not entered as covariates in the moderation model. The analysis tested the hypothesized three-variable model — AI anxiety, positive AI attitudes, and their interaction — without covariate adjustment, consistent with Hayes' (2022) recommendation that covariates be included only when there is theoretical justification for their inclusion.

No correction for multiple comparisons was applied, as the three hypotheses test conceptually distinct relationships — two bivariate associations (Ho_1, Ho_2) and one conditional interaction (Ho_3) — rather than simultaneous pairwise comparisons. All tests used a .05 level of significance.

Ethical Considerations

This study was reviewed and approved by the Research Ethics Committee prior to data collection. The study adhered to the ethical principles outlined in the Belmont Report (National Commission for the Protection of Human Subjects, 1979), the Declaration of Helsinki (World Medical Association, 2013), and the Data Privacy Act of 2012 (Republic Act No. 10173). Written informed consent was obtained from all respondents before participation. The consent form explained the study's purpose, procedures, potential risks and benefits, voluntary nature, and the respondent's right to withdraw at any time without penalty. Confidentiality was maintained by assigning numeric codes to all questionnaires; no personally identifiable information was collected. All completed instruments were stored in a secured location accessible only to the researcher, and electronic data were password-protected. No deception, coercion, or incentive was involved in recruitment. The researcher had no supervisory or evaluative authority over any respondent, eliminating potential power dynamics that could compromise voluntary participation (Emanuel et al., 2000).

RESULTS and DISCUSSION

The results are organized by study objective, with a discussion of each finding presented alongside its corresponding result.

Table 1

Demographic Profile of the Respondents

Demographic Variable	**f**	**%**
Age		
20–29	36	29.3
30–39	49	39.8
40–49	25	20.3
50–59	13	10.6
Total	**123**	**100.0**
M = 35.60, *SD* = 9.27		
Sex		

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Female	98	79.7
Male	25	20.3
Total	**123**	**100.0**
Highest Educational Attainment		
Bachelor's Degree	80	65.0
With Master's Units	22	17.9
Master's Degree	12	9.8
With Doctoral Units	6	4.9
Doctoral Degree	3	2.4
Total	**123**	**100.0**
Years of Clinical Experience		
5 years or below	42	34.1
6–10 years	40	32.5
11–15 years	22	17.9
16–20 years	14	11.4
21 years or above	5	4.1
Total	**123**	**100.0**
M = 8.38, *SD* = 6.55		
Area of Assignment		
Medical-Surgical Unit	32	25.9[a]
Emergency Department	20	16.3
Intensive Care Unit	16	13.0
Obstetric Unit	14	11.4
Operating Room	12	9.8
Pediatric Unit	12	9.8
Out-Patient Department	10	8.1
Other	7	5.7
Total	**123**	**100.0**

Note. *N* = 123.
[a]Percentage adjusted from 26.0% to 25.9% due to rounding to ensure sum equals 100.0%.

The sample consisted of 123 nurses from a public hospital in Bulacan, Philippines. In terms of age, the largest group fell within the 30–39 bracket (*n* = 49, 39.8%), followed by 20–29 (*n* = 36, 29.3%), with a mean age of 35.60 years (*SD* = 9.27). The sample was predominantly female (*n* = 98, 79.7%). In terms of educational attainment, the majority held a Bachelor's Degree (*n* = 80, 65.0%), while 22 respondents (17.9%) had earned Master's units and only three (2.4%) held a Doctoral Degree. For years of clinical experience, the largest group had five years or below (*n* = 42, 34.1%), followed closely by 6–10 years (*n* = 40, 32.5%), with a mean of 8.38 years (*SD* = 6.55). Only five respondents (4.1%) had 21 years or more of experience. The largest share of respondents was assigned to the Medical-Surgical Unit (*n* = 32, 25.9%), followed by the Emergency Department (*n* = 20, 16.3%) and the Intensive Care Unit (*n* = 16, 13.0%).

The sample reflected the typical demographic composition of hospital nurses in the Philippine public healthcare system — predominantly female, bachelor's-prepared, and spanning early-career to senior-level practice. The concentration of respondents in the 20–39 age range (69.1% combined) and with 10 years or fewer of clinical experience (66.7% combined) indicated a relatively young and mid-career workforce, consistent with the staffing profile of a public hospital. The limited representation of doctorally-prepared nurses (*n* = 3, 2.4%) and those with more than 20 years of experience (*n* = 5, 4.1%) may constrain the applicability of findings to senior-level or academically-advanced subgroups. The concentration of respondents in acute care units (Medical-Surgical, Emergency, and Intensive Care) aligned with the staffing demands of the institution.

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Table 2

Level of Artificial Intelligence Anxiety Among the Respondents

Indicator	*M*	*SD*	VI
A. Learning			
1. Learning to understand all of the special functions associated with AI	3.80	1.16	Moderate
2. Learning to use AI techniques/products	3.55	0.90	Slightly Low
3. Learning to use specific functions of an AI technique/product	3.57	0.92	Slightly Low
4. Learning how an AI technique/product works	3.68	0.91	Moderate
5. Learning to interact with an AI technique/product	3.43	0.88	Slightly Low
6. Taking a class about the development of AI techniques/products	3.79	0.93	Moderate
7. Reading an AI technique/product manual	3.80	0.99	Moderate
8. Being unable to keep up with advances associated with AI	3.94	0.96	Moderate
Learning (Composite)	3.69	0.61	Moderate
B. Job Replacement			
9. AI technique/product may make us dependent	4.46	1.10	Slightly High
10. AI technique/product may make us even lazier	4.25	0.93	Moderate
11. AI technique/product may replace humans	4.48	0.81	Slightly High
12. Widespread use of humanoid robots will take jobs away	4.49	1.00	Slightly High
13. Using AI and losing reasoning skills	4.31	0.94	Moderate
14. AI techniques/products will replace someone's job	4.54	0.83	Slightly High
Job Replacement (Composite)	4.42	0.63	Moderate
C. Sociotechnical Blindness			
15. AI technique/product may be misused	4.28	1.10	Moderate
16. Problems potentially associated with AI	4.15	0.99	Moderate
17. AI may get out of control and malfunction	4.27	0.84	Moderate
18. AI may lead to robot autonomy	4.20	0.88	Moderate
Sociotechnical Blindness (Composite)	4.22	0.79	Moderate
D. AI Configuration			
19. Humanoid AI techniques/products are scary	3.63	1.21	Moderate
20. Humanoid AI techniques/products are intimidating	3.50	0.80	Slightly Low
21. Humanoid AI techniques/products scare me	3.59	0.84	Moderate
AI Configuration (Composite)	3.57	0.81	Slightly Low
Overall AI Anxiety	**3.99**	**0.48**	**Moderate**

Note. N = 123. VI = Verbal Interpretation. Verbal interpretation based on a researcher-developed equal-interval scale (7-point): 6.15–7.00 = Very High; 5.29–6.14 = High; 4.43–5.28 = Slightly High; 3.58–4.42 = Moderate; 2.72–3.57 = Slightly Low; 1.86–2.71 = Low; 1.00–1.85 = Very Low. Items presented in original instrument order.

The respondents reported a moderate level of overall AI anxiety (M = 3.99, SD = 0.48). Among the four subscales, Job Replacement obtained the highest composite mean (M = 4.42, SD = 0.63, "Moderate"), followed by Sociotechnical Blindness (M = 4.22, SD = 0.79, "Moderate") and Learning (M = 3.69, SD = 0.61, "Moderate"). AI Configuration obtained the lowest composite mean (M = 3.57, SD = 0.81, "Slightly Low"), the only subscale that did not reach the "Moderate" threshold. Within the Job Replacement subscale, four of six items crossed into the "Slightly High" range (M = 4.46 to 4.54), with the highest-rated item being concern that AI will replace someone's job (M = 4.54, SD = 0.83). In contrast, within the Learning subscale, three of eight items fell into the "Slightly Low" range, with learning to interact with AI obtaining the lowest mean across all 21 items (M = 3.43, SD = 0.88).

The moderate overall level is consistent with Tarsuslu et al. (2025), who found that 82.7% of 439 Turkish hospital nurses had low or medium AI anxiety. In contrast, Yigit and Acikgoz (2024) reported high AI anxiety among nursing students, suggesting that clinical experience may temper technology-related apprehension — a pattern supported by Ünal and Avcı (2024), who identified a significant inverse relationship between AI anxiety and AI readiness among neonatal nurses. The prominence of Job Replacement as the dominant subscale corroborates Li et al. (2024), whose Chinese hospital nurse sample similarly showed AI anxiety concentrated in occupational displacement concerns, and Özçevik Subaşi et al. (2025), whose paediatric nurses demonstrated anxiety more strongly tied to job threat than learning demands. The low AI Configuration rating likely reflects the clinical setting,

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where AI manifests as software tools rather than humanoid robots. These results suggest that interventions clarifying AI's complementary role in nursing may be more effective than general technology exposure in reducing anxiety.

These findings carry implications for healthcare administrators and nurse managers. Job replacement concerns — the dominant source of anxiety in this sample — may affect workforce morale, engagement, and retention if left unaddressed. Transparent organizational communication that positions AI as a clinical support tool rather than a substitute for nursing judgment, combined with structured training that demonstrates AI's practical applications in patient care, may help mitigate these concerns and support workforce stability.

Table 3

Level of Attitudes Towards Artificial Intelligence Among the Respondents

Indicator	*M*	*SD*	VI
A. Positive Attitudes			
1. For routine transactions, I would rather interact with AI than a human	3.15	0.92	Neutral
2. AI can provide new economic opportunities for this country	3.53	0.78	Agree
3. AI systems can help people feel happier	3.27	0.73	Neutral
4. I am impressed by what AI can do	3.43	0.74	Agree
5. I am interested in using AI systems in my daily life	3.22	0.78	Neutral
6. AI can have positive impacts on people's well-being	3.35	0.72	Neutral
7. AI is exciting	3.32	0.77	Neutral
8. An AI agent would be better than an employee in many routine jobs	3.05	0.77	Neutral
9. There are many beneficial applications of AI	3.49	0.69	Agree
10. AI systems can perform better than humans	3.03	0.80	Neutral
11. Much of society will benefit from a future full of AI	3.33	0.67	Neutral
12. I would like to use AI in my own job	3.29	0.72	Neutral
Positive Attitudes (Composite)	3.29	0.46	Neutral
B. Negative Attitudes			
13. Organisations use AI unethically	3.17	0.89	Neutral
14. AI systems make many errors	3.02	0.89	Neutral
15. I find AI sinister	3.02	0.70	Neutral
16. AI might take control of people	2.93	0.76	Neutral
17. I think AI is dangerous	2.94	0.74	Neutral
18. I shiver with discomfort when I think about future uses of AI	2.79	0.85	Neutral
19. People like me will suffer if AI is used more and more	3.09	0.75	Neutral
20. AI is used to spy on people	3.02	0.74	Neutral
Negative Attitudes (Composite)	3.00	0.45	Neutral

Note. N = 123. VI = Verbal Interpretation. Verbal interpretation based on a researcher-developed equal-interval scale (5-point): 4.21–5.00 = Strongly Agree; 3.41–4.20 = Agree; 2.61–3.40 = Neutral; 1.81–2.60 = Disagree; 1.00–1.80 = Strongly Disagree. Items presented in original instrument order.

The respondents reported a neutral level of positive AI attitudes overall (*M* = 3.29, *SD* = 0.46). Only three of 12 items crossed into the "Agree" range: AI providing new economic opportunities (*M* = 3.53, *SD* = 0.78), many beneficial applications of AI (*M* = 3.49, *SD* = 0.69), and being impressed by what AI can do (*M* = 3.43, *SD* = 0.74). The remaining nine items were rated "Neutral," with the lowest-rated item being the belief that AI systems can perform better than humans (*M* = 3.03, *SD* = 0.80). The negative attitudes subscale was also rated "Neutral" overall (*M* = 3.00, *SD* = 0.45), with all eight items falling within the "Neutral" range. The highest-rated negative item was the perception that organizations use AI unethically (*M* = 3.17, *SD* = 0.89), while the lowest was discomfort when thinking about future AI uses (*M* = 2.79, *SD* = 0.85).

The neutral ratings on both subscales indicated that the respondents neither strongly endorsed nor rejected the potential benefits or risks of AI. The three items that reached "Agree" on the Positive subscale pertained to abstract societal benefits (economic opportunities, beneficial applications), while items requiring personal engagement with AI (using AI in daily life, preferring AI over human interaction) remained neutral. This pattern suggested an acknowledgment of AI's macro-level utility without personal readiness to adopt it. The uniformly neutral negative attitudes indicated that the respondents did not harbor strong apprehension about AI's ethical or social risks, though neither did they dismiss such concerns. For the institution, these findings pointed to an

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opportunity: the respondents appeared open but uncommitted, suggesting that structured exposure and education could move attitudes in either direction depending on how AI is introduced.

Table 4

Level of Professional Identity Among the Respondents

Indicator	*M*	*SD*	VI
1. I feel like I am a member of this profession.	3.81	0.94	High
2. I feel I have strong ties with members of this profession.	3.92	0.88	High
3. I am often ashamed to admit that I am working in this profession. (R)	4.13	0.84	High
4. I find myself making excuses for belonging to this profession. (R)	4.15	0.68	High
5. I try to hide that I am working as part of this profession. (R)	4.15	0.78	High
6. I am pleased to belong to this profession.	3.99	0.88	High
7. I can identify positively with members of this profession.	3.98	0.84	High
8. Being a member of this profession is important to me.	4.02	0.98	High
9. I feel I share characteristics with other members of the profession.	3.81	0.85	High
Overall Professional Identity	**4.00**	**0.60**	**High**

Note. N = 123. VI = Verbal Interpretation. Verbal interpretation based on a researcher-developed equal-interval scale (5-point): 4.21–5.00 = Very High; 3.41–4.20 = High; 2.61–3.40 = Moderate; 1.81–2.60 = Low; 1.00–1.80 = Very Low. Items marked (R) are reverse-scored. Items presented in original instrument order.

The respondents reported a high level of professional identity overall (M = 4.00, SD = 0.60). All nine items were rated "High," with no item crossing into the "Very High" or "Moderate" range. The highest-rated items were the two reverse-scored statements — making excuses for belonging to the profession and hiding one's professional membership (M = 4.15 each) — indicating that respondents strongly rejected feelings of professional shame or concealment. The lowest-rated items were feeling like a member of the profession and sharing characteristics with other members (M = 3.81 each), suggesting that professional pride was comparatively stronger than interpersonal peer identification, though both remained within the "High" range.

The high overall level is consistent with Landis et al. (2025), whose cross-sectional study of 334 acute care nurses in the United States similarly found that nurses rated themselves at "proficient" or higher levels of professional identity, with values and ethics emerging as the highest-rated domain — a pattern that parallels the present sample's strong rejection of professional shame. That professional identity in the present study appeared anchored more in pride and value commitment than in peer identification aligns with Geoghan Marold et al. (2025), who noted that the values and ethics domain of professional identity tends to be well-internalized among practicing nurses, while relational dimensions such as shared identity and peer connection require more deliberate cultivation. The uniformly high ratings also provide an important baseline for interpreting the moderation analysis: the relatively restricted range of professional identity scores may attenuate observable associations with predictor variables, making the significant findings in the moderation analysis all the more notable.

Table 5

Relationship Between Overall AI Anxiety and Professional Identity

Variable Pair	Test Used	ρ	p	Decision	Magnitude	95% CI	N
AIAS Overall × Professional Identity	Spearman's rho	−.306	< .001	Reject H_{o1}	Moderate	[−.460, −.140]	123

Note. N = 123. Effect size: |ρ| = .306, Moderate (.30–.49).
*p < .05. **p < .01. ***p < .001.

Spearman rho was used instead of Pearson r due to non-normal distribution of the professional identity variable (Shapiro-Wilk W = 0.951, p < .001). The analysis revealed a moderate negative correlation between overall AI anxiety and professional identity (ρ = −.306, p < .001, 95% CI [−.460, −.140]). The null hypothesis was rejected.

No prior study has directly tested the AI anxiety–professional identity relationship, which constitutes the empirical gap this study addressed. However, the direction and magnitude of the finding are consistent with evidence

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linking AI anxiety to other professional outcomes among nurses. Li et al. (2024) reported a comparable negative correlation between AI anxiety and innovation behaviour (r = −0.321, p < .01) in Chinese hospital nurses, suggesting that AI-related apprehension similarly undermines engagement with professional growth activities. Ünal and Avcı (2024) found a stronger inverse relationship between AI anxiety and AI readiness among neonatal nurses (r = −0.549, p < .01), indicating that anxiety may function broadly as a barrier to adaptive professional responses. Geoghan Marold et al. (2025), in their narrative review of the ISPIN framework, specifically identified AI integration as a concern for the values and ethics domain of professional identity formation, providing theoretical support for the present empirical finding. Taken together, these results indicate that AI anxiety extends beyond technology acceptance outcomes and is inversely associated with how nurses perceive their professional role.

Table 6

Relationship Between Positive AI Attitudes and Professional Identity

Variable Pair	Test Used	ρ	p	Decision	Magnitude	95% CI	N
GAAIS Positive × Professional Identity	Spearman's rho	.466	< .001	Reject H_{02}	Moderate	[.310, .590]	123

Note. N = 123. Effect size: |ρ| = .466, Moderate (.30–.49).
*p < .05. **p < .01. ***p < .001.

Spearman rho was used instead of Pearson r due to non-normal distribution of the professional identity variable (Shapiro-Wilk W = 0.951, p < .001). The analysis revealed a moderate positive correlation between positive AI attitudes and professional identity (ρ = .466, p < .001, 95% CI [.310, .590]). The null hypothesis was rejected.

As with the preceding analysis, no prior study has tested this specific bivariate relationship, but the finding is supported by converging evidence on the role of positive AI attitudes in shaping professional outcomes. Özçevik Subaşi et al. (2025) found that GAAIS scores significantly predicted 50% of the variance in both AI anxiety and AI literacy scores among 170 Turkish paediatric nurses, establishing positive attitudes not merely as correlates but as strong determinants of technology-related professional responses. Cho and Seo (2024) similarly demonstrated that acceptance attitudes serially mediated the link between AI perception and intention to use AI among Korean nursing students, confirming that favorable attitudes function as a pathway through which nurses translate perceptions into professional engagement. That positive AI attitudes showed a stronger association with professional identity (|ρ| = .466) than AI anxiety (|ρ| = .306) is consistent with Tarsuslu et al. (2025), who found that AI attitude exerted a stronger direct effect on professional outcomes than AI anxiety did among Turkish hospital nurses. These results collectively suggest that positive attitudes toward AI may be at least as strongly associated with professional identity as anxiety is, and provided the rationale for testing whether positive AI attitudes moderate the relationship between AI anxiety and professional identity.

Table 7

Moderated Regression Model Fit for the Effect of AI Anxiety on Professional Identity as Moderated by Positive AI Attitudes

Model	R	R^2	Adjusted R^2	F	df_1	df_2	p
Full (X + W + X×W)	.543	.295	.277	16.61	3	119	< .001

Note. N = 123. X = AI Anxiety (centered); W = Positive AI Attitudes (centered); X×W = interaction term. PROCESS Model 1 (Hayes, 2022).

Table 8

Moderated Regression Coefficients for the Effect of AI Anxiety on Professional Identity as Moderated by Positive AI Attitudes

Predictor	B	SE	t	p	β	95% CI
Intercept	4.021	0.047	85.23	< .001	—	[3.928, 4.114]
AI Anxiety (centered)	−0.316	0.102	−3.11	.002	−.250	[−0.517, −0.115]

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Positive AI Attitudes (centered)	0.433	0.106	4.11	< .001	.334	[0.224, 0.642]
Interaction (X×W)	0.420	0.169	2.48	.015	.195	[0.085, 0.755]

Note. N = 123. All predictors mean-centered. VIF range: 1.04–1.12 (no multicollinearity). Durbin-Watson = 2.14. Residual normality: Shapiro-Wilk W = 0.968, p = .005 (marginal violation; skewness = −0.505, kurtosis = −0.332, within acceptable shape thresholds).
R^2 change due to interaction: ΔR^2 = .036, F change(1, 119) = 6.15, p = .015.
*p < .05. **p < .01. ***p < .001.

Table 9
Simple Slopes of AI Anxiety on Professional Identity at Levels of Positive AI Attitudes

Level of Moderator	W (centered)	W (original)	Simple Slope	SE	t	df	p	95% CI
Low (−1 *SD*)	−0.4625	2.8254	−0.510	0.124	−4.11	119	< .001	[−0.756, −0.264]
Mean	0.0000	3.2879	−0.316	0.102	−3.11	119	.002	[−0.517, −0.115]
High (+1 *SD*)	0.4625	3.7505	−0.121	0.132	−0.92	119	.360	[−0.383, 0.140]

Note. N = 123. W = Positive AI Attitudes. Johnson-Neyman transition point: W = 3.5163 (original scale); 74.0% of respondents fell below this point (slope significant), 26.0% fell at or above (slope not significant).
*p < .05. **p < .01. ***p < .001.

Moderated regression analysis was conducted using PROCESS Model 1 (Hayes, 2022) with AI anxiety (centered) as the independent variable, professional identity as the dependent variable, and positive AI attitudes (centered) as the moderator. Assumptions were met: VIF range 1.04–1.12, Durbin-Watson = 2.14, and residual skewness (−0.505) and kurtosis (−0.332) within acceptable thresholds despite marginal Shapiro-Wilk violation (W = 0.968, p = .005). Influential cases were screened using Cook's distance; six cases exceeded the 4/N threshold (0.033), but the maximum Cook's D was 0.13 — well below 1.0 — and all cases were retained (Cook & Weisberg, 1982). As shown in Table 7, the full model was significant, F(3, 119) = 16.61, p < .001, R^2 = .295. The regression coefficients in Table 8 indicated that positive AI attitudes was the strongest predictor (B = 0.433, β = .334, p < .001), followed by AI anxiety (B = −0.316, β = −.250, p = .002) and the interaction term (B = 0.420, β = .195, p = .015, ΔR^2 = .036). The interaction effect was small in magnitude (f^2 = .051; Cohen, 1988), indicating that while statistically significant, the moderating effect accounted for a modest proportion of additional variance beyond the main effects. Simple slopes analysis in Table 9 confirmed that the negative AI anxiety–professional identity relationship was significant at low (B = −0.510, p < .001) and mean (B = −0.316, p = .002) levels of positive AI attitudes but not at high levels (B = −0.121, p = .360). The Johnson-Neyman transition point was 3.5163 on the GAAIS Positive scale; 74.0% of respondents fell below this threshold where the slope remained significant. The null hypothesis was rejected.

This is the first empirical demonstration that positive AI attitudes moderate the AI anxiety–professional identity relationship, addressing the methodological gap this study identified. The buffering pattern aligns with Lazarus and Folkman's (1984) Transactional Model, which predicts that outcomes depend on the interaction between threat appraisal (AI anxiety) and coping resources (positive attitudes toward AI's utility). Prior studies positioned attitudes as mediators rather than moderators: Liu et al. (2025) found that AI anxiety mediated between AI literacy and attitudes among 478 Chinese hospital nurses, and Tarsuslu et al. (2025) showed that AI attitude mediated digital leadership's indirect effect on AI anxiety among 439 Turkish nurses. The present study extends this literature by demonstrating that positive AI attitudes function not merely as a transmitting variable but as a boundary condition — determining whether AI anxiety is significantly associated with professional identity at all. That 74% of respondents fell below the buffering threshold is consistent with Özçevik Subaşi et al. (2025), who found that GAAIS scores accounted for 50% of the variance in AI anxiety and literacy among paediatric nurses, underscoring how powerfully attitudes shape technology-related professional responses. The small effect size of the interaction (ΔR^2 = .036) suggests that while the moderation mechanism is operative, other variables not included in the model — such as AI

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literacy, organizational support, or years of clinical experience — likely contribute additional explanatory power. These findings indicate that fostering positive AI attitudes may be associated with a weakened anxiety-identity link, though the cross-sectional design precludes directional claims about whether attitude change leads to identity protection or whether nurses with stronger identity develop more favorable attitudes.

These findings indicate that fostering positive AI attitudes may be associated with a weakened anxiety-identity link, though the cross-sectional design precludes directional claims about whether attitude change leads to identity protection or whether nurses with stronger identity develop more favorable attitudes.

For policymakers and healthcare leaders, these results suggest that fostering positive AI attitudes — through structured exposure, participatory implementation, and AI literacy programs — may strengthen workforce resilience and support the safe integration of AI technologies in clinical settings. The finding that 74% of respondents had not yet reached the attitude threshold necessary for the buffering effect to operate indicates that most nurses in this sample would not benefit from the protective mechanism without deliberate institutional intervention.

Several limitations should be considered. The cross-sectional design precludes causal inference; the observed associations may reflect reverse or reciprocal relationships. Data were collected from a single public hospital, limiting generalizability to other settings, regions, or healthcare systems. All variables were measured through self-report, which is susceptible to social desirability bias. The restricted range on professional identity (all item means rated "High") may have attenuated the observed correlations. The interaction effect, while statistically significant, was small ($\Delta R^2 = .036$, $f^2 = .051$), and unmeasured variables — such as AI literacy, organizational support, and clinical experience — likely contribute additional explanatory power. Finally, demographic variables were not entered as covariates, consistent with Hayes' (2022) recommendation, meaning potential confounding by age, experience, or education was not statistically controlled.

Conclusions

The study concludes that Filipino hospital nurses experience moderate AI anxiety driven primarily by job replacement concerns rather than technological unfamiliarity, hold neutral attitudes toward AI suggesting openness without commitment, and maintain high professional identity anchored in pride and value commitment. AI anxiety was moderately and inversely associated with professional identity ($\rho = -.306$, $p < .001$), while positive AI attitudes showed a stronger positive association ($\rho = .466$, $p < .001$), indicating that favorable attitudes may be at least as consequential as anxiety reduction in sustaining professional identity. Positive AI attitudes significantly moderated the anxiety–identity relationship ($B = 0.420$, $p = .015$): among nurses with high positive attitudes, the negative link between AI anxiety and professional identity was no longer statistically significant. However, 74% of respondents fell below the buffering threshold, indicating that the protective mechanism, while operative, has not yet reached most of the workforce.

The findings were consistent with the structural predictions of both the Roy Adaptation Model and the Transactional Model of Stress and Coping. The RAM predicted that the same focal stimulus (AI anxiety) would produce different role function outcomes depending on contextual conditions — precisely the moderation pattern observed. Lazarus and Folkman's (1984) model predicted that outcomes depend on the interaction between threat appraisal and coping resources, consistent with the significant interaction term and the weakening of the anxiety–identity slope as positive attitudes increased. However, only approximately one-quarter of respondents had developed sufficiently positive attitudes to neutralize the association, suggesting that the buffering mechanism requires deliberate institutional cultivation to benefit the broader nursing workforce.

These findings contribute to nursing science and clinical practice by demonstrating that AI anxiety extends beyond technology acceptance outcomes and is inversely associated with how nurses perceive their professional role — a relationship that positive AI attitudes can conditionally buffer. For healthcare systems, the results indicate that supporting nurses through AI integration requires attention not only to technical training but also to interventions that strengthen positive perceptions of AI's utility in patient care. From a public health and workforce perspective, fostering adaptive attitudes toward AI may help sustain a competent and resilient nursing workforce capable of delivering quality care in increasingly technology-driven clinical environments.

Recommendations

Given that job replacement was the dominant source of AI anxiety, hospital nursing departments may implement AI orientation sessions that explicitly address job security concerns and demonstrate AI as a clinical support tool rather than a workforce replacement. As positive AI attitudes moderated the AI anxiety-professional identity relationship but most respondents had not yet reached the buffering threshold, nursing education programs

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may integrate AI literacy content designed not only to build technical skills but to foster positive appraisal of AI's utility in nursing practice.

Since positive AI attitudes emerged as the strongest predictor of professional identity in the moderation model, hospital administrators may prioritize attitude-building strategies — such as nurse-led AI pilot projects and participatory implementation planning — as a practical means of sustaining professional identity during AI integration. With attitudes toward AI rated neutral on both subscales, institutional leaders may consider structured AI exposure programs to shape attitudes positively before resistance patterns develop.

Considering the cross-sectional, single-site design and the small interaction effect size ($\Delta R^2 = .036$), future researchers may replicate the moderation model using longitudinal designs and across multiple Philippine healthcare settings. Future studies may also explore additional variables — such as AI literacy, organizational support, or clinical experience — that may further explain the AI anxiety–professional identity relationship, and may examine the directionality of the anxiety-attitudes-identity associations through prospective or experimental designs.

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