The Moderator Role of Age in the Relation between Nursing Educators' Emotional Regulation Styles and Perspectives on Artificial Intelligence

Samia ElHusseini Abd-ElMageed ElKholy[1], Shaimaa Samir Dawood[2]*, Reham Magdy Mohammed AbdElsalam3

1 Assistant Professor Gerontological Nursing, Faculty of Nursing, Alexandria University, Alexandria City, Egypt

2 Assistant Professor Gerontological Nursing, Faculty of Nursing, Alexandria University, Alexandria City, Egypt

3 Assistant Professor Gerontological Nursing, Faculty of Nursing, Alexandria University, Alexandria City, Egypt

Correspondence* [shaimaa.dawoud@alexu.edu.eg]

Abstract

Background: Individuals' perspective on artificial intelligence may be influenced by their psychological factors, such as their emotional regulation styles. However, these concepts are typically examined in isolation. This article seeks to combine these two concepts by examining the relation between them among nursing educators. **Aim:** To explore the relationship between emotional regulation styles and perspectives on artificial intelligence among nursing educators and how age moderates this relation. **Design:** descriptive correlational research design. **Setting:** Faculty of Nursing, Alexandria University, Egypt. **Subjects:** A convenience sample of 184 nursing educators. **Tools:** (1) Nursing educators' Personal Data Structured Questionnaire, (2) Perspectives toward Artificial Intelligence Structured Questionnaire (PAIQ), and (3) Emotional Style Questionnaire (ESQ). **Results:** The mean percent score of overall emotional regulation styles among all of the nursing educators was 60.90±12.41, indicating that they have a considerable degree of emotional health in general, with a significantly higher mean score among older participants (69.25±11.82) than their younger counterparts (56.17±11.05). Also, structural equation model approach found a significant main positive effect of emotional regulation styles on positive perspectives toward artificial intelligence (β=0.599 ، CR=3.155 ، P= 0.002), and a significant main negative effect of age on positive perspectives toward artificial intelligence (β=-1.153 ، CR=-2.607 ، P= 0.009). These effects were moderated by a significant interaction between age and emotional regulation styles (β=-0.012 ، CR=-3.017 ، P= 0.003). **Conclusion:** A significant positive relationship was found between the nursing educators' overall emotional regulation styles score and positive perspectives on artificial intelligence which moderated by age. For illustration, the emotional regulation styles overall score has a stronger positive effect on positive perspectives on artificial intelligence for nursing educators of young age than for nursing educators of older age. **Recommendations**: It is critical to have candid discussions with nursing educators about artificial intelligence, so, they can offer their perspectives and influence how artificial intelligence will be used in education in the future. Also, older nursing educators who enjoy more healthy emotionality should be encouraged to support others of younger age during their emotional regulation difficulties, to improve camaraderie and productivity and facilitate the installation of new artificial intelligence tools.

Keywords: Emotional regulation styles, Moderator role of age, Nursing educators, Perspectives on artificial intelligence.

Abbreviations: artificial intelligence (AI), nursing educators (NEs), emotional regulation styles (ERS).

Introduction

The world is being rapidly transformed by artificial intelligence (AI) applications. The landscape of higher education is poised to be at the vanguard of this transformation, such as learning platforms deploying AI to monitor students' progress and make tailored and specific recommendations to meet user needs (**Kumar, 2023**). The perspectives of nursing educators (NEs) concerning AI tend be very diverse, some academics view AI as a force for good that can be used to advance education,

others see it as a danger that could result in job losses or low-quality and biased educational materials (**Bergdahl et al., 2023**). Positive perspectives on AI emphasize its potential advantages, while negative perspectives on AI emphasize its potential drawbacks and mixed perspectives on AI take into account both the advantages and disadvantages of AI. Before implementing AI, proponents of mixed perspectives contend that precautions must be taken to reduce the risks **(Ahmad et al., 2023; Sugandini et al., 2018).**

Resistance to AI-powered education may be more likely among academics that value interpersonal interactions, particularly as this relates to their pedagogical skills. Additionally, those who are more comfortable using technology are more likely to have favorable opinions of AI than those who are less at ease with technology-led education. Also, NEs may have different perspectives on AI depending on their respective fields of study **(Ali, 2023).** Numerous other factors, including the specific AI system being used, the experiences of similar technological advancements, and the emotional makeup and emotional regulation styles (ERS) of NEs, can also play a significant role in shaping their perspectives **(Steinbauer et al., 2021).**

Understanding ERS helps to better comprehend how others experience, communicate, and regulate their emotions. Most people employ a range of ERSs in daily life, depending on the circumstances, as well as throughout their lifespans (Eldesouky et al., 2023). There is no one style that works for everyone when it comes to emotional regulation, and some NEs might be more likely to use one style than another. We can more effectively manage our emotions if we are aware of our own ERS **(Xie et al., 2022; Kesebir et al., 2019).**

The Emotional Style Theory by Davidson and Begley is among the most well-known of the many different ERS models. According to this theory, there are six different ERSs: attention, resilience, a positive outlook, social intuition, self-awareness, and sensitivity to context **(Davidson & Begley, 2012).** Resilient emotional NEs are able to overcome difficulties and setbacks. Also, NEs who have a positive outlook are upbeat and hopeful. The emotions of others (including students) can also be more accurately read by academics with a strong social intuition style. The ability to comprehend one's own emotions and recognize the situations or people that set off particular emotions is a sign of good self-awareness. The sensitivity to context style is the fifth style. When expressing and responding to emotions, NEs who are sensitive to context can take the social and cultural context into account. Finally, teachers with strong attention skills can maintain their composure under pressure by focusing on the here and now (**Xu et al., 2023**). Even if they have some doubts, NEs who are better at controlling their emotions are more likely to be open to new experiences, have positive attitudes towards AI, and be able to deal with unpredictability and ambiguity. Furthermore, NEs who find it difficult to interact with other humans may also find AI solutions to be useful tools to avoid such interpersonal communications associated with traditional learning formats (**Kaya et al., 2022**).

Age-related changes in ERSs occur throughout life. Despite typical declines in physical and cognitive functioning, older adults generally report high levels of emotional well-being. Older NEs might be more likely to repress their emotions than younger NEs to express their emotions honestly (**Orgeta, 2009**). Also, older adults typically experience less negative effects and report using more effective adaptive emotion regulation techniques. Furthermore, **Orth et al., (2018)** highlighted the importance of older adults' positive self-perceptions in promoting emotional well-being and quality of life. Importantly, the different ways that different age groups regulate their emotions may cause them to view AI very differently.

NEs' exposure to AI can vary depending on their age. Since they are more likely to use technology and be familiar with products and services utilizing AI, younger NEs are more likely to have had exposure to AI applications, or at least to have more familiarity with them conceptually, than their older counterparts. On

the other hand, older NEs might be more concerned about the possibility that AI will replace teachers or cause a loss of human connections in the classroom (**Offerman et al., 2023; Shandilya & Fan, 2022; Livingstone & Isaacowitz, 2021).**

Significance of the study

Overall, the present study may offer insightful information that can be used to advance nursing instruction, patient care, and the use of AI in healthcare. A deeper comprehension of how NEs view and interact with AI may make it easier to spot any potential points of contention or misunderstanding and to devise solutions. This study may contribute to the development of nursing curricula that equips future nurses with the skills necessary to safely use AI in patient care. Additionally, by identifying the variables that affect NEs' perspectives on AI, such as their age, and ERS, training programs that help NEs control their emotions in a way that is advantageous when working with AI could be developed.

Age, ERSs, and NEs' perspectives on AI all interact in a nuanced and complex way. To design AI systems that are useful and satisfy the needs of various NEs, it is crucial to comprehend this relationship. Studies largely ignore the emotional side of AI in favor of the technical and technological aspects. This study can improve originality in analysis and synthesis by facilitating the analysis and acceptance of novel, complex ideas. The present study searches the relationship between emotional regulation styles and perspectives on AI among nursing educators and how age moderates this relation. For this purpose, a path analysis model drawn by using SPSS-AMOS of structural equation modeling (SEM) was tested (figure 1).

Operational definition:

In the present research, Nursing Educators (NEs) refer to Nursing Faculty Members.

Aim of the study:

The present study aimed to explore the relationship between emotional regulation styles and perspectives on artificial intelligence among nursing educators and how age moderates this relation.

Research objectives:

1- Investigate the ERSs among NEs.
2- Explore the perspectives on AI among NEs.
3- Determine the relation between ERSs and perspectives on AI among NEs and how age moderates this relation.

Research hypotheses:

Based on the evidence from existing literature (as expounded above), the following hypotheses were formulated:

H1: ERSs among NEs predict their perspectives on AI.

H2: When controlling for relevant variables, age moderates the relation between ERSs and perspectives on AI among NEs.

H3: The ERSs overall score has a stronger positive effect on perspectives on AI for NEs of young age than for NEs of older age.

METHOD

Study Design

The methodological approach used in the present study was a descriptive correlational research design, deploying a quantitative Likert-type questionnaire survey.

Setting

The study was conducted at the Faculty of Nursing, Alexandria University, Egypt. The faculty contains 9 different academic departments with different nursing specialties (Medical Surgical Nursing, Community Health Nursing, Psychiatric and Mental Health Nursing, Nursing Education, Critical Care and

Emergency Nursing, Nursing Administrative, Gerontological Nursing, Gynecological and Obstetric Nursing, and Pediatric Nursing). The total number of the NEs (i.e., the study population) comprises 290 members.

Study Participants

The Epi Info V. 7.0 program was used to determine the size of the study sample based on the following statistical considerations: population size 290, frequency 50%, acceptable error 5%, and confidence level 95%. Consequently, the required sample size was calculated to be at least 166. Subsequently, a convenience sample of 184 NEs was recruited from the chosen setting, subject to being at least 20 years old and agreeing to voluntarily participate in the study, after being informed about its nature and objectives, and their right to refuse or withdraw without it affecting them professionally, or their statutory rights.

Data Collection Tools

Three tools were used to gather the data that was required as follows;

Tool I: Nursing Educators' Personal Data Structured Questionnaire

The researchers developed this tool for this study to evaluate the NEs' general socio-demographic and personal data, such as age, sex, social status, and academic position.

Tool II: Perspectives toward Artificial Intelligence Structured Questionnaire (PAIQ)

After a thorough review of recent literature (Mehta et al., 2021; Nagro, 2021; Dai et al., 2020; Lemay et al., 2020), the researchers developed the PAIQ for this study to evaluate the NEs' perspectives on AI. It encompasses 32 items covering two dimensions: NEs' positive and negative perspectives on AI. Items are answerable using a five-point Likert scale, with a maximum of five points, from strongly disagree (1) to strongly agree (5). Each dimension's mean percent score was calculated, and the higher each dimension's mean percent score, the more strongly the particular perspective on AI is supported and endorsed. Additionally, the total percent score for each domain was divided into three levels; low (score of less than 50 %), moderate (score from 50 to less than 75%), and high (score of 75% and more). This tool was supported to be valid by using suitable tests. Factor analysis revealed that the items' saturation values exceeded 0.35 and their prevalence values ranged from 0.83 to 0.88. Additionally, the Bartlett's test of sphericity reached statistical significance (P = 0.000), which supported the factor ability of the correlation matrix, and the Kaiser-Meyer-Olkin measure of sampling adequacy was 0. 955 indicating that these data were very suitable for factor analysis. As a result, the items of this scale were kept. The Cronbach's alpha coefficient was used to confirm its reliability (α = 0.91).

Tool III: Emotional Style Questionnaire (ESQ)

ESQ is a 24-item self-reported instrument developed and validated by **Kesebir et al., (2019)** and has previously been published in other studies and translated into several languages **Gasiorowska et al., (2022); Samadzade et al., (2022); Jekauc et al., (2021)** to assess the six dimensions of healthy emotionality as well as overall healthy emotionality. It illustrates how individuals differ along the six dimensions that comprise a balanced emotional life: Resilience, Outlook, Social Intuition, Sensitivity to Context, Self-Awareness, and Attention. The study participants rated how strongly they agreed or disagreed with each statement on a seven-point Likert scale, with scores ranging from strongly disagree (1) to strongly agree (7). Each of these six dimensions is given a separate score, and there is also an overall score for healthy emotionality, which is the sum of the six dimensions. The more positive emotions there are, the higher the overall score. Each dimension's mean percent score was calculated, and the higher each dimension's mean percent score, the more strongly a particular ERS is supported and endorsed. The Cronbach's alpha

coefficient was used to confirm its reliability (α = 0.88).

Method

1- This research began after obtaining approval to conduct this study from the Research Ethics Committee of the Faculty of Nursing, Alexandria University.

2- Written approval was obtained from the responsible authority at the Faculty of Nursing; Alexandria University (Dean of the Faculty and the Vice- Dean for Research), and the head of each academic department in the selected Faculty were asked for permission to conduct the study, after clarifying its aim and scope.

3- Tool I, Nursing educators' Personal Data Structured Questionnaire was developed by the researchers to assess the NEs' general socio-demographic and personal data.

4- Tool II, Perspectives toward Artificial Intelligence Structured Questionnaire (PAIQ), was developed by the researchers to evaluate the NEs' perspectives on AI. Seven experts in the relevant fields (Psychiatric and Mental Health Nursing, as well as Gerontological Nursing) evaluated PAIQ for its content validity. Its reliability was tested using suitable statistical analysis.

5- Tool III, Emotional Style Questionnaire (ESQ), was used to assess the six dimensions of healthy emotionality as well as overall healthy emotionality among NEs. Its reliability was tested using suitable statistical analysis.

6- A pilot study was conducted on 20 NEs who were selected from the study setting to assess the clarity and feasibility of the study tools. They were not included in the study sample.

7- The researchers created electronic Microsoft Form that included the study tools and the study's aim.

8- The head of each academic department received the link to this form and was directed to post it on the academic department's official site. Also, to accelerate the sharing rate, it posted on the official Faculty WhatsApp group to enable participants to complete the survey.

9- The study aim and objectives were clearly stated in the first section of the form, and then followed by the online informed consent form. Once the nursing educators expressed their voluntary willingness to participate in the study, they clicked "Agree" and proceeded to complete the questionnaires anonymously. It allowed only one response to be submitted. Senior investigators checked the submitted questionnaires daily and downloaded a final Excel file of participants' responses after the due date. The electronic form was available to receive the NEs' responses for one month, from mid-March 2023 to mid-April 2023.

10- SPSS version 20 was used for the statistical analysis, and the level of significance was set at 0.05.

Ethical considerations:

All study subjects were informed about the study aim and online informed consent was obtained accordingly from all of them. The confidentiality of the obtained data was guaranteed and upheld and participants' anonymity was preserved. The participants' engagement was completely voluntary and the freedom to withdraw from the study at any time was guaranteed.

Statistical analysis

Data were entered into the computer and analyzed using IBM SPSS version 20.0 software. (IBM Corporation, Armonk, NY). The reliability of the tools was determined by Cronbach's alpha. To describe qualitative data, numbers, and percentages were used. Using the Kolmogorov-Smirnov test, the distribution's normality was evaluated. In order to describe quantitative data, the range (minimum and maximum), mean, standard deviation, and median were used. The results' significance was

established at the 5% level. The used tests were F-test (ANOVA) to compare more than two groups for quantitative variables that is normally distributed. The path analysis model drawn by using SPSS-AMOS of structural equation modeling (figure 1) was used to address the relation between ERSs and perspectives on AI and among nursing educators and how age moderates this relation.

Results

Table 1 illustrates that the vast majority (94.6%) of participants were females. In relation to age categories, the table notes that almost half of the participants were younger adults (aged 20-39 years old) (48.9%), followed by 28.3% middle-aged (aged 40-59), and 22.8% older (aged 60 and above). The age distribution of the NEs ranged from 25 to 77 years old, with a mean age of 43.84±13.70. Also, the table notes that 77.2% of the NEs were married. As for academic title, 23.9% of NEs were lecturers, followed by similar proportions of emeritus professors (22.8%) and assistant professors (20.7%), while 16.3% were demonstrators. Furthermore, almost a third (32.6%, the highest percentage) of the NEs reported work experience that ranged from 5-14 years.

Table 2 indicates that the NEs scored a considerable degree of healthy emotionality in general, as indicated by their overall mean percent score of emotional health (60.90±12.41). The main ERSs adopted and experienced by participants were social intuition (68.66±14.74) and self-awareness (63.90±18.08). On the other hand, the least experienced ERSs were the resilience domain, as indicated by the lowest mean percentage score (54.48±20.54).

Table 3 shows the age difference in ERSs among the study subjects. The table indicates that the "older" NEs (aged 60+ years) had more healthy emotionality than their younger counterparts, in relation to both general overall emotional health and in relation to the different ERSs experienced by them. For specification, a highly significant difference was observed between the different age group in relation to overall emotional health (F=19.742, P< 0.001), with the highest mean score being among the older subjects (69.25±11.82).

The same pattern of difference also observed between the older NEs and others in relation to different ERSs. For examples, older NEs reported the highest mean scores of the following domains: outlook (67.06±18.26), resilience (66.87±18.29), sensitivity to context (71.83±14.95), attention (64.48±19.33), and self-awareness (75.20±14.40). The differences were highly significant (P≤0.001). This means that older NEs seem to be better able to maintain positive emotions over time (outlook), bounce back from negative emotions (resilience), consider the social context when responding emotionally and behaviorally (sensitivity to context), block out distractions and maintain focus (attention), and recognize the bodily signals that express emotions (self-awareness).

The table also notes that the main adopted ERS among older NEs was self-awareness (75.20±14.40), while the least supported style by them was attention (64.48±19.33). As for younger and middle-aged subjects, the main ERS supported by them was social intuition (67.04±14.24, 70.35±14.68, respectively), while in the least adopted one was resilience style (47.78±20.12, 56.09±18.16, respectively).

Table 4 illustrates that the NEs reported greater endorsement for positive perspectives on AI (74.82±14.39) than negative ones (54.81±15.06). In relation to the positive perspective among the study subjects, 52.2% of them perceived high positives, 44.6% moderate positives, and 3.3% low positives on AI. Concerning the negative perspectives toward AI, 12% of them perceived high negatives, 47.8% moderate negatives, and 40.2% low negatives on AI.

Table 5 clarifies the fit parameters of the structural equation model (SEM) (Model X^2 = 1.805; CMIN/DF= 1.80; CFI = 1.000; NFI = 0.999; RFI = 0.999; and RMSEA = 0.666 which indicate the goodness-of-fit of the model.

Table 6 shows the relationships between variables in the default model. The table showed a significant main positive effect of ERSs on positive perspectives on AI (β=0.599 ، CR=3.155 ، P= 0.002), indicating that higher overall ERSs score (emotional health) was associated with higher positive perspectives on AI. Also, there was a significant main negative effect of age on positive perspectives on AI (β=-1.153 ، CR=-2.607 ، P= 0.009), indicating that older age was associated with low positive perspectives on AI. However, these effects were moderated by a significant interaction between age and ERSs. Specifically, ERSs had a stronger positive effect on positive perspectives on AI for NEs of young age than for NEs of older age (β=-0.012 ، CR=-3.017 ، P= 0.003). In other words, age moderates the relationship between ERSs and positive perspectives on AI.

Table (1): Distribution of the nursing educators according to their personal data (n = 184)

Personal data	**No.**	**%**
Gender		
Male	10	5.4
Female	174	94.6
Age (years)		
20-39 young adults	90	48.9
40-59 middle-aged adults	52	28.3
60+ older adults	42	22.8
Min. – Max.	25.0 – 77.0	
Mean ± SD.	43.84 ± 13.70	
Academic Title		
Emeritus Professor	42	22.8
Professor	14	7.6
Assistant professor	38	20.7
Lecturer	44	23.9
Assistant lecturer	16	8.7
Demonstrator	30	16.3
Social Status		
Married	142	77.2
Single	26	14.1
Widow	8	4.3
Divorced	8	4.3
Years of work experience (years)		
1- 4	26	14.1
5-14	60	32.6
15-24	34	18.5
25-34	18	9.8
35 and above	46	25.0

SD: **Standard deviation**

Table (2): Distribution of the nursing educators according to their emotional regulation styles (n = 184)

Emotional regulation styles	**Total Score**			**% Score**
	Min. – Max.	**Mean ± SD.**	**Median**	**Mean ± SD.**
1. Outlook	5.0 – 27.0	18.45 ± 4.20	18.0	60.19 ± 17.50
2. Resilience	8.0 – 28.0	17.08 ± 4.93	16.50	54.48 ± 20.54
3. Social intuition	11.0 – 28.0	20.48 ± 3.54	20.50	68.66 ± 14.74
4. Sensitivity to context	8.0 – 27.0	18.58 ± 4.58	19.0	60.73 ± 19.07
5. Attention	4.0 – 27.0	17.78 ± 4.40	18.0	57.43 ± 18.33
6. Self-awareness	8.0 – 28.0	19.34 ± 4.34	20.0	63.90 ± 18.08
Overall emotional regulation	**74.0 – 158.0**	**111.70 ± 17.87**	**111.5**	**60.90 ± 12.41**

Table (3): Age difference in emotional regulation styles among the nursing educators (n = 184)

Age (years)	Emotional regulation styles						
	Outlook	Resilience	Social intuition	Sensitivity to context	Attention	Self-awareness	Overall
	Mean ± SD.	Mean ± SD.	Mean ± SD.	Mean ± SD.	Mean ± SD.	Mean ± SD.	Mean ± SD.
20-39 young adults	55.56 ± 16.0	47.78±20.12	67.04±14.24	56.39±56.39	52.69±16.0	57.59±17.67	56.17±11.05
40-59 middle-aged adults	62.66±17.37	56.09±18.16	70.35±14.68	59.29±18.97	59.94±19.28	65.71±16.80	62.34±11.31
60- older adults	67.06±18.26	66.87±18.29	70.04±15.81	71.83±14.95	64.48±19.33	75.20±14.40	69.25±11.82
F (p)	**7.394* (0.001*)**	**14.442* (<0.001*)**	**1.073 (0.344)**	**10.595* (<0.001*)**	**7.045* (0.001*)**	**16.264* (<0.001*)**	**19.742* (<0.001*)**

F: F for One way ANOVA test p: p-value for comparison between the studied categories *: Statistically significant at $p \leq 0.05$

Table (4): Distribution of the nursing educators according to their perspectives toward AI (n = 184)

Perspective toward AI	Low		Moderate		High		Total Score	% Score
	No.	%	No.	%	No.	%	Mean ± SD.	Mean ± SD.
- Positive	6	3.3	82	44.6	96	52.2	71.87 ± 10.36	74.82 ± 14.39
- Negative	74	40.2	88	47.8	22	12.0	44.70 ± 8.43	54.81 ± 15.06

Table (5): Model Fit Summary (the fit parameters of the structural equation model**)**

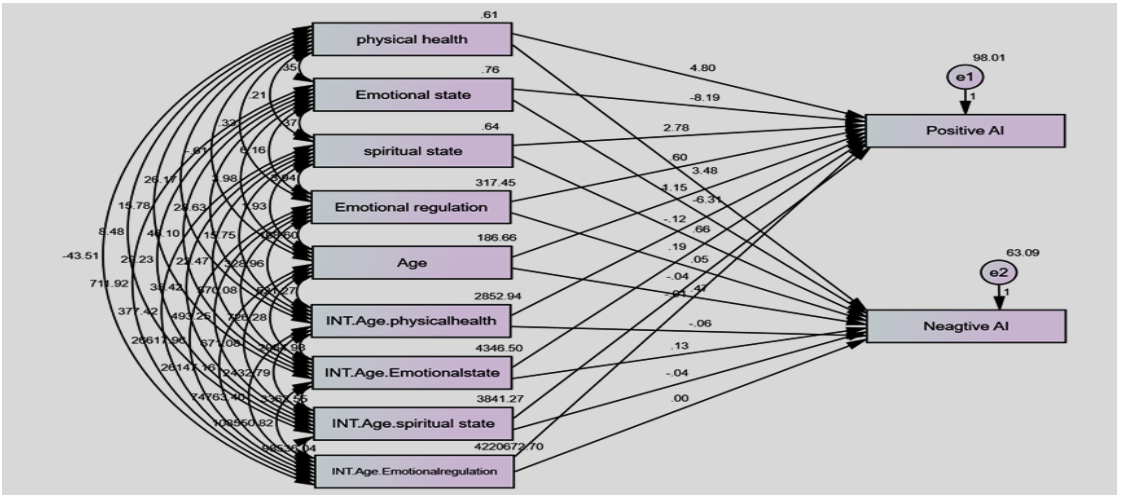
Pointer		Value
CMIN		1.805
CMIN/DF		1.805
GFI		0.998
AGFI		0.882
PGFI		0.015
NFI		0.999
RFI		0.999
IFI		1.000
TLI		0.986
CFI		1.000
RMSEA		0.666
ECVI	Default model	0.720
	Saturated model	0.721

Source: Results of statistical analysis (AMOS 23)

Table (6): Estimates (Group number 1 - Default model): the relationship between emotional regulation styles, perspectives on artificial intelligence, and age

The relationships between variables			Estimate	S.E.	C.R.	P	**Standardized** coefficient
Negative(AI)	<---	Emotional regulation	0.054	0.152	0.354	0.724	0.114
Positive (AI)	<---	Emotional regulation	0.599	0.190	3.155	0.002**	1.033
Negative(AI)	<---	Age	.466	0.355	1.315	0.189	0.758
Positive (AI)	<---	Age	-1.153	0.442	-2.607	0.009**	-1.525
Negative(AI)	<---	INT.Age.Emotional regulation	-.004	0.003	-1.119	0.263	-0.862
Positive (AI)	<---	INT.Age.Emotional regulation	-0.012	0.004	-3.017	0.003**	-2.358

Figure (1) the structural equation model using SPSS-AMO



Discussion

It is crucial to comprehend how and why NEs view AI, as this will likely impact the effectiveness of AI-based education. Evidence from a variety of fields highlights the crucial role that human factors play in practitioners' adoption of technology particularly; individual age, perspective, and emotional health. This study presents an insight into the relationship between ERSs and perspectives toward AI among NEs and how they differ across different age groups.

The present study result revealed that the NEs enjoyed a considerable degree of healthy emotionality in general and also in relation to different ERSs (table 2). This can be justified by the inherent characteristics of the study subjects in terms of being NEs, all of whom have (ipso facto) high levels of educational attainment, which supports their ability to control and regulate their emotions. Also, the supportive environment in which they work allows them to deal with the most knowledgeable and superior groups of society who acts as role models for the young generations. **Han et al., (2020)** suggested that the use of reappraisal strategies by teachers was facilitated by supportive teaching practices, which had positive effects on their emotional health and wellbeing. On the other hand, **Salimzadeh's (2021)** study suggested that stress entailed in the academic field jeopardizes the personal and professional well-being of NEs and elicits a range of emotions which affect their cognition, emotional wellbeing, and performance.

According to the present study, older NEs (aged 60 years and above) reported the highest mean scores in relation to overall emotional health and in relation to different ERSs in comparison to others of younger age (table 3). This finding may be due to older adults' limited time perspectives, which may cause them to concentrate on present-focused hedonic goals. As a result, they may experience improved attention and memory due to goal-induced positive effects. Furthermore, as age advances, older adults may benefit from their past experience, and reevaluate the value and importance they assign to life aspects. **Livingstone & Isaacowitz, (2021)** concluded that compared to younger adults, older adults are better at controlling their emotions, have more positive affect overall, and engage in negative aspects of life less frequently.

In relation to the perspective on AI, the present study results showed that the NEs reported higher support for positive perspectives than negative ones (table 4). This may be due to their experience during Covid-19 lockdowns, which may limit the traditional educational process in most countries worldwide for extended periods during the 2020-2022 era. At this time, the appearance of new technologies helped to solve the problematic situation and substituted traditional face-to-face learning with online solutions. Most NEs sought or were compelled by necessity to learn about such tools and how to use them. It can be said that the Covid-19 pandemic might correct latently negative perspectives about technology and AI educational tools, affirming the findings of **Nagro, (2021)** who found that nursing educators unanimously agreed that e-learning and AI enhanced pertinent teaching goals and associated practices during the pandemic.

According to the present study, NEs of younger age perceived greater positives of AI in comparison to older NEs (table 6). This can be justified by the normal age-related changes experienced by older NEs, such as sensory and fine motor decline, may limit their readiness and motivation to deal with new AI tools and programs. At the same time, the pervasive use of new technologies among younger generations may facilitate their more ready acceptance of AI in their education and work. In the same vein, according to **Chien et al., (2019)** older adults typically have less curiosity about new technologies than younger adults. Additionally, **Chu & Fung, (2022)** looked at age differences in curiosity when it came to learning a novel technology, and looked into the moderating effect of personal relevance. In comparison to younger people, they found that older people displayed significantly lower curiosity traits.

Higher overall ERSs score (greater healthy emotionality) predicts greater positive perspectives toward AI, according to the present study results (table 6). This can be explained by the fact that improved emotional control aided academic participants in developing positive teacher-student and peer-to-peer relationships. Additionally, positive emotions can play a significant role in fostering learning and teaching in the classroom. **Abu-Shanab & Shanab, (2022)** revealed that emotional regulation is a significant predictor of technology adoption in a context involving decision-making.

Our hypothesis related to the moderating role of age on the relationship between ERSs and perspectives on AI among NEs was accepted. This can be elaborated on by that ERSs had a stronger positive effect on positive perspectives on AI for NEs of young age than for NEs of older age (table 6). One explanation for the present result is age related cognitive flexibility changes. Younger NEs often display greater cognitive flexibility, which refers to the capacity to change one's perspective in response to new information or experiences **(Amelchenko et al., 2023).** Also, age may have an impact on one's ability to adapt to technological progress. For instance, younger NEs were raised in the digital age, where quick technological change was the norm. Younger NEs may be more receptive to ERSs that encourage an upbeat and adaptable mindset, having a bigger positive impact on their views of AI (**Mardiana, 2020**). Moreover, Older NEs might be more worried about the effects of AI, which can affect their attitudes and emotional reactions (**Offerman et al., 2023**).

To sum up, according to the present study findings, a significant positive relationship was found between the NEs' overall ERSs score and positive perspectives toward AI which moderated by age. This finding may impact current nursing practices in different ways. For example, younger NEs may be more open and willing to integrate AI technologies into nursing practices, leading to increased use of AI-based tools and systems. AI technologies can enhance efficiency and accuracy in nursing practices, and younger NEs may be more inclined to leverage these technologies for improved patient outcomes.

Conclusion

Considering the current study's results, it can be concluded that a significant positive relation was found between the ERSs overall score among nursing educators and their perspectives on AI, thus H1 is supported. In alignment with H2, age moderates the relation between nursing educators' ERSs and their perspectives on AI. Furthermore, the present study results validate H3 that ERSs have a stronger positive effect on positive perspectives on AI for NEs of young age than for NEs of older age.

In the light of the present study results, older NEs reported higher scores in relation to both overall healthy emotionality and most ERSs than their younger counterparts. Also, perceiving greater positive perspectives toward AI among NEs is significantly correlated to young age.

Recommendations:

1- It is critical to have candid discussions with NEs about AI, so, they can offer their perspectives and influence how AI will be used in education in the future.

2- AI tools should be selected carefully by NEs before generalization within the academic institution in order to use the most feasible, accessible, and acceptable one for all age categories.

3- Older nursing educators who enjoy more healthy emotionality should be encouraged to support others of younger age during their emotional regulation difficulties, to improve camaraderie and productivity and facilitate the installation of new AI tools.

4- The differing perspectives between younger and older nursing educators may create a generation gap in the adoption of AI. So, education and training programs to all nursing educators should be developed and implemented by the academic institutions to bridge this gap.

Limitations

The study had a limitation in that the sample was predominantly composed of NEs with higher levels of education, introducing a bias towards individuals who were functioning well across all age groups. To address this bias, it is recommended to recruit nursing educators with varying educational levels and increasing the sample size to provide a broader range of perspectives and reduce the influence of any particular subgroup. Also, implementing a stratified sampling approach may ensure a balanced representation of different educational levels. Furthermore, the sample exhibited a disproportionate representation of female NEs. Due to the resulting gender imbalance caused by the study's setting, any conclusions reached may be more directly applicable to the female majority. To mitigate this limitation, it is advisable to conduct subgroup analyses to explore potential gender differences in the findings. Additionally, future studies should strive for a more balanced representation of genders to ensure that the conclusions are relevant to both men and women.

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