

# Examining the Influence of Key Demographic Variables of Preservice Teachers in a University in Ghana on Their Emotional Intelligence

Kwaku Darko Amponsah<sup>1,2</sup>, Emmanuel Adjei-Boateng<sup>3,\*</sup>, Florence Christianah Awoniyi<sup>1</sup>, Priscilla Commey-Mintah<sup>1</sup>, Grace Sintim Adasi<sup>4</sup>, Rita Yeboah<sup>1</sup>, Simon Peter Kafui Aheto<sup>5</sup> & Inusah Salifu<sup>6</sup>

<sup>1</sup>Department of Teacher Education, University of Ghana, Legon, Accra, Ghana

<sup>2</sup>Department of Science and Technology Education, University of South Africa, Pretoria, South Africa

<sup>3</sup>Department of Educational Studies and Leadership, School of Education and Leadership, University of Ghana, Legon, Accra, Ghana

<sup>4</sup>Institute of African Studies, P.O. Box LG 73, Legon, Accra, Ghana/ Agogo Presbyterian Women's College of Education, P. O. Box 26, Asante Akim Agogo, Ghana

<sup>5</sup>Department of Distance Education, P.O. Box LG 31, Legon, Accra, Ghana

<sup>6</sup>Department of Adult Education, School of Continuing and Distance Education, University of Ghana, Legon, Accra, Ghana

\*Correspondence: Department of Educational Studies and Leadership, School of Education and Leadership, University of Ghana, Legon, Accra, Ghana. E-mail: eadjei-boateng@ug.edu.gh

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## Abstract

This study is relevant as it highlights the crucial role of emotional intelligence (EI) in achieving long-term success and managing stress at work. The impact of demographic diversity on EI, a topic of ongoing debate, is the focus of our research. We employed a cross-sectional survey approach to investigate the potential influence of demographic variables such as age, gender, residential status, religious affiliation, and program of study on the EI of preservice teachers at the University of Ghana. We collected data from 291 participants using a self-made questionnaire and used descriptive and inferential statistics for analysis. The results showed that the only factor that significantly affected EI was age. Given that age was the only significant factor affecting EI in our study, the implications for raising EI among preservice teachers may need to be reconsidered. While our findings do not support broad demographic influences, they highlight the importance of age-related experiences in developing EI. This finding underscores the urgent need for age-inclusive policies and targeted EI development strategies in teacher training programs. These policies should be in line with the postpositivist worldview. Data was collected carefully to safeguard the participants' identities, and ethical approval was obtained. The findings highlight the value of motivating preservice teachers to live stress-free lives, engage in social activities, and maintain a healthy lifestyle to improve their emotional intelligence, self-control, social awareness, and interpersonal skills and, ultimately, increase their efficacy as future teachers.

**Keywords:** age, emotional intelligence, gender, preservice teachers, program of study, religious denomination, residential status

## 1. Introduction

The exigencies of today's classroom require that teaching is considered more than just making learners master instructional content (Kim et al., 2019). In contemporary education, it is imperative that teaching extends beyond the mere transmission of knowledge. Teachers are, therefore, encouraged to deliver lessons in ways that best suit the needs of their learners (Tomlinson, 2014). Adapting instructional methods to meet diverse learner needs is crucial for effective teaching. According to Aheto (2024) and Tomlinson (2014), as the call continues to grow for teachers to become high performers in the classroom, the need to manage their emotions and those of learners has become more critical than ever. The increasing demand for high-performance teaching underscores the importance of emotional

management for teachers and learners.

Research on how emotional intelligence (EI) affects preservice teachers has grown significantly. The burgeoning interest in EI among preservice teachers highlights its perceived importance in teacher education. The reason has been attributed to the increasing need to make them aware of their own emotions and those of others so that during future professional practice, they will be able to use their experiences to understand the sentiments of colleagues and learners and manage relationships professionally (Amponsah et al., 2024a; Amponsah et al., 2024b; Ayite, et al., 2022, Drigas & Papoutsi, 2018). Awareness and management of emotions are vital for professional practice and effective relationship management in educational settings. Therefore, EI among teacher trainees must build professional skills to become competent practicing teachers (Singh et al., 2022). Developing EI is essential for teacher trainees to enhance their professional competencies.

The present investigation employs the definition of EI provided by Singh et al. (2022), which comprises the capacity to identify, comprehend, regulate, and utilize one's emotions and those of others. This comprehensive definition of EI underscores its multifaceted nature, encompassing self and social awareness. EI is a vital interpersonal communication skill that has received much attention in many contexts, including the workplace. The significance of EI extends beyond education, impacting various professional domains. Drigas and Papoutsi (2018) and Lansley (2017) highlighted four essential elements of EI in various research. These elements include self-awareness, self-management, social awareness, and relationship management. These components form the foundational pillars of EI, which are crucial for effective interpersonal interactions. These investigations improve our comprehension of EI and its influence on learning. Understanding these elements enhances our insights into how EI impacts educational outcomes.

This research was compelling because our literature search on the concept of EI in teacher education indicated that although many studies existed on it, their focus was only on its impact on teacher and learner performance (see Afridi et al., 2021; Amponsah et al., 2024b; Meher et al., 2021). Existing literature primarily concentrates on the performance-related aspects of EI, leaving other dimensions to be explored. Thus, very few, if any, examined how the concept relates to demographic variables. The relationship between EI and demographic factors remains largely uncharted territory. Due to the dearth of data, it was unclear whether prospective teachers' demographic characteristics, particularly those specific to Ghana, may also impact their emotional intelligence (EI). This knowledge gap is particularly evident in the Ghanaian context, necessitating further exploration. Meanwhile, studies show that demographics more influence learner personality than other ones, including self-efficacy beliefs (Aheto et al., 2024; Alwaleedi, 2017), emotions (Fili, 2016; Salifu et al., 2021), and motivation (Urošević & Miličić, 2012). Demographic variables have significantly impacted various learner characteristics, highlighting their potential influence on EI.

Using Ghana as a case study, we aimed to close a gap in current knowledge by concentrating on the Ghanaian educational environment. The goal was to determine whether demographic factors substantially impacted the EI of students enrolled in a teacher training program at a Ghanaian university. These criteria included residence status, age, gender, and religion. By investigating these demographic variables, we seek to uncover their impact on the EI of teacher trainees in Ghana.

### *1.1 Purpose of the Study*

This study investigates how important demographic factors affect the emotional intelligence (EI) of the University of Ghana's preservice teachers. The research specifically seeks to ascertain whether age, gender, residential status, and religious affiliation significantly impact these teacher candidates' EI. The study aims to bridge a knowledge gap by utilizing a cross-sectional survey approach and analyzing data from 291 participants about the relationship between EI and demographic variables in the context of teacher education in Ghana.

## **2. Literature Review**

### *2.1 Theoretical Framework*

Emotional intelligence is identifying and controlling emotions (Cherry, 2018). The first person to propose this hypothesis was a psychologist and best-selling author, Daniel Goleman, who believes that EI consists of five distinct components. Salovey and Mayer's (1990) early definition of emotional intelligence states that EI is a component of Gardner's social intelligence hypothesis. However, the EI performance model by Goleman, the competencies model by Bar-On, and the EI ability model by Mayer, Salovey, and Caruso will be the foundation for this study (Lansley, 2017).

We used data from the investigation, analysis, and study to create the three models. When defining emotional intelligence (EI), Goleman emphasizes self-awareness, relationship management, social awareness, and other abilities. Bar-On presents an alternative viewpoint, arguing that emotional intelligence (EI) is a network of interrelated behaviors derived from social and emotional intelligence (Lansley, 2017). He argues that behavior and performance are affected by these skills.

The model proposed by Mayer et al. states that information derived from our views of understanding and managing emotions influences our thinking and decision-making. The four branches of the emotional intelligence model—recognizing emotion, understanding emotion, controlling emotion, and using emotion to promote ideas—are heavily stressed in this framework (Lansley, 2017). According to Mayer et al. (2004), the order of these branches—from emotion awareness to management—also corresponds with how the skill fits within the person's overall personality. These improved research models would make this research easier.

### 2.1.1 Alignment of Our Work with the Theoretical Framework

The theoretical framework of emotional intelligence (EI) proposed by Goleman, Bar-On, Mayer, Salovey, and Caruso is the backbone of our research. This study examines preservice teachers' EI while considering several demographic variables, including age, gender, religion, residential status, and program of study. It incorporates essential facets of the EI models put forth by these theorists in this way. First, Goleman's model strongly focuses on social skills, motivation, self-regulation, empathy, and self-awareness. Given that older preservice teachers are likely to have more life experiences that contribute to the development of self-awareness and self-regulation, our findings that EI rises with age are consistent with Goleman's emphasis on these skills.

Furthermore, our investigation into gender differences—which revealed no discernible difference in EI—strongly supports Goleman's claim that EI components can grow equally across genders, given equal access to emotional learning opportunities. This finding should reassure educators, researchers, and policymakers that the potential for emotional growth is not limited by gender. In addition, Bar-On's model centers on a network of interrelated behaviors that arise from emotional and social abilities and impact behavior and output. Bar-On's theory that EI is impacted by broader social and emotional talents rather than demographic criteria is supported by our study's absence of significant variations in EI across residential and non-residential students and religious denominations. This research underscores the critical importance of creating a supportive environment where preservice teachers from all backgrounds can grow in their emotional intelligence. Finally, our method of evaluating preservice teachers' emotional intelligence (EI) is based on the Mayer, Salovey, and Caruso model, which incorporates the four-branch model of EI: recognizing emotions, facilitating cognition, comprehending emotions, and controlling emotions. Our study methodology is in line with the structured approach of Mayer et al.'s model since we use a variety of statistical analyses to understand EI across different groups. Our research supports the theoretical framework that suggests emotional intelligence (EI) entails a complex interplay of cognitive and emotional processes by concentrating on how preservice teachers perceive and manage emotions.

## 2.2 Empirical Review

### 2.2.1 Can Age, Gender, Religion, Residential Status, and Program of Study Influence Learner Emotional Intelligence?

Age determines how EI is taught and learned, though learning other abilities like math, science, or English language arts is always time to improve EI (Brackett & Cipriano, 2020). From birth until old age, the areas of the brain required for the development of EI are functional. The study discovered that elderly individuals had stronger EI than younger individuals. The results showed that EI is the total of the Developmental abilities picked up through life experiences. EI is significant because, when developed, it makes it possible to live a happier and more fulfilling life. Stated differently, EI is the intersection of cognition and feeling. It improves our capacity for flexibility, motivation, empathy, reasoning, stress reduction, communication, and the ability to recognize and navigate a range of social contexts and problems. (2019, Houston). Additionally, prior research has demonstrated that the overall EI rises with age (Sharma, 2017; Singh, 2019).

A study examined prospective educators' emotional intelligence (Heera & Kaur, 2017). According to the findings, male educators are emotionally more developed and stable than their female colleagues. Male teachers had above-average mean scores. These findings demonstrated that male preservice teachers were willing to consider advice, were socially active, and relied on them instead of others. Ji et al. (2022) also investigated the research "Preservice teachers' emotional experience: characteristics, dynamics, and sources amid the teaching practicum?". The findings show that female preservice teachers consistently receive higher mean scores. According to independent

samples t-tests, the mean scores for males are statistically significantly lower than those for females for each EI skill, underscoring the robustness of the research. In Xianjiao et al.'s (2023) study on the disparities in emotional maturity across genders among management school students, they found that females had higher EI than males, particularly in empathy, social competence, and interpersonal connections. In his "Emotional Intelligence: A Study on University Students," Kant (2019) found that female students have more robust emotional intelligence than male students. The emotional intelligence of graduate students was not significantly different from that of undergraduate students. However, Commey-Mintah et al. (2020) noted that the gender, age, and marital status of preservice teachers had little bearing on their EI.

The traits of EQ or EI—self-awareness, self-control, motivation, empathy, and social skills—improve general happiness and well-being. EQ improves these areas, which makes a person happier with their life. Research has examined the connection between EQ and spirituality/religiosity in several religious contexts. Islam holds that the path to ultimate bliss is spiritual intelligence attained via close contact with God, soul purification, repentance, worship, and good deeds (Wahab, 2022). According to Flores et al. (2013), spiritual activities like prayer, meditation, and contemplation help to improve EQ by encouraging introspection, self-control, empathy, and inner serenity. Lowicki and Zajenkowski (2016) discovered that among Polish Christians, ability EQ is negatively correlated with negative religious coping and extrinsic religious orientation and positively associated with religious belief. Research by Zhou et al. (2024) demonstrates that knowledge and academic achievement are greatly enhanced by both spiritual and emotional intelligence. Emotional intelligence (EQ) can be developed, and psychological well-being can be improved by integrating spiritual and emotional intelligence (available in many traditions, including Islam, Christianity, and traditional faiths). This assertion can lead to scholastic success and personal fulfillment, inspiring individuals to strive for a more fulfilling life. A key component of EQ is Christian teachings' emphasis on forgiveness, love, and compassion. Being involved in religious communities improves social skills and offers emotional support, which promotes empathy. Regular prayer and meditation enhance Self-awareness and emotional control (Coholic, 2023; Kaya, 2022).

We also considered how the residential status of resident and non-resident learners affected the emotional intelligence displayed by preservice teachers. Studies on emotional intelligence (EQ) have explored various topics, including school environments, living situations, and demographics. In contrast to their counterparts in residential schools, Dandona (2018) discovered that students in non-residential schools had more emotional competence, with girls in residential schools displaying superior emotional awareness. In general, rural students had more excellent EQ than urban students, according to Podila (2018), while other studies indicated the opposite. According to Simpson and Burnett (2017), students who commuted had better GPAs than those who lived at home, and both groups profited from rigorous coursework. While Bassam and Omar (2014) observed substantial differences in EQ based on gender, religion, and residence, which affected academic performance, Ali and Ranjha (2019) found no significant impact of residential status or gender on university students' EQ. When taken as a whole, these studies highlight how educational and demographic settings affect academic achievement and emotional intelligence.

The program of study impacts learners' emotional intelligence (EI) by providing opportunities for emotional and interpersonal growth. In non-STEM disciplines such as education, social sciences, and humanities, higher emotional intelligence is cultivated through cooperation, reflection, and experience learning (Schutte et al., 2010; Brackett et al., 2011). By contrast, STEM programs prioritize technical skills and provide limited opportunities for developing emotional intelligence unless interventions are integrated (Hartmann et al., 2022). However, programs for preservice teachers emphasize emotional and social skills, underscoring their importance in the learning process and resulting in increased emotional intelligence in students studying education. Non-STEM areas foster Emotional Intelligence more efficiently than STEM fields (Hartmann et al., 2022; Morris et al., 2012).

### 3. Method

#### 3.1 Research Design

The study, which focused on preservice teachers in Ghana, employed a cross-sectional survey design to investigate how critical demographic factors such as age, gender, residential status, religious affiliation, and program of study influenced their emotional intelligence. This design choice was guided by our adherence to the postpositivist paradigm, which prioritizes objectivity in research (Creswell, 2017). Furthermore, we selected this design to maximize the study's inclusivity, thereby enhancing the potential for our findings to be generalizable. Denzin and Lincoln (2011) argue that a larger sample size enhances a study's external validity.

### 3.2 Population

The target population for this study was the University of Ghana's preservice teachers. This demographic consisted of students enrolled in the teacher education program over various academic years, focusing on junior high school (JHS) and senior high school (SHS) teaching. We trained this cohort of preservice teachers with a wide range of specializations because they teach in many subject areas. However, the accessible population was more precisely delineated. Only preservice teachers in secondary school focused on STEM fields—specifically, science and mathematics—and those with a non-STEM background, like English, were included. This differentiation made it possible to conduct a targeted analysis of the variations and similarities in the training and viewpoints of aspiring educators in these vital subject areas.

### 3.3 Sample and Sampling Techniques

We used three selection techniques—modal purposive sampling, expert purposive sampling, and non-proportional quota sampling—to choose the sample from the target population. The University of Ghana was chosen as the research setting using modal purposive sampling, a decision that was carefully made due to its status as the biggest university in Ghana, making it a perfect fit for the study. Expert purposive sampling was used at the University of Ghana to choose a recently formed teacher education department, the only academic division where students are trained to become teachers. Moreover, participants were drawn from the first, second, third, and fourth years of the 2021–2022 academic year using this method, guaranteeing a varied representation of preservice teachers at various educational stages. We utilized non-proportional quota sampling by selecting a representative sample from several academic cohorts. First, each cohort's minimum number of participants was chosen to ensure a representative sample. Despite having 226 participants in mind for the targeted sample size, 291 people participated in the survey since they answered all the questions. This sample size satisfied the requirements set out by Krejcie and Morgan (1970) for choosing a suitable sample size for research projects. By integrating these three sampling strategies, we guaranteed a thorough and representative sample of University of Ghana preservice teachers, which allowed for a thorough investigation of the impact of demographic variables on emotional intelligence in these future educators.

### 3.4 Instrumentation

We used a self-constructed questionnaire with closed-ended questions for the study. The questionnaire had two sections, with section A having nine questions on background information and critical variables. In contrast, section B discussed the study's modified questionnaire, which consists of 37 items (Mayer, 2002), and Bar-On (2004) On's EI Inventory questions with four subscales. Emotional self-awareness, self-management, social awareness, and relationship management are the four main areas of emotional intelligence (EI) used when developing the questionnaire. We included five rankings in the scoring guide: Never (rank 1), Seldom (rank 2), Sometimes (rank 3), Most of the Time (rank 4), and Always (rank 5). Participants circled the numbers of their selections to indicate how much each statement related to them. The 37-item modified questionnaire for the study was developed based on the four main components of EI: emotional self-awareness, emotional self-management, emotional and social awareness, and emotional relationship management. Relationship management, social awareness, self-awareness, and self-management are the four components of emotional intelligence. These can help a leader handle any circumstance with less anxiety, less emotional outbursts, and fewer inadvertent consequences, like a preservice teacher in the classroom. (Goleman, 2011).

### 3.5 Validity and Reliability of the Instrument

According to Bhattacharjee (2012), dependability is more concerned with a measure's consistency than validity is with its precision. It is important to note that even if a measurement lacks reliability, it may still be valid. However, if a measurement is valid, it is usually reliable. This interconnectedness of reliability and validity underscores the complexity of research. High-validity research is defined as that which yields conclusions that accurately reflect the characteristics, variances, and attributes of the physical or social world. In this study, expert lecturers in educational psychology and teacher education ensured that the statements were okay and corresponded to previous research. This action made the validity of the instrument to be very high. Also, the overall reliability coefficient was 0.86, which makes the instrument reliable.

### 3.6 Data Collection and Ethics

We administered the instrument ourselves. We did so because we thought it would make the data collection exercise more effective than commissioning research assistants to do the same. We used two months to gather the data (i.e., from June to August 2022). Before the data collection, we sought and obtained ethical clearance from the Ethics Committee for Humanities of the selected University. We also obtained written permission from the Head of the

Department. Further, we ensured that all the participants read and completed our consent forms before participating in the study. We also protected the identity of the participants because we ensured that they completed the consent forms and questionnaires without indicating their names.

### 3.7 Data Analysis

To meet the goal stated in the introduction, we used SPSS, version 22, to analyze the data after the data collection period. This examination ensured that the information entered into the statistical program matched the original survey we used to obtain the data. By confirming the consistency between the data gathered and the data entered, we preserved the integrity and dependability of our dataset, reducing the possibility of errors that could impact the study's conclusions. We used both descriptive and inferential statistics to satisfy the study goals. The primary characteristics of the dataset were summed up and described using descriptive statistics, such as percentages, frequencies, means, and standard deviations. This characteristic resulted in a clear and succinct summary of the demographic and essential variables. We investigated the correlations and differences between groups using inferential statistics, namely the one-way ANOVA and the independent samples t-test. We addressed the main research questions and hypotheses by using the results of these statistical tests to form judgments and inferences about the larger population based on our sample data.

## 4. Results and Discussion

### 4.1 Results

We conducted this study to establish whether demographic variables, such as age, gender, religion, and residential status of learners enrolled in a teacher training program at the University of Ghana significantly influenced their EI. Five tables will guide the results presentation and subsequent discussion in this section. The results in Tables 1 and 2 will guide the discussion on the age construct, while those in Tables 3, 4, and 5 will guide the discussion on gender, religion, and residential status.

### Objective 1: To Examine the Relationship between Age and Emotional Intelligence among Preservice Teachers at the University of Ghana

**Table 1.** One-way ANOVA on the Differences in Age on Emotional Intelligence

	Age	N	M	SD	df	F	p
Emotional Intelligence	18 and below	10	143.20	17.03	3	11.13	.000
	19-22	162	129.92	23.02			
	23-26	86	145.37	18.22			
	27 and above	33	142.18	21.83			

Source, Field data 2022

The first task of this research was to examine how the age differences of the participants influenced their emotional intelligence. ANOVA was used to answer the objective regarding the differences in age on emotional intelligence of preservice teachers at the University of Ghana. We classified participants into four age ranges: 18 and below ( $n = 10$ ), 19-22 ( $n = 162$ ), 23-26 ( $n = 21$ ), and 27 and above ( $n = 17$ ). Emotional intelligence score increased from 19-22 ( $M = 129.9$ ,  $SD = 23.0$ ) to 27 and above ( $M = 142.2$ ,  $SD = 21.8$ ) to 18 and below ( $M = 143.2$ ,  $SD = 17.03$ ) to 23-26 ( $M = 145.4$ ,  $SD = 18.2$ ) age groups, in that order. Table 2 presents the result of the analysis done on the one-way ANOVA on the differences in age on EI. Thus, EI was statistically significantly different between different age ranges,  $F(3, 287) = 11.13$ ,  $p < .0005$ ,  $\omega^2 = 0.104$ .

Thus, preservice teachers aged 23-26 ( $M = 145.37$ ,  $SD = 18.22$ ) have high EI compared to those aged 19-22 ( $M = 129.92$ ,  $SD = 23.02$ ). Similarly, preservice teachers aged 27 and above ( $M = 142.18$ ,  $SD = 21.83$ ) have high EI compared to those aged 19-22 ( $M = 129.92$ ,  $SD = 23.02$ ).

**Table 2.** Post-Hoc Analysis on Comparing Preservice Teachers' Differences in Age as a Follow-up to ANOVA

Age (I)	Age (J)	Mean Difference (I-J)	95% Confidence Interval		Sig.
			Lower Bound	Upper Bound	
18 and below	19-22	13.28	-4.74	31.30	.228
	23-26	-2.17	-20.65	16.30	.990
	27 and above	1.02	-18.94	20.98	.999
19-22	18 and below	-13.28	-31.30	4.74	.228
	23-26	-15.45	-22.83	-8.08	.000*
	27 and above	-12.26	-22.82	-1.70	.015*
23-26	18 and below	2.17	-16.30	20.65	.990
	19-22	15.45	8.08	22.83	.000*
	27 and above	3.19	-8.13	14.51	.886
27 and above	18 and below	-1.02	-20.98	18.94	.999
	19-22	12.26	1.70	22.82	.015*
	23-26	-3.19	-14.51	8.13	.886

\* The mean difference is significant at the 0.05 level

### Objective 2: To Investigate Gender Differences in Emotional Intelligence among Preservice Teachers

The second task of this research was to analyze how the prospective teachers' gender differences also influenced their emotional intelligence. Table 3 shows the findings of the gender differences in the emotional intelligence exhibited by preservice teachers. We used the mean, standard deviation, and independent samples t-test to analyze the data.

**Table 3.** Gender Differences in the Emotional Intelligence Exhibited by Preservice Teachers

	Gender	N	M	SD	df	t	p
Emotional intelligence	Male	142	136.76	23.80	289	.316	.752
	Female	149	135.93	21.24			

Significant at  $p < .05$

The table shows that male preservice teachers had higher emotional intelligence scores than female preservice teachers ( $M = 136.76$ ,  $SD = 23.80$  vs.  $M = 135.93$ ,  $SD = 21.24$ ). However, there was no statistically significant difference between the two groups ( $M = .834$ , 95% CI [-4.36, 6.03],  $t(289) = .316$ ,  $p = .752$ ). Therefore, there were no variations in emotional intelligence between males and females.

### Objective 3: To Analyze the Impact of Religious Denominations on Emotional Intelligence among Preservice Teachers

Aside from the age and gender constructs, we were also interested in finding how the religious differences of the preservice teachers influenced their emotional intelligence. Oneway analysis of variance (ANOVA) was used to answer objective three regarding the differences in the religious denomination on the emotional intelligence of preservice teachers at the University of Ghana. The data in Table 4 discusses the mean ratings of religious denomination differences in emotional intelligence and the one-way ANOVA on the differences in the religious denomination on EI.

**Table 4.** One-way ANOVA on the Differences in Religious Denomination on Emotional Intelligence

Independent variable	Religious Denomination	N	M	SD	df	F	p
Emotional Intelligence	Christianity	260	136.10	23.16	2	.151	.860
	Muslim	26	138.65	17.08			
	Traditional	5	136.20	8.67			

Source, Field data 2022

From Table 4, Muslim preservice teachers experienced higher emotional intelligence levels than Traditionalists. Lastly, Christian preservice teachers experienced lower levels of emotional intelligence. We conducted a one-way ANOVA to determine if preservice teachers' emotional intelligence scores differed for the different religious groups

at the University of Ghana. We present data as mean  $\pm$  standard deviation. We classified participants into three prevalent religions in Ghana: Christianity ( $n = 260$ ), Muslim ( $n = 26$ ), and Traditional ( $n = 5$ ). Emotional intelligence scores increased from the Muslim ( $M = 138.7$ ,  $SD = 17.1$ ) to Traditional ( $M = 136.2$ ,  $SD = 8.7$ ) to Christianity ( $M = 136.1$ ,  $SD = 23.2$ ) religious groups, in that order. However, the differences between these religious denominations were not statistically significant,  $F(2, 288) = .151$ ,  $p = .860$ ,  $\omega^2 = 0.001$ . Our research has shown that all preservice teachers of different religious groups examined the differences in residential status and emotional intelligence exhibited by preservice teachers at the university. It was analyzed using the mean, standard deviation, and independent samples t-test.

#### Objective 4: To Evaluate the Effect of Residential Status on Emotional Intelligence among Preservice Teachers

Table 5 shows the differences in emotional intelligence exhibited by preservice teachers in residential status. From the table, residential preservice teachers ( $M = 137.33$ ,  $SD = 22.05$ ) had higher levels of emotional intelligence than non-residential preservice teachers ( $M = 135.67$ ,  $SD = 22.82$ ), but a statistically no significant difference,  $M = 1.66$ , 95% CI [-3.64, 6.96],  $t(289) = .616$ ,  $p = .538$ .

**Table 5.** Independent Samples t-test on Residential Status Differences in the Emotional Intelligence Exhibited by Preservice Teachers

	Residential Status	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
Emotional intelligence	Residential	117	137.33	22.05	289	.616	.538
	Non-residential	174	135.67	22.82			

Significant at  $p < .05$

Thus, there were no differences between residential and non-residential preservice teachers regarding the emotional intelligence they experience. However, the mean of residential students was slightly higher than non-residential preservice teachers. The results indicated that residential preservice teachers had less stress than their counterparts and performed better.

#### Objective 5: To Assess the Program's Effect on Emotional Intelligence among Preservice STEM and non-STEM Teachers

Table 6 shows the differences in emotional intelligence exhibited by preservice teachers according to the programs (STEM or non-STEM). From Table 6, STEM preservice teachers ( $M = 133.91$ ,  $SD = 22.26$ ) had lower levels of emotional intelligence than non-STEM preservice teachers ( $M = 138.96$ ,  $SD = 22.61$ ). However, there was no statistically significant difference,  $M = -5.05$ , 95% [CI -10.24, .14],  $t(288) = -1.92$ ,  $p = .056$ .

**Table 6.** Independent Samples t-test on Program Differences in the Emotional Intelligence Exhibited by Preservice STEM and non-STEM Teachers

	Program	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
Emotional intelligence	STEM	151	133.91	22.26	288	-1.92	.056
	Non-STEM	139	138.96	22.61			

Significant at  $p < .05$

While approaching significance, the p-value surpasses the 0.05 barrier, suggesting that the difference lacks statistical significance at the 5% level. These results underscore the need for further research to understand the factors contributing to emotional intelligence in preservice teachers.

#### 4.2 Discussion

The relationship between current findings and earlier research highlights consistencies and discrepancies in understanding emotional intelligence (EI) among preservice teachers. The results indicated that EI varied significantly across different age groups. Specifically, preservice teachers aged 23-26 exhibited the highest EI, followed by those aged 27 and above, then those 18 and below, with the lowest EI observed in the 19-22 age group. These findings align with previous studies suggesting that EI increases with age (Kafetsios, 2004; Lehto & Stein, 2009; Sharma, 2017). We attributed the increased EI with age to the accumulation of life experiences and the excellent emotional regulation skills developed over time. Older individuals may have more opportunities to encounter and navigate various emotional situations, enhancing their ability to manage emotions effectively.



Regarding gender, the current study found no statistically significant difference in EI between male and female preservice teachers. This finding aligns with earlier studies, such as Yang et al. (2021), which also reported no gender differences in EI. Thus, the findings regarding gender differences in EI were consistent with some prior research but conflicted with others. Based on widely used aptitude tests like the MSCEIT, research often shows that women are more emotionally intelligent than men (Barrett et al., 2016). However, the current study found no statistically significant difference between male and female preservice teachers' EI. This finding aligns with findings from Yang et al. (2021), who also reported no gender differences in EI.

Conversely, some studies have found males to have higher EI (Heera & Kaur, 2017; Newman & Smith, 2014), while others report higher EI in women (Corcoran & Tormey, 2012; Depape et al., 2006; Hyde et al., 2020; Kant, 2019; Martínez-Marín et al., 2021). Those with high EI are generally better at solving problems and are more specific and skilled communicators. Fernández-Berrocal et al. (2012) also noted that women typically have more emotional intelligence, highlighting the complexity and variability in gender-related EI research. The mixed results in the literature suggest that cultural, social, and contextual factors may influence gender differences in EI.

The study also examined the influence of religious denominations on EI and found no significant differences across different religious groups. This finding contrasts with studies by Łowicki & Zajenkowski (2017) and Nesami (2015), which showed a correlation between positive religious coping and EI. However, the lack of significant differences in this study suggests that religious affiliation alone may not be a strong determinant of EI among preservice teachers in the Ghanaian context. A cross-cultural study between Germany and Pakistan found that EI, social support, and religion all assist people in lowering stress brought on by trying circumstances (Ghafoor et al., 2022). The findings from this study imply that while religion might provide emotional support and coping mechanisms, it does not necessarily translate into differences in EI among preservice teachers.

Finally, the study found no significant differences in EI between residential and non-residential preservice teachers, although residential students had slightly higher EI scores. This finding is corroborated by research indicating that residential students often experience less stress and better performance (Amponsah et al., 2020). The slight advantage in EI among residential students might be due to the supportive environment and community living, which can enhance emotional and social skills. Residential settings may provide more opportunities for social interactions and emotional learning, contributing to higher EI. Thus, while age significantly influences EI among preservice teachers, gender, religion, and residential status do not show significant differences. These findings underscore the importance of considering age as a factor in developing EI interventions and suggest that other demographic variables have a more nuanced impact, influenced by broader cultural and contextual factors.

The independent samples t-test results indicate no statistically significant difference in emotional intelligence between preservice STEM and non-STEM teachers ( $p = .056$ ). This finding is consistent with previous studies conducted by Durlak et al. (2011) and Turner et al. (2020), which also reported little variability across different subject specializations. Nevertheless, studies conducted by Hartmann et al. (2022) and Morris et al. (2012) challenge this notion by suggesting that non-STEM preservice teachers typically demonstrate greater emotional intelligence because of the interpersonal and relational requirements inherent in both disciplines. These conflicting results underscore the need for more research in this area, which could provide valuable insights into teachers' emotional intelligence.

## 5. Conclusion

This study investigated how the EI of the University of Ghana's preservice teachers was affected by demographic factors such as age, gender, religion, and residential status. The results showed notable emotional EI variations amongst the different age groups. Preservice teachers in the 23–26 age group had the highest EI, followed by those in the 27–44 age group, those in the 18–24 age group, and those in the 19–22 age group had the lowest EI. This result implies that the accumulation of life experiences and improved emotional management abilities cause EI to rise with age. Gender may not be a relevant factor in determining EI in this situation, as there were no statistically significant variations in EI between male and female preservice teachers. The study also revealed no statistically significant differences in emotional intelligence (EI) across preservice teachers from various religious denominations, indicating that religious membership is irrelevant to EI in the Ghanaian environment. Finally, while residential students had somewhat higher EI scores, the study did not find any statistically significant differences in EI between residential and non-residential preservice teachers. This finding suggests that their residential status alone does not significantly influence preservice teachers' EI. Overall, gender, religion, residential status, and program of study do not significantly differ from age regarding EI among preservice teachers, even though age considerably influences EI.

This finding emphasizes the significance of considering age when creating EI treatments for preservice teachers.

## 6. Limitations and Suggestions for Further Studies

This study has several limitations. The findings must be more generalizable as we based them on a single institution in one area. Future research should include more institutions and regions in Ghana and diverse sample types. Replication studies in Ghana are necessary. Using Western psychometric instruments is another flaw; future assessments should use valid, reliable indigenous metrics, considering the cultural element for consistent results.

## 7. Implications of the Current Findings

The research impacts teacher preparation programs and educational policy. As EI increases with age, mentorship schemes where senior students assist juniors could accelerate emotional management skills in younger preservice teachers. The curriculum can include life skills and emotional control training through existing or new courses. With no significant gender disparities in EI, training programs should remain gender-neutral while offering tailored support as needed. An inclusive environment for diverse religious backgrounds is crucial, as religious denominations do not significantly influence EI. The slightly higher EI among residential students highlights the benefits of a supportive community, emphasizing the need for resources and support systems for all preservice teachers, residential or not.

## 8. Applications of the Current Findings

These practical implications can improve preservice teacher development and training programs. Institutions could introduce peer-mentorship programs where senior students help juniors with life lessons and emotional regulation techniques to address the rise in EI with age. Training programs should promote gender-neutral methods while providing extra assistance as needed, including training in gender sensitivity and emotional awareness. Programs could host interfaith discussions and cultural exchanges to enhance empathy and EI through religious diversity. Establishing community spaces and virtual platforms for social contact and support is essential for residential and non-residential students. Expanding residential programs or creating support systems for non-residential students can ensure that all preservice teachers access the necessary emotional and academic resources for success.

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### **Authors contributions**

Not applicable.

### **Data Availability Statements**

The corresponding author is ready and eager to provide the datasets created and analyzed during the current investigation upon reasonable request. This commitment empowers the audience to access the research's raw data, fostering a culture of transparency and openness.

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### **Competing interests**

The researchers wish to underscore their unwavering commitment to transparency. They declare with utmost confidence that there were no financial or commercial ties that might be seen as a potential conflict of interest throughout the research's execution, ensuring the integrity of the study.

### **Informed consent**

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**Data availability statement**

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

**Data sharing statement**

No additional data are available.

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