




Research Article

Emotional Intelligence and Clinical Empathy among Medical Students: The Conditional Effects of Spirituality and Gender

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Abstract

Clinical empathy (CE) is a crucial component that influences how well patients respond to treatment. This necessitated the examination of the factors that promote CE among undergraduate medical students. Therefore, this study investigated the individual and combined conditional effects of spirituality (SS) and gender on the emotional intelligence (EI) – CE relationship among the medical students at Delta State University, Abraka, Nigeria who have clinical exposure. Participants were 202 undergraduate medical students who have had direct contact with patients. The sample comprises 86 males and 116 females with an average age of 22.52 years. Instruments with proven psychometric qualities were used to collect data on each variable. A regression-based analysis complemented by model 2 of Hayes' PROCESS macro via the IBM-SPSS v25 was utilised for testing the hypotheses and developed model. The direct effect results indicated that EI and SS positively and significantly predicted CE. The moderating effect of SS on the EI-CE relationship was significant while that of gender was not. The combined moderating effects of SS and gender on the EI-CE link was significant and stronger for females with higher levels of SS. These findings led to the conclusion that EI, SS and gender are valuable mechanisms to consider when making policies to improve CE.

Keywords:

Clinical empathy • Emotional intelligence • Gender • Healthcare • Medical students • Spirituality

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Introduction

Clinical empathy (CE) has gained significant interest in the scholarly community. Outside of the medical context, empathy is generally understood to be the capacity to feel with or place oneself in the position of another (Halpern, 2014). In the medical profession, empathy is considered an essential clinical factor that can impact treatment outcomes through the practitioners' cognitive, emotional and behavioural dispositions towards patients (Guidi & Traversa, 2021). Parkin et al. (2014), citing a variety of definitions from the literature, proposed that empathy is the capacity to recognise and comprehend an individual's situation (feelings, ideas, opinions, and perspective), to convey that comprehension to the individual, and carry out beneficial behaviour based on that comprehension. Medical practitioners and students are expected to possess interactive and consulting skills, one of which is the ability to comprehend the feelings and experiences of their patients. The ability to effectively relate to patients is just as important as acquiring a body of knowledge and applying it to diagnose and treat patients. CE is needed for medical students to interact effectively with patients. This attribute encompasses the capacity to empathise with patients and comprehend their experiences and the capacity to introspect or comprehend one's emotions and reactions to patients' emotions and behaviours.

CE has beneficial effects on several levels by fostering mutual understanding, communication, and trust. In professional healthcare service delivery, CE has been linked to positive outcomes for patients and healthcare practitioners. Regarding the advantages for professionals and medical students, studies have shown a relationship between an empathetic treatment approach to job satisfaction and the well-being of healthcare professionals (Lamiani et al., 2020; Lee et al., 2023; Lee & Park, 2021; Li et al., 2021; Waddimba et al., 2021). It has been generally observed that providing compassionate care enhances both clinical outcomes and patient satisfaction (Mercer et al., 2016; Miniotti, 2022; Walsh et al., 2019). Ensuring the clinical competency of tomorrow's healthcare professionals is just as vital as understanding what drives CE. However, there exist uncertainties about possible factors that can be used to improve this crucial behaviour, especially in Nigeria where the attitude of healthcare professionals toward patient care and service delivery are contributing factors to the issues in the healthcare sector (Effiom & Danlami, 2020). While the management of public health institutions emphasizes money and infrastructure problems when it comes to the quality of care, patients frequently voice concerns about the attitudes of personnel in the healthcare sector. It, therefore, becomes necessary to explore factors that can predict CE as these factors can inform policies in the administration of medical education and can also be inculcated into medical training.

Several studies have shown that, despite the benefits of CE in healthcare, it tends to decrease during medical training due to the combination of real-world

experience and the inability of some medical curriculums to capture the essence of empathy in healthcare (Costa-Drolon et al., 2021; Son et al., 2018). Consequently, examining potential contributing variables that can be used to curtail this decline is very important. Literature on the determinant of CE is complex and researchers are exploring more of its antecedents. In the current study, emotional intelligence (EI) is adopted as a predictor of CE while also investigating the conditional effects of spirituality (SS) and gender. Although a few studies have linked EI with the CE of healthcare professionals, the current study aims to address certain knowledge gaps identified in the existing literature.

First, the empirical literature on the EI-CE relationship has been dominated by studies built around practitioners rather than medical students with field or clinical exposure. Therefore, the current study deemed it important to focus on a different cultural setting and sample which may impact the conceptualization of the constructs, modification of data collection instruments, and the relationship among the variables. Hence, examining the CE levels of medical students is crucial as they are considered the future of healthcare in nations across the world. Second, with the understanding that other variables have a role to play as moderators in observed relationships; the researchers provided further insight on the interplay of EI and CE by going beyond existing knowledge built mainly on the direct effect of EI on CE. Currently, there is no conceptual framework incorporating the combined effects of SS and gender as possible strengthening or attenuating factors for the EI-CE relationship in a model controlling for the age and marital status of medical students. A moderation model was proposed to understand when this relationship is likely to occur using two moderators. This moderation model incorporated the effects of SS and gender on the EI-CE relationship specific to medical students. Therefore, to better understand the relationship between EI and CE, SS and gender are utilized as moderator variables in a model that helps understand their individual and combined interaction with EI in predicting CE.

Objectives of the Study

Accordingly, to fill the identified gaps in the literature, efforts are made to address the following research objectives:

1. Examine the predictive relationship between emotional intelligence and clinical empathy among medical students.
2. Examine the predictive role of spirituality on the clinical empathy of medical students.
3. Explore the moderating effect of spirituality in the relationship between emotional intelligence and clinical empathy.

4. Examine the moderating effect of gender (male and female) in the relationship between emotional intelligence and clinical empathy among medical students.
5. Investigate the joint conditional effects of spirituality and gender in the relationship between emotional intelligence and clinical empathy.

Literature Review and Hypotheses Development

Emotional Intelligence and Clinical Empathy

Research has shown that the emotional attributes of healthcare professionals impact how they behave in the presence of patients (Aksu et al., 2023; Mosallanezhad et al., 2023). Making appropriate decisions as a healthcare professional requires some attributes, one of which is EI as it can impact the awareness of oneself and others. It also includes the capacity to guide others and the appropriate use of emotions in interpersonal interactions (Mosallanezhad et al., 2023). This essence is captured by the Bar-On (as cited in McNulty & Politis, 2023) definition of EI, which is defined as a composite of interrelated emotional and social competence, abilities, and facilitators that determine our ability to understand and express ourselves, understand others, form connections with them, and handle daily responsibilities.

EI is a distinct characteristic that can be taught and improved. It can assist healthcare professionals in perceiving, regulating, and providing emotional support to patients during treatment (Wang et al., 2018). EI has been correlated with positive attributes in healthcare such as increased psychological adaptation of healthcare professionals (Halian et al., 2020), resilience in healthcare practice (Chikobvu & Harunavamwe, 2022), and increase in caring behaviour towards patients (Alinejad-Naeini et al., 2023; Nwanzu & Babalola, 2020). These empirical results highlight that higher levels of EI have positive implications for the patient-physician relationship because it improves adaptation to the work environment, resilience in difficult situations, and care for patients. On the other side, stress and exhaustion are associated with low EI (Mosallanezhad et al., 2023). Studies demonstrating the role of EI on medical students' empathy are relatively few in the literature and some have conflicting results. In the first instance, studies have demonstrated the positive role of EI on CE in healthcare (Abe et al., 2018; Deng et al., 2023; Hajibabaei et al., 2018; Rfan et al., 2019). Although, not a popular proposition across empirical studies, the pilot study by Castelino and Mendonca (2023) led to a non-significant EI-CE association among nursing students. Generally, the literature points to the notion that an increase in EI necessitates an increase in CE because medical students and healthcare professionals who are receptive to their emotional needs and understand the emotions of others are more likely to show empathy to their patients. Hence, it is proposed that EI would be a significant predictor of CE among medical students.

Spirituality and Clinical Empathy

There exist empirical studies telling us that believing in something greater than oneself or the supernatural has positive implications for personal health and the way we treat people around us whether in professional or non-professional settings (Shakarian et al., 2021; Güner & Akyüz, 2023). These belief systems are structured around the concepts of religiosity and spirituality. While there are some conceptual similarities between spirituality and religiosity, most academics agree that these are different concepts. Harris et al. (2018) carried out a thorough content analysis of the meanings of religiosity, SS, faith, and the holy in their study of both ideas. While SS is more specifically associated with the search for or contact with the divine, religiosity is often understood to be a culturally sanctioned ritualistic, institutional, or institutionalized spirituality. cursory analyses indicate that the majority of faiths around the world actively promote associated qualities like empathy, compassion, and mercy as well as prosocial conduct among their adherents (Stewart & Lawrence, 2021).

According to Khorrami-Markani et al. (2015), SS is the essence of human existence and encompasses the immaterial aspect of life, and it is seen via a person's relationships with God, other people, and the natural world. Individuals who possess a high level of SS approach life holistically and approach situations with flexibility and openness (Kleftara & Vasilou, 2016). Most spiritual traditions associate the cultivation of spiritual awareness with attributes like empathy (Huber & MacDonald, 2012). We argue that in the presence of SS, medical students and healthcare professionals would be more receptive and empathetic to the needs of their patients. Even while there are strong theoretical links between spirituality and empathy, there is not always clear-cut actual evidence to back these claims. Any correlation between spirituality and empathy is frequently deduced from related concepts or acts of prosociality or caring behaviour in healthcare. For instance, there is strong evidence that connects spirituality with caring behaviour (Baker et al., 2017), prosocial behaviour (Khalili et al., 2023; Travis et al., 2023), and forgiveness (Raj & Padmakumari, 2023). In a study on the SS-empathy link, Stewart and Lawrence (2021) found a significant correlation between dimensions of spirituality and empathy. According to Thomas et al. (2019), healthcare professionals who identified as spiritual were more likely to exhibit greater levels of both clinical and general empathic compassion. Consequently, it is hypothesised that SS would be a significant predictor of CE among medical students.

Spirituality as a Moderator between EI and CE

The existing nomological network provides the framework for the suggested moderating role of SS linkages (both direct and moderated) examined in this paper. At the direct level of analysis, SS has been found to increase the likelihood that individuals would carry out prosocial behaviour, forgiveness, and exhibit care and

compassion for others (Baker et al., 2017; Khalili et al., 2023; Raj & Padmakumari, 2023; Thomas et al., 2019). Based on the aforementioned, at different levels of SS, the link between EI and CE is expected to change for medical students such that increasing SS will lead to an increase in the EI-CE relationship. At the moderation level, the literature indicates that SS strengthens the nexus between theory of mind and prosocial behaviour (Khalili et al., 2023), religiosity and positive behaviours (Buenconsejo & Datu, 2023). Consequently, it is proposed that SS would moderate the EI-CE relationship such that the relationship would be stronger for medical students with high SS.

Gender as a Moderator between EI and CE

Gender is one of the most researched demographic characteristics in social and behavioural research (Nwanzu & Babalola, 2023). The concept of gender in this study represents the categorisation of people into males or females using biological characteristics. This demographic variable is affected by cultural and social expectations. There exist few studies on gender differences in CE and related behaviour such as caring behaviour and compassion in healthcare. While some studies have observed a non-significant difference in gender and compassion-related behaviour (Edosomwan & Nwanzu, 2023; Jung et al., 2022), the majority of studies in the literature appear to provide support for gender differences in CE and compassion-related behaviours (Deng et al., 2023; Pang et al., 2023). These differences can impact the EI-CE relationship. Hence, as a moderator, the different levels of gender (males and females) can either strengthen or attenuate the EI-CE relationship.

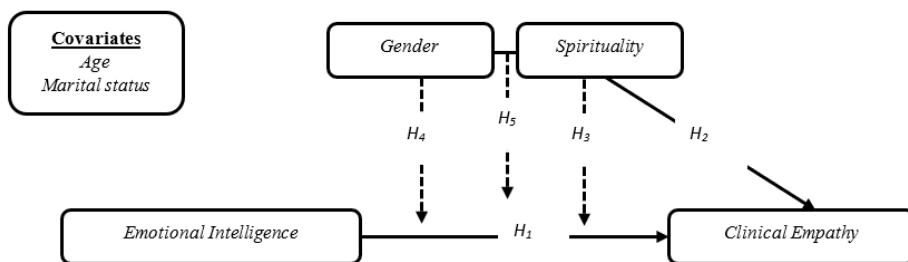
In the theoretical literature, this possibility can be explained using the gender categorisation theory. Gender socialization theory states that due to their disparate upbringings and experiences, males and females behave differently in social settings (Leaper & Farkas, 2015). According to empirical studies, males are associated with aggressive and competitive behaviours, whereas females are associated with caring behaviours (Deng et al., 2023; Kuhnert et al., 2017; Quenneville et al., 2022). The inconsistent findings in gender differences in empathy and other compassion-related behaviour across past studies give credence to the examination of the conditional effect of gender on the nexus between EI and CE. Gender has been found to moderate the link between nurses' optimism and distress tolerance (Falavarjani & Yeh, 2019). Consequently, it is proposed that gender would be a moderator in the EI-CE relationship.

The Combined Moderating Effects of SS and Gender on EI-CE Relationship

Based on earlier research demonstrating the moderating capacity of gender (Falavarjani & Yeh, 2019) and SS (Buenconsejo & Datu, 2023; Khalili et al., 2023), and the positive impact SS has on general empathic compassion (Stewart & Lawrence,

2021; Thomas et al., 2019), we proposed that SS and gender would jointly moderate the EI-CE relationship. The model and hypotheses for the study are shown below:

Figure 1.
Hypothesised model showing the direct and conditional effects



Based on the theoretical and empirical literature reviewed, and in line with the research objectives and utilization model; the researchers proposed five hypotheses:

H_1 : Emotional intelligence positively predicts clinical empathy.

H_2 : Spirituality positively predicts clinical empathy.

H_3 : Spirituality moderates the relationship between EI and CE such that the relationship will be stronger when spirituality is high.

H_4 : Gender moderates the relationship between EI and CE such that the relationship will be stronger for females compared to males.

H_5 : Spirituality and gender jointly moderate the relationship between EI and CE such that the relationship will be stronger for female participants with high levels of SS.

Method

Participants

The participants comprised 202 undergraduate medical students from Delta State University, Abraka, Nigeria who have had contact with patients either through the student industrial work experience programme or regular medical internship. The sample comprises 86 (42.60%) males and 116 (57.40%) females with an average age of 22.52 years ($SD = \pm 2.83$). Medical students that were less than 21 years old comprised 22.4% of the sample, those that were 21-28 years old comprised 74.0%, while those greater than 28 years consisted of 3.6% of the sample. The majority of the participants were single, 187 (93.50%), while 13 (6.50%) reported being married.

The questionnaire also elicited responses regarding medical students' contact with patients which was a major inclusion criterion. All the participants reported that they had been in contact with patients. This is possible as only medical students who had been exposed to field work were utilised for the study. The sample size and power analysis were largely considered during the design of the study. Therefore, factors such as effect size, power, significance levels, and type of statistical analysis were used for the sample size determination via the G*power software (v3.1.9.7). The sample size was calculated using a linear multiple regression fixed model and an R^2 deviation of Zero fixed at A-priori. The software generated a minimum sample of 119 participants for the regression model, based on a .15 medium effect size, an alpha of .05, and power fixed at .95. The generated sample size was sufficient to determine statistical power. However, to reduce non-response bias, a larger sample size is often recommended. Consequently, 200 medical students clinically exposed to patient care were sampled to analyse the model developed for the study. According to the recommendation by Verma and Verma (2020) and Kang (2021), the sample size generated by the G*power software was sufficient to determine power and statistical significance, and it met the maximum sample-to-variable ratio of twenty to one.

Procedure

All procedures took into account the most recent updates to the Helsinki Declaration for human research. The Psychology Committee on Research Ethics (Psychology Department, Delta State University, Abraka) gave its approval for this study. The approval was given on February 12, 2023, with reference number 0001827. The research instruments were procured from published articles, which served as their sources, and appropriate measures were implemented to guarantee proper attribution of credit. The three instruments, a sociodemographic questionnaire, and informed consent were then combined in a single document. A statement outlining the goals and theme of the study as well as the fact that participation was completely voluntary was included in the informed consent. Complete confidentiality and privacy of data were assured to the participants. This was disclosed in the informed consent form that was included in the survey. These are the prerequisites for inclusion: verbal consent indicating interest in participating in the study, the student must be enrolled in a full-time medical degree program in any of the university council's recognized medical programs, and must and must have had contact with a patient through the medical industrial work scheme or internship.

The survey's Incompleteness and failure to meet the Inclusion requirements were the exclusion criteria. Surveys with a high percentage of incomplete responses were not used. The data were collected from the students via a convenience sampling method. Procedural controls were put in place to control common method bias. These

include making certain that the criterion variable was shown to participants before the predictor variables, safeguarding participant data confidentiality and privacy, and making sure the questionnaire's items were easy to read, concise, and clear (Kaltsonoudi et al., 2022a; Kaltsonoudi et al., 2022b). After getting their informed consent, research assistants and class coordinators/representatives helped administer the self-report measure (the questionnaires) to the participants who met the inclusion criteria. It took about eight to fifteen minutes to respond to the questionnaire.

Measurement

Socio-demographics such as gender, age, marital status, and contact with patients were collected in the first section of the questionnaire (section A). Section B of the questionnaires contains the instruments used for measuring the other scaled variables in the study. Three unique instruments measured on a 5-point response format with 1 being “strongly disagree” to 5 being “strongly agree” were used in the study. Specifically, each variable was measured with a validated and reliable instrument found in the literature. The instruments adopted for the study were all in their original form and only adapted where necessary to suit the research context.

Clinical Empathy: The Jefferson Scale of Empathy among Healthcare Professionals Student Version (JSEHPS-17) was used to measure empathy among medical students. It was developed to measure the level of empathy among medical students. The scale was developed by Field et al. (2011). The 17-item two-factor structure which describes the significant aspect of empathic behaviour salient to the healthcare profession such as compassionate care and perspective taking was adopted in this study (Williams et al., 2012). Sample items on the JSEHPS-17 include “It is difficult for a healthcare provider to view things from patients’ perspective”, and “healthcare providers should try to think like their patients to render better care”. The total score achieved varies from 1 to 85, where higher values correspond to higher levels of clinical empathy and lower scores correspond to lower levels of clinical empathy among medical students with clinical exposure. The overall scores for the 17-item scale represent the composite construct of CE. The 17-item model produced a good model fit and a satisfactory alpha coefficient of .75 (Williams et al., 2012).

Emotional Intelligence: This was measured by the Brief Emotional Intelligence Scale (BEIS-10) developed by Davis et al. (2010). The scale measures a person's adaptive interpersonal and intrapersonal functioning. The scale comprises 10 items that describe the significant aspects of EI including the appraisal of others and one's own emotions, the regulation of others and one's own emotions, and the utilization of emotions. Sample items on the BEIS-10 include “I know why my emotions change”, and “I can tell how people are feeling by listening to the tone of their voice”. The overall scores for the 10-item represent the composite construct of EI. Since the scale

was evaluated on a 5-point Likert format, participants' ratings ranged from 1 to 50, where higher values indicate high emotional intelligence and lower values indicate low emotional intelligence among medical students with clinical exposure. Davis et al. (2010) reported good psychometric properties for the scale. The confirmatory factor analysis results yielded a good fit and an acceptable test-retest reliability.

Spirituality: This was assessed with the 11-item Attitude Related to Spirituality Scale (ARES-11) developed by Braghetta et al. (2021). The 11-item scale assesses individuals' belief in something sacred and their general attitude towards prayer, meditation, and spiritual values. Students were the original sample utilized for developing the scale hence making the scale highly appropriate for this study. Examples of items include: "I believe in something sacred or transcendent (God a higher force)", and "My spirituality influences my physical and mental health". The rating or evaluation of participants' scores ranged from 1 to 55, where higher values indicate high spirituality and lower values indicate low spirituality among medical students with clinical exposure. The overall scores for the 11-item represent the composite construct of SS. According to Braghetta et al. (2021), ARES-11 showed satisfactory internal consistency of .98. The scale was described as having a unidimensional structure in the exploratory factor analysis. The scale's fit indices in the unidimensional model showed a good fit.

Design and Statistics

This cross-sectional study investigates the relationship between the moderators (gender and SS), independent (EI), and dependent (CE) variables using a predictive survey model. The researchers obtained data from medical students in a natural setting, free from outside interference, by employing a predictive model. The study's focal variables' zero-order correlation, Cronbach's alphas, and the normal distribution test (skewness and kurtosis) were examined. This is to validate the use of parametric statistics for hypotheses testing and ascertain whether the data satisfies the normal distribution assumptions. Also, a simple regression analysis was used to test the direct relationships while model 2 of the PROCESS modelling tool was used to examine the individual and combined moderation involving SS and gender. The data was managed and analysed using IBM SPSS v25 (complemented by the PROCESS tool v4.2).

Control Variables

Two demographic factors were selected for this study to act as control variables. The choice to include age and marital status as covariates was informed by the literature. In particular, age (the actual age the study's participants reported) and marital status (single = 1, married = 2) were controlled for in the moderation model. Empirical studies have examined the role of gender, age, and marital status and their impact on CE

among medical students. While significant gender differences in empathic behaviour among medical students have been found—with female students showing higher levels of CE (Hegazi et al., 2017), the same cannot be said for age and marital status as most studies have reported insignificant association or difference in empathy across age groups and marital status. Hence, it is important to control for these factors in the moderation model. Accordingly, Cooper et al. (2020) stated that analyzing covariates is crucial because it reduces the bias brought on by missing variables in a model. Age and marital status have also been included as covariates in comparable studies that have been published in the literature (Edosomwan et al., 2024; Edosomwan et al., 2021; Hegazi et al., 2017; Jeffries et al., 2014; Khan et al., 2022).

Results

Common Method Bias and Psychometric Properties of the Instruments

The researchers adopted two statistical techniques as diagnostic tools to assess the presence of common method bias (CMB) in the data set: Harman's single-factor test and the correlation matrix technique. The results of the analyses were within acceptable bounds. As per the test results of the Herman's single-factor test, the first factor explained 16.12% of the variation. According to these figures, CMB is not a problem in the data set, as evidenced by the first factor's inability to explain up to 50% of the overall variation. The second statistical method used for evaluating the presence of CMB in the data was the correlation matrix technique. This method uses correlations between latent variables to evaluate the effect of CMB. According to this technique, a high correlation ($r > .90$) between the study's major constructs is an indication of the presence of CMB. Therefore, a correlation $< .90$ signifies the absence of CMB (Tehseen et al., 2017). The correlation values for the variables were moderate and within the normal range further supporting the result of Herman's single-factor test for the absence of CMB in the data set.

After CMB was evaluated in the data set, the data was examined for normal distribution. The values obtained are shown in Table 1. The skewness and kurtosis values fell between $-.386$ and $+2.615$, which was sufficient for a sample of 202 or more. According to Hair et al. (2010), the normality assumption is fulfilled when the skewness value is within the range of ± 2 and the value for the kurtosis is within the range of ± 7 . These results were consistent with a normal distribution of the data (Demir, 2022). The instrument's reliability was then verified through internal consistency using Cronbach's coefficient and McDonald's omega. The Cronbach's alpha values demonstrated adequate reliability coefficients for each of the data collection instruments, following the suggestion made by Howitt and Cramer (2017). The values ranged from $.790$ to $.871$. According to Francis et al. (2022), McDonald's

ω , which is determined by factor assessment, was also found to be satisfactory, with values ranging from .800 to .879. The inter-scale correlation allowed for convergent validity to be attained. The three primary variables were measured using scales that are already in the literature. This was used to assess content validity, and the inter-item correlation values shown in Table 2 further demonstrated evidence of convergent validity (Field, 2018; Francis et al., 2022).

Table 1.
Report of Normal Distribution and Reliability of the Instruments

	<i>Skewness</i>	<i>Kurtosis</i>	<i>Items</i>	<i>Cronbach's alpha</i>	<i>McDonald's ω</i>
Emotional Intelligence	-.626	1.461	10	.807	.812
Spirituality	-.849	.426	11	.871	.879
Clinical Empathy	-.386	2.615	17	.790	.800

Descriptive Statistics and Correlations

Based on the values presented in Table 2, EI positively and significantly correlate with CE ($r = .317, p < .01$), thus, indicating that an increase in EI scores is associated with an increase in the scores for CE. From the figures in Table 2, SS positively correlate with CE ($r = .165, p < .05$), with the statistics showing that an increase in the scores for SS necessitates an increase in the scores for CE. Also, SS correlate positively and significantly with EI ($r = .365, p < .01$) indicating that an increase in the scores for SS leads to an increase in scores for EI. Additionally, for the demographic characteristics, the researchers used as covariates in the moderation model, marital status was found to have a significant negative relationship with SS ($r = -.146, p < .05$). The data did not exhibit any problems with multicollinearity because all of the variables had modest correlation values $< .80$. These values also provided support, using this benchmark, for the correlation matrix technique used in survey studies to evaluate CMB (Tehseen et al., 2017).

Table 2.
Descriptive statistics and correlation coefficients

	<i>M</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
1 Gender	1.574	.495					
2 Age	22.526	2.835	-.212**				
3 Marital Status	1.075	.316	-.050	.149*			
4 Emotional Intelligence	4.030	.562	-.039	.008	-.128		
5 Spirituality	4.408	.573	.044	.041	-.146*	.365**	
6 Clinical Empathy	3.445	.549	-.026	-.079	.044	.317**	.165*

Note: * $< .05$; ** $< .01$; Gender was coded as 1 = male, 2 = female; marital status coded as 1 = single, 2 = married, Age was coded in years.

Testing the Research Propositions: Direct and Conditional Effects

The independent effect of EI and SS on CE are presented in Table 3. The statistics supported hypotheses 1 and 2. For the first hypothesis, EI has a positive significant

effect on CE ($B = .309$, 95% CI [.180, .438], $t = 4.721$, $p < .01$). According to the B -statistics, there is a .309 rise in CE for every unit increase in EI. The R^2 statistics indicate that EI accounts for a 10% variance in CE and also indicate that the effect on CE is small. The analysis of variance (ANOVA) statistics, $F(1,200) = 22.288$, $p < .01$, showed evidence of statistically significant regression, and this indicates CE can be predicted from EI. The first hypothesis (H_1) was accepted. For hypothesis 2, SS has a positive and significant effect on CE ($B = .158$, 95% CI [.026, .290], $t = 2.369$, $p < .01$). The B -values indicate that a one-unit increase in SS leads to a .158 unit increase in CE. The R^2 statistics indicate that SS accounts for a 2.7% variance in CE and also indicate that the effect of SS on CE is of a small magnitude. The values for analysis of variance (ANOVA) statistics, $F(1,200) = 5.610$, $p < .01$, showed a significant regression, indicating that CE can be predicted from SS. Hence, the second hypothesis (H_2) was accepted. The tolerance values and variance inflation factor obtained were within the normal range showing that the data set has no issues with multicollinearity (Field, 2018).

Table 3.
Simple regression analysis on the effect of EI and SS on CE

	B	SE	β	t	P	95% CI		R^2	Adj R^2	F
						Lower Limit	Upper Limit			
Constant	2.199	.267		8.251	.000	1.674	2.725			
EI	.309	.066	.317	4.721	.000	.180	.438	.100	.096	22.288
Constant	2.749	.297		9.272	.000	2.165	3.334			
SS	.158	.067	.165	2.369	.019	.026	.290	.027	.022	5.610

Note: EI = emotional intelligence; SS = spirituality; CE = clinical empathy

Table 4 displays the outcomes of the different relationship and moderation pathways that were tested. Model 2 of the Hayes PROCESS Macro tool for moderation analysis was utilized for testing the individual and joint effects of SS and gender on the EI-CE relationship. The model's confidence interval was computed using a bootstrapped CI based on 5000 samples. The model containing all the variables (dependent, independent, covariates, and moderators) was significant, $R = .387$; $R^2 = .149$; $F = 4.566$; $p < .001$. The R^2 value indicates that the variables in the model account for a 15% variance in medical students' CE. The results showed that after controlling for age and marital status, EI significantly and positively predicted CE, $b = .261$, 95% CI [.108, .414], $p = .000$.

Table 4.
Moderation analyses of the individual and combined interaction effects

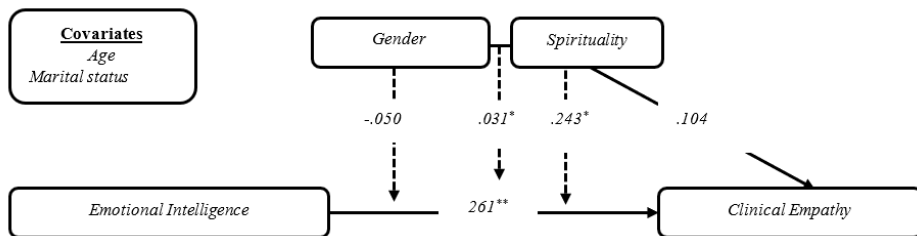
	B	Se	t	95% CI		R^2 Change	F	P
				Lower Limit	Upper Limit			
Constant	3.737	.322	11.560	3.095	4.369			.000
Emotional intelligence	.261	.077	3.367	.108	.414			.000
Spirituality	.104	.072	1.437	-.038	.246			.152

Interaction_1 (EI*SS)	.243	.110	2.194	.024	.463	.022	4.817	.029
Gender	-.050	.079	-.633	-.207	.106			.527
Interaction_2 (EI*Gender)	.283	.158	1.782	-.030	.596	.015	3.177	.076
EI*SS*Gender						.031	3.283	.039
Model Summary	$R = .387, R^2 = .149, F = 4.566, p < .001$							

Note: EI = emotional intelligence; SS = Spirituality

On average, a unit increase in medical students' EI leads to a .261 increase in their CE for patients. In the model, SS did not significantly predict CE after controlling for age and marital status, $b = .104$, 95% CI [-.038, .246], $p = .152$. This is different compared to the significant result obtained from the simple regression analysis. The results further indicated that SS moderate the relationship between EI and CE, $b = .243$, 95% CI [.024, .463], $p = .029$. The interaction term between EI and SS was significant hence indicating that SS moderated the relationship between EI and the CE of medical students. Consequently, the third hypothesis (H_3) was accepted. Gender did not moderate the relationship between EI and CE, $b = -.050$, 95% CI [-.207, .106], $p = .527$. Consequently, the fourth hypothesis (H_4) was rejected. Further, the overall combination of both interactions have a significant effect on the relationship between EI and CE, $F(2, 200) = 3.283$, $p = .039$, R^2 Change = .031. Hence both moderators jointly moderates the relationship between EI and CE. Consequently, the fifth hypothesis (H_5) was accepted.

Figure 2.
Statistical output for the hypothesised model



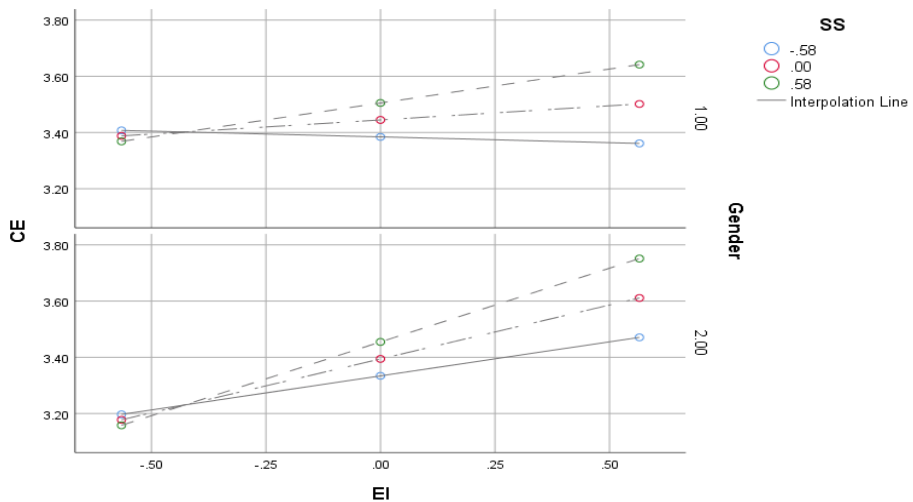
Note: * < .05; ** < .01

Table 5.
Conditional effects of EI on CE at values of SS and gender

Spirituality	Gender	Effect	Se	t	P	Lower Limit CI	Upper Limit CI
-.5801	1	-.040	.159	-.255	.798	-.356	.274
-.5801	2	.242	.095	2.539	.011	.054	.430
.0000	1	.242	.137	.729	.466	-.171	.371
.0000	2	.383	.084	4.550	.000	.217	.549
.5801	1	.241	.143	1.682	.094	-.041	.524
.5801	2	.524	.115	4.535	.000	.296	.753

Further analysis depicted in Table 5 shows the conditional effect of EI on CE at values of the moderators: -1 standard deviation below the mean (low), at the mean value (medium), and +1 standard deviation above the mean (high). Specifically, it depicts the conditional effects of low SS at low (males) and high (females) levels of gender and their implications for the nexus between EI and CE. The conditional effect was significant and more substantial for female participants at the mean, $b = .383$, 95% CI [.217, .549], $t = 4.550$, $p < .001$, and high levels of SS, $b = .524$, 95% CI [.296, .753], $t = 4.535$, $p < .001$. The conditional effect further supported Hypothesis three (H_3) and Hypothesis five (H_5). There were no significant conditional effects at levels of SS when the participants were male. These are shown in the plot below.

Figure 3.
Interaction effects of EI, SS and gender in predicting CE



Discussion

This study examined EI and its relationship with clinical empathy in a sample of medical students. The study also examined the individual and combined moderating roles of SS and gender in the relationship between EI and CE. The study examined five hypotheses using a regression-based analysis. One may infer the following conclusion by contrasting the findings of this investigation with those of earlier ones. The first hypothesis which stated that EI would positively predict CE was supported. Hence, an increase in EI necessitates an increase in clinical empathy. This further affirms the literature on the idea that the emotional attributes of healthcare personnel affect how they respond and behave in the presence of patients (Mosallanezhad et al., 2023). This result is similar to studies that have examined the role of EI on compassion and care-related behaviours (Abe et al., 2018; Deng et al., 2023; Hajibabae et al.,

2018; Rfan et al., 2019; Wang et al., 2018). Therefore, medical students must acquire emotional skills to improve their perception and expression, and control of their emotions to improve patient care and collaborate effectively with colleagues.

In the model analysis (controlling for age, marital status and other variables in the model) outside the direct connection between SS and CE, the results indicated a non-significant relationship between SS and CE but the result for the second hypothesis (H_2) using simple regression analysis showed that SS positively predict CE among medical students; therefore supporting the notion that SS promote CE. Empathic behaviour can be strengthened by SS. This is consistent with the studies that posited that SS has positive implications for personal health, individual flexibility and openness, and individuals' behaviour and attitude towards others (Shakarian et al., 2021; Güner & Akyüz, 2023; Kleftara & Vasilou, 2016). The result is also in line with studies that have established a relationship between SS and attributes such as forgiveness, prosocial, compassion, and caring behaviour (Baker et al., 2017; Khalili et al., 2023; Raj & Padmakumari, 2023; Thomas et al., 2019; Travis et al., 2023).

Accordingly, the result of the third hypothesis showed that SS moderated the EI-CE relationship. This is an indication that at different levels of SS, there is likely going to be an attenuation or increase in the EI-CE relationship. This is in agreement with studies that have used SS as a moderator and found significant conditional effects in the theory of mind and prosocial behaviour relationship, religiosity and positive behaviours (Buenconsejo & Datu, 2023; Khalili et al., 2023). For the fourth hypothesis, gender was not a significant moderator in the EI and CE relationship. In the model, at different levels of gender after controlling for age and marital status, gender had no individual conditional effect on the relationship between EI and CE. Although the result is not consistent with Falavarjani and Yeh (2019) whose findings showed a moderating role of gender on the link between nurses' optimism and distress tolerance, the inconsistencies in gender differences in empathy and other compassion-related behaviour in past studies give credence to the current findings (Edosomwan & Nwanzu, 2023; Jung et al., 2022).

The fifth and final hypothesis examined the combined moderating effect of SS and gender on the EI-CE relationship. When gender interacted further with levels of SS, a significant combined moderating effect was found such that the relationship between EI and CE was pronounced for medical students who were females and with higher levels of SS. This result is supported by studies in the literature. This is attributed to earlier studies showing the moderating capacity of SS (Buenconsejo & Datu, 2023; Khalili et al., 2023), and gender (Falavarjani & Yeh, 2019) and the positive connection between SS on compassion and caring behaviour (Stewart & Lawrence, 2021; Thomas et al., 2019). This result also agrees with the gender socialisation

theory which explains that due to differences in upbringing, males and females tend to display differences in behaviour across social settings (Leaper & Farkas, 2015). Higher levels of SS among female medical students might have interacted with EI to predict higher levels of CE because females are often expected to show care and compassion for others (Deng et al., 2023; Kuhnert et al., 2017). These social and cultural expectations explain the reason CE was high when SS and gender (female medical students) interacted with EI. On the other hand, no significant conditional effects at different levels of SS were observed in the EI-CE relationship when the participants were male medical students. This result rests on the notion that males are often expected to show masculine traits such as self-affirmation, aggression, dominance and sometimes lack of consideration for the feelings of others (Deng et al., 2023; Quenneville et al., 2022).

These gender role expectations are largely embedded in the Nigerian culture and other similar cultures around the world. Hence, this could be the defining factor behind the results obtained for the combined moderating roles of gender and SS on the EI-CE relationship. Therefore, while it is important to encourage a sense of spirituality and a deep calling to life and the medical profession; medical school administrators and instructors must also emphasise the importance of cultivating certain emotional skills that are necessary for medical students to conduct themselves as medical professionals irrespective of the environmental and cultural expectations surrounding their gender. This is important because the results reflected a significant change in the combined effects of gender and SS in the EI-CE relationship. This change was pronounced and significant for female medical students. Therefore, recognising the need to remove the impediments posed by gender expectations is important to foster patient positive experiences in clinical settings. Patients deserve quality care regardless of the gender of the medical professional responsible for their care management. This is achievable through a structured clinical curriculum centred on the need for compassion and empathy in medicine.

Conclusion

In conclusion, the findings of this study give greater insights into the effect of EI, SS, and gender on CE among medical students. The results showed that the presence of EI – the capacity to understand one’s and others’ emotions and react to events in the environment based on this understanding – enhances the tendency of medical students to show CE towards patients. This is because through EI, medical students develop a sense of awareness, and emotional regulations, and have the social skills necessary to react perceptively to patients’ demands. Also, the attachment and belief systems structured around SS – a meaningful connection to something greater than oneself – facilitated the act of CE among medical students. In addition, SS moderated the

EI-CE relationship while gender did not. In the combined interaction effects model, SS and gender both moderated the EI-CE relationship such that the relationship was stronger for female medical students with higher levels of SS.

Accordingly, the roles of EI, SS, and gender expectations in this context cannot be overemphasised. The understanding of the salient roles of these predictor and moderator variables can help in designing interventions at the individual levels and through the enhancement of the medical curriculum to capture the essence of care and the roles of empathy in the patient-physician relationship and the treatment process. As a result, the study suggests that medical school administrators and policymakers should create a system that promotes factors that facilitate empathic behaviour among medical students.

Limitations and Avenues for Further Studies

There are certain limitations in the study. First, a university in Nigeria provided the sample for the research. There are still some geographic limitations in the data. The fact that the students were recruited from a single geographic location may have limited the results' generalizability. To derive a more comprehensive conclusion, future research should look at medical students from different parts of Nigeria and across the world. Given that the current study was conducted at a single university site, future research on this topic should be multi-centre and incorporate the data of medical students from multiple educational institutions. Additionally, it is important to conduct a multi-level analysis that takes into consideration specific demands and needs based on geographic locations, sociodemographic factors, and other individual factors that may likely impact the tendency to be empathetic towards patients. The second limitation is that the study relied solely on self-report measures, or self-rating scales, which may have introduced recall bias into the evaluation of EI, SS, and CE. Respondent bias may have arisen as a result of social desirability. In questionnaire-based research, it is typically challenging to control for socially desirable responses, even though the study's design included procedural controls for CMB. As such, objective evaluations are a preferable method of measuring the constructs.

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Authors' contribution. The authors

contributed equally to this manuscript.

Peer-review. This research was rigorously evaluated by two or more experts in the field, and the study was refined based on their recommendations.

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