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Professional and Organizational Correlates of Trait Emotional Intelligence Among Nurse Managers: A Multicenter Cross-Sectional Study

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Abstract

Background: Trait emotional intelligence reflects individuals' characteristic perceptions of their emotional functioning and may be particularly relevant in nursing management, where clinical, interpersonal, and organizational demands converge. Although emotional intelligence has been widely examined in relation to leadership outcomes, less is known about the professional and organizational characteristics associated with trait emotional intelligence among nurse managers. This study examined the independent contributions of professional experience, managerial tenure, educational attainment, and managerial position.

Methods: This multicenter cross-sectional study analyzed data from nurse managers employed in various Greek public healthcare organizations. The final analytic sample included 1,212 participants from 81 healthcare organizations. Trait emotional intelligence was assessed using the 30-item Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF). Hierarchical multiple linear regression was performed with Global Trait Emotional Intelligence as the dependent variable. Cluster-robust standard errors were estimated at the healthcare-organization level. A sensitivity analysis replaced professional experience with age.

Results: The mean Global Trait Emotional Intelligence was 5.13 (SD=0.66). Overall professional experience was not associated with Global Trait Emotional Intelligence in the fully adjusted model (B=−0.0007; 95% CI: −0.0086 to 0.0072; p=0.854). Managerial tenure showed a small positive association that did not reach conventional statistical significance (B=0.0063; 95% CI: −0.0002 to 0.0128; p=0.059). In contrast, master's-level education was independently associated with higher Global Trait Emotional Intelligence (B=0.196; 95% CI: 0.102 to 0.290; p<0.001). In the fully adjusted regression model, Department Heads (B=0.081; 95% CI: 0.008 to 0.155; p=0.031) and Sector Heads (B=0.154; 95% CI: 0.014 to 0.295; p=0.032) showed small positive adjusted differences in Global Trait Emotional Intelligence relative to Deputy Department Heads, who served as the reference category. The final model explained 3.4% of the variance. In the sensitivity analysis, managerial tenure remained positively associated with Global Trait Emotional Intelligence and reached statistical significance, although the effect remained small.

Conclusions: Trait emotional intelligence among nurse managers was not related to career duration alone. Educational attainment and managerial position showed more consistent associations, whereas managerial tenure contributed only modestly and was sensitive to model specification. These findings highlight the limited explanatory value of the professional and organizational characteristics examined, which together with gender accounted for only 3.4% of the variance in Global Trait Emotional Intelligence. This underscores the need to investigate additional individual and contextual factors associated with emotional functioning among nurse managers.

Categories: Occupational Health, Psychology, Quality Improvement
Keywords: managerial position, managerial tenure, nurse managers, nursing management, postgraduate education, professional experience, teique-sf, trait emotional intelligence

Introduction

Nurse managers occupy a particularly demanding position within healthcare organizations, situated between direct clinical care, workforce management, and organizational decision-making. Their responsibilities extend beyond administrative and technical functions to include staff support, conflict management, communication, coordination, and the management of emotionally demanding situations. Contemporary leadership research has increasingly emphasized that effective managerial functioning depends not only on technical expertise but also on emotional, social, and interpersonal competencies, particularly in complex organizational environments [1,2]. These competencies may be especially relevant in nursing management, where managerial decisions are routinely embedded in interpersonal relationships and in contexts characterized by clinical uncertainty, workload pressures, and competing organizational demands.

Emotional intelligence, however, is not a unitary construct. Emotional intelligence has been conceptualized and measured in several different ways. Ability emotional intelligence refers to the capacity to process emotional information, assessed through performance-based tasks. For example, individuals may be asked to identify emotions from facial expressions or determine appropriate responses to emotionally challenging situations. Mixed models incorporate emotional abilities alongside broader personal and interpersonal competencies, such as motivation and social skills. In contrast, trait emotional intelligence concerns how individuals typically perceive their own emotional functioning. For instance, a nurse manager may perceive themselves as capable of remaining calm during conflicts, understanding colleagues' emotional reactions, or managing stressful interpersonal situations. These self-perceptions do not necessarily correspond to objectively demonstrated emotional abilities. Within the framework developed by Petrides and colleagues, trait emotional intelligence represents a constellation of emotion-related self-perceptions embedded within the broader domain of personality [3]. This distinction is essential because findings obtained from ability-based, mixed, and trait models should not be considered directly interchangeable [3,4].

The Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF) was developed to assess Global Trait Emotional Intelligence and has undergone psychometric evaluation [5]. The Greek-language version was validated in a sample of 602 adults and demonstrated satisfactory internal consistency at the factor level and excellent internal consistency for the global score. Evidence of convergent validity included a strong negative correlation with neuroticism ($r=-0.65$) and a strong positive correlation with extraversion ($r=0.71$). Furthermore, the Greek validation study demonstrated incremental validity in explaining subjective happiness and life satisfaction beyond the Big Five personality dimensions [6]. In the present study, the TEIQue-SF global score demonstrated good internal consistency (Cronbach's $\alpha=0.865$). These psychometric findings support the assessment of trait emotional intelligence as a measure of individuals' characteristic emotional self-perceptions rather than objectively tested emotional ability.

Interest in emotional intelligence among nurse managers has grown substantially because of its reported relationships with leadership behavior and managerial outcomes. Previous studies have reported positive associations between emotional intelligence and transformational leadership, perceived leadership effectiveness, satisfaction with leadership, and "extra effort", a leadership outcome reflecting the extent to which leaders motivate staff to exert effort beyond usual role expectations, rather than simply working additional hours [7,8]. These leadership outcomes were examined in previous research and were not assessed in the present study. Reviews have also highlighted the potential relevance of emotional intelligence to effective nursing management [9]. Nevertheless, much of this literature has treated emotional intelligence as a predictor of leadership or organizational outcomes. Comparatively less attention has been given to a different question: which professional and organizational characteristics are themselves associated with nurse managers' emotional intelligence?

Existing evidence on this question is heterogeneous. A systematic review and meta-analysis of 21 cross-sectional studies identified several personal, professional, and organizational characteristics associated with emotional intelligence among nurse managers, although the findings were inconsistent across studies [10]. Importantly, the included studies used different instruments and conceptualizations of emotional intelligence, limiting the extent to which their findings can be directly applied to trait emotional intelligence. For example, Ohlson and Anderson examined ability emotional intelligence using the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) and found no significant associations between overall emotional intelligence and age, managerial experience, or graduate education [11]. Similarly, Prufeta examined ability-based emotional intelligence and identified differences in specific emotional intelligence dimensions associated with managerial experience and postgraduate educational background [12]. Although these studies provide relevant evidence concerning the professional context of emotional intelligence in nursing management, their findings cannot be assumed to apply directly to trait emotional intelligence. This distinction highlights the importance of examining professional experience, managerial tenure, educational attainment, and organizational position specifically in relation to self-perceived trait emotional intelligence, as assessed by the TEIQue-SF. These characteristics are therefore investigated as potential correlates rather than established predictors of trait emotional intelligence.

This distinction is particularly important because overall professional experience and managerial tenure represent different forms of occupational exposure. Years of nursing practice primarily reflect cumulative professional and clinical experience, whereas years spent in managerial positions involve repeated responsibility for staff supervision, organizational decision-making, conflict resolution, coordination, and accountability. Evidence from nurse manager competency research demonstrates that managerial experience can contribute substantially to the development of role competence and that graduate leadership education may provide additional developmental value [13]. However, managerial competence is not equivalent to trait emotional intelligence. It therefore remains unclear whether duration of professional practice, duration of managerial responsibility, educational attainment, and organizational position make distinct contributions to emotional self-perceptions among nurse managers.

This question is also methodologically important. Professional experience is strongly related to age, while managerial tenure is itself partly dependent on overall career duration. Treating these variables as interchangeable may obscure their independent associations with emotional functioning. Similarly, organizational hierarchy may capture more than accumulated years of service, because different managerial

positions entail qualitatively different relational, supervisory, and decision-making demands. Examining these factors simultaneously may therefore provide a more differentiated understanding of the professional context in which trait emotional intelligence is expressed.

Accordingly, the present study aimed to examine the professional and organizational correlates of trait emotional intelligence in a large multicenter sample of nurse managers. Particular emphasis was placed on distinguishing the contribution of overall professional experience from managerial tenure while simultaneously considering educational attainment and managerial position. Specifically, the study investigated whether career duration and years spent in managerial responsibility were independently associated with Global Trait Emotional Intelligence after adjustment for sociodemographic and organizational characteristics.

Materials And Methods

Study design and participants

The present study analyzed data from a multicenter cross-sectional study involving nurse managers employed in public healthcare organizations in Greece. Data were collected between November 2024 and January 2025. The study is reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) recommendations for cross-sectional studies [14].

Eligible participants were registered nurses employed in participating Greek public healthcare organizations who held a formal nursing management position within the nursing service, including Nursing Director, Sector Head, Department Head, or Deputy Department Head. Participants were required to be in active service during the study period, provide informed consent, and submit the study questionnaire. No minimum duration of service in a managerial role was required. Invitations to participate were distributed through the nursing administration of each participating organization, via the Office of the Director of Nursing Service.

Authorization for the study was initially sought from all Regional Health Authorities (YPE) across Greece. Subsequently, invitations to participate were sent to 120 public hospitals, of which 81 participated, corresponding to an institutional participation rate of 67.5%. Within the participating hospitals, all eligible nurse managers were invited through their respective nursing administrations. The recruitment approach therefore sought to include all eligible nurse managers within participating institutions, but did not constitute a probability-based national sample. The study size was determined by the number of eligible nurse managers who responded to the invitation; no a priori sample-size calculation was performed. A total of 1,253 records were available for analysis from the 81 participating healthcare organizations.

Data quality and analytic sample

Prior to inferential analysis, a structured data-quality audit was conducted to identify invalid, internally inconsistent, or professionally implausible records and thereby reduce the potential influence of data-quality errors on the findings.

Exclusion criteria were applied during data-quality screening and analytic sample construction. Records were excluded when they contained internally inconsistent or professionally implausible career-history information, including managerial tenure exceeding total professional experience, professional experience equal to or exceeding recorded age, or an implied onset of professional nursing practice before 18 years of age. Records showing an exact duplicate response pattern across all questionnaire items despite discordant sociodemographic information were also excluded. Records containing TEIQue-SF responses outside the permitted response range, missing healthcare-organization information required for clustered analyses, or data that could not be included in the prespecified binary gender contrast used in the multivariable model were not included in the corresponding analytic sample.

Twenty-nine records were excluded on the basis of these data-quality criteria. An additional record was excluded because it contained a TEIQue-SF response outside the permitted response range, seven records could not be included in the binary gender contrast used in the multivariable model, and four lacked healthcare-organization information required for clustered analyses. The final analytic sample therefore comprised 1,212 participants from 81 healthcare organizations.

Measures

Sociodemographic, Professional, and Organizational Characteristics

Participants provided information on age, gender, educational attainment, total years of professional experience, current managerial position, years spent in a position of managerial responsibility, and employing healthcare organization. Educational attainment was classified as undergraduate, master's, or doctoral level. Managerial position was categorized as Nursing Director, Sector Head, Department Head, or Deputy Department Head. Within the Greek public healthcare system, the nursing management hierarchy is

generally organized, from highest to lowest, as Nursing Director, Sector Head, Department Head, and Deputy Department Head. Nursing Directors oversee the overall administration and coordination of nursing services. Sector Heads supervise and coordinate groups of nursing departments, whereas Department Heads are responsible for the management of individual departments, including staff supervision and the organization of nursing care. Deputy Department Heads assist Department Heads and undertake delegated or substitute supervisory responsibilities. Although specific responsibilities may vary across healthcare organizations, these positions represent distinct levels of formal managerial authority. In the present study, managerial position was treated as an organizational characteristic rather than a direct indicator of leadership effectiveness or emotional competence.

Overall professional experience and managerial tenure were treated as conceptually distinct variables. Professional experience represented the total number of years in nursing practice, whereas managerial tenure represented the cumulative number of years spent in formal positions of managerial responsibility.

Trait Emotional Intelligence

Trait emotional intelligence was assessed using the 30-item TEIQue-SF [5]. Items are rated on a 7-point Likert-type scale ranging from 1 (completely disagree) to 7 (completely agree). Following reverse scoring of the relevant items, the Global Trait Emotional Intelligence score was calculated as the mean of all 30-item scores, as described for the TEIQue-SF [5], with higher scores indicating higher trait emotional intelligence.

The validated Greek-language version of the TEIQue-SF was used [6]. Internal consistency of the Global Trait Emotional Intelligence score was assessed using Cronbach's alpha.

Statistical analysis

Descriptive statistics were calculated for all sociodemographic, professional, organizational, and emotional intelligence variables. Continuous variables were summarized using means and standard deviations or medians and interquartile ranges, where appropriate, while categorical variables were summarized using frequencies and percentages.

Pearson correlation coefficients were used to examine bivariate associations between age, total professional experience, managerial tenure, and Global Trait Emotional Intelligence.

The primary analysis consisted of hierarchical multiple linear regression with Global Trait Emotional Intelligence as the dependent variable. Predictors were entered in theoretically defined blocks. The first model included gender, educational attainment, and managerial position. Total years of professional experience were added in the second model, and years in managerial responsibility were added in the final model. Female gender, undergraduate education, and Deputy Department Head served as the respective reference categories.

Changes in explained variance (ΔR^2) were examined at each step to determine whether overall professional experience and managerial tenure provided additional explanatory information beyond educational and managerial characteristics. Because participants were nested within healthcare organizations, cluster-robust standard errors were estimated at the healthcare-organization level. Regression coefficients are presented as unstandardized coefficients (B), 95% confidence intervals (CIs), standardized coefficients (β), cluster-robust t-statistics, and two-sided p-values. Overall model significance was evaluated using robust Wald F-tests.

Age was not entered simultaneously with professional experience in the primary regression model because of their strong correlation ($r=0.862$). As a sensitivity analysis, age was substituted for total professional experience to examine the robustness of the findings.

No imputation of missing data was performed; multivariable analyses were based on participants with complete data for all variables included in the respective models. Multicollinearity was assessed using variance inflation factors (VIFs). Model assumptions and influential observations were evaluated using residual and influence diagnostics, including the Breusch-Pagan test for heteroscedasticity, externally studentized residuals, leverage, and Cook's distance. Potential nonlinearity in professional experience and managerial tenure was examined using centered quadratic terms.

All statistical tests were two-sided, and statistical significance was set at $p<0.05$. No adjustment for multiple comparisons was applied to the reported p-values. Accordingly, statistical significance should be interpreted cautiously, particularly for exploratory associations and results close to the conventional significance threshold. Analyses were conducted using Python version 3.13.5 (Python Software Foundation, Fredericksburg, VA, USA) with statsmodels version 0.14.6.

Ethical considerations

The study was conducted in accordance with the principles of research ethics and applicable institutional

requirements. Ethical approval for the doctoral research project was obtained from the Research Ethics and Deontology Committee of the International Hellenic University (approval number: 59/2024; decision dated July 15, 2024). The Committee approved the study protocol, participant information and consent procedures, and the proposed conduct of the research.

Following central ethical approval, the required scientific and administrative approvals were obtained from the participating healthcare organizations and relevant Regional Health Authorities before recruitment commenced at each individual site. Data collection at each healthcare organization began only after the corresponding local approval procedures had been completed.

All potential participants received written information regarding the purpose and procedures of the study and were informed that participation was entirely voluntary. Informed consent was obtained prior to participation. Participants were assured that their responses would remain anonymous and confidential and that the data would be used exclusively for research purposes. Individual identification was replaced by confidential study coding, and no personally identifiable information was used in the statistical analyses.

Results

Participant characteristics

The final analytic sample comprised 1,212 nursing management staff from 81 healthcare organizations. The mean age of participants was 52.73 years (SD=5.78), and 1,027 (84.7%) were women. Participants reported a mean of 28.51 years (SD=6.53) of overall professional experience and 7.22 years (SD=6.39) of managerial tenure. The median duration of managerial responsibility was five years (IQR=2-11).

Regarding educational attainment, 730 participants (60.2%) held an undergraduate degree, 442 (36.5%) held a master's degree, and 40 (3.3%) held a doctoral degree. With respect to managerial position, 590 (48.7%) were Deputy Department Heads, 500 (41.3%) were Department Heads, 81 (6.7%) were Sector Heads, and 41 (3.4%) were Nursing Directors.

The mean Global Trait Emotional Intelligence score was 5.13 (SD=0.66). The TEIQue-SF demonstrated good internal consistency in the present sample (Cronbach's α=0.865). Participant characteristics are summarized in Table *1*.

Characteristic	N (%) or mean (SD)
Age, years	52.73 (5.78)
Women	1,027 (84.7%)
Men	185 (15.3%)
Professional experience, years	28.51 (6.53)
Managerial tenure, years	7.22 (6.39)
Managerial tenure, median (IQR)	5 (2-11)
Undergraduate education	730 (60.2%)
Master's degree	442 (36.5%)
Doctoral degree	40 (3.3%)
Deputy Department Head	590 (48.7%)
Department Head	500 (41.3%)
Sector Head	81 (6.7%)
Nursing Director	41 (3.4%)
Global Trait Emotional Intelligence, mean (SD)	5.13 (0.66)

TABLE 1: Sociodemographic, professional, and organizational characteristics of the study sample

IQR: interquartile range

Bivariate associations

Overall professional experience was not significantly associated with Global Trait Emotional Intelligence (r=0.026; p=0.361). In contrast, managerial tenure showed a small positive bivariate association with Global Trait Emotional Intelligence (r=0.064; p=0.027). Overall professional experience and managerial tenure were moderately positively correlated (r=0.434; p<0.001).

Age was strongly correlated with overall professional experience (r=0.862), supporting the decision not to include both variables simultaneously in the primary multivariable model. The bivariate associations are summarized in Table *2*.

Variable pair	Pearson r	P-value	Test
Professional experience: Global Trait Emotional Intelligence	0.026	0.361	Pearson correlation
Managerial tenure: Global Trait Emotional Intelligence	0.064	0.027	Pearson correlation
Professional experience: managerial tenure	0.434	<0.001	Pearson correlation
Age: professional experience	0.862	<0.001	Pearson correlation

TABLE 2: Bivariate associations among the study variables

Pearson product-moment correlations are reported. All tests were two-sided.

Hierarchical regression analysis

Hierarchical multiple linear regression was conducted with Global Trait Emotional Intelligence as the dependent variable. The initial model, including gender, educational attainment, and managerial position, accounted for 3.1% of the variance in Global Trait Emotional Intelligence (R^2=0.031). The hierarchical regression results are presented in Table *3*.

Model	Predictor	B	95% CI	β	t	P-value
1	Constant	5.011	4.901 to 5.120	-	91.07	<0.001
1	Male	−0.086	−0.189 to 0.017	−0.047	−1.65	0.102
1	Master's education	0.183	0.097 to 0.270	0.133	4.21	<0.001
1	Doctoral education	0.073	−0.162 to 0.308	0.020	0.62	0.537
1	Nursing Director	0.207	0.018 to 0.396	0.057	2.18	0.032
1	Sector Head	0.192	0.050 to 0.334	0.072	2.68	0.009
1	Department Head	0.100	0.031 to 0.169	0.074	2.89	0.005
2	Constant	4.973	4.745 to 5.202	-	43.31	<0.001
2	Male	−0.083	−0.186 to 0.021	−0.045	−1.59	0.115
2	Master's education	0.187	0.094 to 0.279	0.136	4.02	<0.001
2	Doctoral education	0.082	−0.159 to 0.324	0.022	0.68	0.499
2	Nursing Director	0.199	−0.004 to 0.401	0.054	1.95	0.055
2	Sector Head	0.182	0.044 to 0.321	0.069	2.60	0.011
2	Department Head	0.095	0.019 to 0.170	0.070	2.49	0.015
2	Professional experience, years	0.001	−0.006 to 0.008	0.013	0.38	0.706
3	Constant	4.991	4.762 to 5.221	-	43.28	<0.001
3	Male	−0.080	−0.183 to 0.022	−0.044	−1.56	0.123
3	Master's education	0.196	0.102 to 0.290	0.143	4.15	<0.001
3	Doctoral education	0.094	−0.152 to 0.339	0.025	0.76	0.450
3	Nursing Director	0.180	−0.024 to 0.383	0.049	1.76	0.083
3	Sector Head	0.154	0.014 to 0.295	0.058	2.18	0.032
3	Department Head	0.081	0.008 to 0.155	0.060	2.20	0.031
3	Professional experience, years	−0.0007	−0.0086 to 0.0072	−0.007	−0.19	0.854
3	Managerial tenure, years	0.0063	−0.0002 to 0.0128	0.060	1.92	0.059

TABLE 3: Hierarchical multiple linear regression predicting Global Trait Emotional Intelligence

Coefficient-level inference used cluster-robust t-tests with healthcare organization as the clustering unit (81 clusters; residual df=80). Reference categories were female gender, undergraduate education, and Deputy Department Head. Model 1 included gender, educational attainment, and managerial position; Model 2 additionally included total professional experience; Model 3 additionally included managerial tenure. Model 1: R^2=0.0309; adjusted R^2=0.0261; robust Wald F(6,80)=5.23; p<0.001. Model 2: R^2=0.0311; adjusted R^2=0.0255; ΔR^2=0.0001; robust Wald F(7,80)=4.56; p<0.001; cluster-robust p for the newly added block=0.706. Model 3: R^2=0.0339; adjusted R^2=0.0275; ΔR^2=0.0028; robust Wald F(8,80)=4.06; p<0.001; cluster-robust p for the newly added block=0.059. N=1,212. All tests were two-sided.

B: unstandardized regression coefficient; CI: confidence interval; β: standardized regression coefficient

The addition of overall professional experience produced virtually no increase in explained variance (ΔR^2<0.001; p=0.706). Adding managerial tenure in the final step resulted in a small additional increase in explained variance (ΔR^2=0.003; p=0.059). The final model explained approximately 3.4% of the variance in Global Trait Emotional Intelligence (R^2=0.034).

In the fully adjusted model, overall professional experience was not independently associated with Global Trait Emotional Intelligence (B=−0.0007; 95% CI: −0.0086 to 0.0072; p=0.854). Managerial tenure showed a small positive coefficient, although the association did not reach the conventional threshold for statistical significance (B=0.0063 per year; 95% CI: −0.0002 to 0.0128; p=0.059).

Educational attainment showed a clearer association with trait emotional intelligence. Participants with a

master's degree had higher adjusted Global Trait Emotional Intelligence scores than those with undergraduate education (B=0.196; 95% CI: 0.102 to 0.290; p<0.001). Doctoral-level education was not significantly associated with Global Trait Emotional Intelligence compared with undergraduate education (B=0.094; 95% CI: −0.152 to 0.339; p=0.450).

Managerial position was also associated with Global Trait Emotional Intelligence. Compared with Deputy Department Heads, Sector Heads demonstrated higher adjusted scores (B=0.154; 95% CI: 0.014 to 0.295; p=0.032), as did Department Heads (B=0.081; 95% CI: 0.008 to 0.155; p=0.031). Nursing Directors also showed a positive coefficient relative to Deputy Department Heads, although the CI included zero (B=0.180; 95% CI: −0.024 to 0.383; p=0.083).

Gender was not independently associated with Global Trait Emotional Intelligence in the fully adjusted model (B=−0.080 for men relative to women; 95% CI: −0.183 to 0.022; p=0.123).

Sensitivity analysis

Because age was strongly correlated with overall professional experience, a sensitivity analysis was performed in which age replaced professional experience in the multivariable model. Age was not independently associated with Global Trait Emotional Intelligence (B=−0.0023; p=0.636). The results of the sensitivity analysis are summarized in Table *4*.

Predictor	B	95% CI	P-value
Age, years	−0.0023	-	0.636
Managerial tenure, years	0.0066	0.0005 to 0.0127	0.033

TABLE 4: Sensitivity analysis replacing professional experience with age

In the sensitivity analysis, age replaced total professional experience in the fully adjusted multivariable model. The model additionally included gender, educational attainment, managerial position, and managerial tenure. Cluster-robust standard errors were estimated at the healthcare-organization level. Two-sided p-values are reported.

B: unstandardized regression coefficient; CI: confidence interval

In this alternative model, managerial tenure remained positively associated with Global Trait Emotional Intelligence and reached statistical significance, although the magnitude of the association remained small (B=0.0066; 95% CI: 0.0005 to 0.0127; p=0.033). The associations observed for master's-level education and managerial position remained materially unchanged.

Taken together, the primary and sensitivity analyses indicated that overall career duration was not associated with trait emotional intelligence, whereas managerial tenure showed a small positive association whose statistical significance depended on model specification. Educational attainment and managerial position demonstrated the clearest and most consistent associations with Global Trait Emotional Intelligence.

Diagnostic analyses indicated low multicollinearity (VIFs=1.03-1.38), no evidence of heteroscedasticity (Breusch-Pagan p=0.826), and no highly influential observations (maximum Cook's D=0.019); quadratic terms for professional experience and managerial tenure were jointly non-significant (p=0.555).

Discussion

The present study examined professional and organizational correlates of trait emotional intelligence in a large multicenter sample of nurse managers. Three findings are particularly noteworthy. First, overall professional experience showed virtually no association with Global Trait Emotional Intelligence, at either the bivariate or multivariable level. Second, managerial tenure demonstrated only a small positive association, which did not reach conventional statistical significance in the primary model and became significant only when age replaced professional experience in the sensitivity analysis. Third, educational attainment and managerial position showed the clearest independent associations with trait emotional intelligence, particularly master's-level education and the positions of Department Head and Sector Head. Taken together, these findings suggest that emotional self-perceptions among nurse managers are not simply a cumulative product of time spent in nursing or management, but may be more closely related to how professional careers are structured, the educational experiences individuals pursue, and the organizational roles they occupy.

Professional experience and trait emotional intelligence

The absence of an association between total professional experience and trait emotional intelligence is an important finding. It challenges the intuitive assumption that prolonged exposure to emotionally demanding clinical environments necessarily translates into progressively higher emotional intelligence. Previous evidence in nurse managers has not consistently supported such a linear relationship. Ohlson and Anderson, using an ability-based measure of emotional intelligence in 87 front-line nurse managers, found no significant associations between emotional intelligence and age, years of nursing experience, years in management, or graduate education [11]. Similarly, the systematic review and meta-analysis by Sakallı and Timuçin identified a heterogeneous range of individual, professional, and institutional correlates of nurse managers' emotional intelligence, with many variables showing inconsistent or non-significant associations across studies [10].

This finding may be particularly understandable when emotional intelligence is conceptualized as trait emotional intelligence, rather than as a technical or managerial competency. Within Petrides et al.'s framework, trait emotional intelligence represents a constellation of emotion-related self-perceptions and dispositions embedded within the broader personality domain [3]. Professional experience may therefore provide repeated exposure to emotionally demanding situations without necessarily producing a proportional change in how individuals characteristically perceive and regulate their emotional functioning. In other words, occupational exposure and psychological development should not be regarded as equivalent processes.

This distinction also underscores the need for caution when comparing studies based on different models of emotional intelligence. The literature includes ability-based, self-report, mixed, and trait approaches that differ conceptually and psychometrically [3,4]. Joseph and Newman emphasized that different emotional intelligence traditions capture partly different constructs and should not be treated as interchangeable [4]. Accordingly, apparent inconsistencies across studies of nurse managers may reflect not only differences between samples but also differences in how emotional intelligence itself has been conceptualized and measured.

Managerial tenure: a small and context-dependent association

Managerial tenure warrants a more nuanced interpretation. Unlike overall professional experience, years spent in managerial responsibility showed a small positive bivariate association with Global Trait Emotional Intelligence. However, once educational attainment, managerial position, gender, and total professional experience were considered simultaneously, its independent contribution was modest and did not reach the conventional threshold for statistical significance. In the sensitivity analysis, where age replaced professional experience, the association reached statistical significance but remained small in magnitude.

Previous findings are similarly mixed. In Prufeta's exploratory study, nurse managers with fewer than two years of managerial experience had significantly lower scores on the "using emotions" branch and on strategic emotional intelligence than more experienced managers [12]. The same study also found higher scores on the "using emotions" branch among nurse managers with a master's degree in nursing compared with those whose master's degree was in another field [12]. In contrast, Ohlson and Anderson did not identify a significant relationship between years in management and overall emotional intelligence [11].

Taken together, these findings suggest that managerial experience may contain some emotionally relevant developmental exposure, but duration alone is unlikely to be a strong indicator of trait emotional intelligence. Years in a management position do not capture the quality of managerial experiences, the complexity of decisions faced, opportunities for reflection and mentoring, organizational support, or the interpersonal demands encountered during those years.

This distinction is reinforced by research on nurse manager competency. In a national study of 647 nurse managers, Warshawsky and Cramer found that managerial experience was the strongest correlate of perceived nurse manager competence, followed by graduate leadership education [13]. This is not inconsistent with the present findings. Managerial competence and trait emotional intelligence are conceptually distinct. Experience may substantially enhance role-specific knowledge, judgement, coordination, and organizational proficiency without producing an equivalent linear increase in emotional self-perceptions. Thus, becoming a more experienced or competent manager should not automatically be equated with developing higher trait emotional intelligence.

Educational attainment and trait emotional intelligence

One of the most consistent findings of the present study was the association between master's-level education and higher Global Trait Emotional Intelligence. This relationship remained evident after adjustment for gender, managerial position, professional experience, and managerial tenure. The finding is broadly compatible with previous research emphasizing the role of postgraduate education in nurse manager development. Warshawsky and Cramer found graduate leadership education to be an important contributor to nurse manager competence after managerial experience [13]. Prufeta also reported

differences in specific emotional intelligence dimensions according to postgraduate educational background [12].

The association with master's-level education may reflect several possible processes. Postgraduate education frequently requires sustained engagement with reflective learning, critical thinking, communication, multidisciplinary collaboration, and complex professional decision-making. These experiences may provide opportunities for greater emotional self-awareness and interpersonal development. Contemporary research on nurse manager preparation likewise points to continuing educational needs in domains such as communication, leadership, human-resource management, and the development of positive and safe working environments [15].

However, the cross-sectional nature of the present study precludes any causal interpretation. It cannot be concluded that master's education increases trait emotional intelligence. Individuals with particular motivational, interpersonal, or emotion-related characteristics may also be more likely to pursue postgraduate education. Therefore, the observed association may reflect educational development, self-selection, or a combination of both processes.

The absence of a significant association with doctoral education should also be interpreted cautiously. The doctoral subgroup was relatively small compared with the master's and undergraduate groups, which resulted in less precise estimation. The findings should therefore not be interpreted as evidence that doctoral education is unrelated to trait emotional intelligence.

Managerial position and organizational context

Managerial position also emerged as an important correlate. Compared with Deputy Department Heads, both Department Heads and Sector Heads demonstrated higher adjusted Global Trait Emotional Intelligence scores, whereas the positive coefficient for Nursing Directors did not reach statistical significance. This pattern does not support a simple linear interpretation in which trait emotional intelligence necessarily increases at each successive level of organizational hierarchy. Rather, it suggests that different managerial positions may expose individuals to qualitatively different emotional, relational, and organizational demands.

The role of the nurse manager is characterized by substantial interpersonal and organizational complexity. Nurse managers must simultaneously respond to clinical requirements, staffing pressures, conflict, organizational priorities, resource limitations, and the emotional needs of both staff and patients. Labrague et al., in an integrative review, identified workload, resource limitations, managerial responsibilities, and organizational demands as recurrent sources of stress among nurse managers [16]. More recent work on nurse manager competency similarly emphasizes leadership, communication, human-resource management, support of staff, and the creation of a positive and safe work environment as central managerial requirements [15].

Recent evidence increasingly supports this contextual interpretation. A 2024 systematic review and meta-analysis of emotional leadership among nurse managers identified not only individual but also job-related and organizational correlates, with particularly strong associations reported for relational and workplace factors such as leader-member exchange and job satisfaction [17]. This reinforces the view that emotional functioning in nursing management cannot be understood solely as an individual attribute detached from the environment in which managerial work is performed. More recent qualitative evidence similarly suggests that emotional intelligence is enacted through self-awareness, self-management, social awareness, and relationship management in everyday clinical leadership, shaping communication, teamwork, decision-making, and psychologically safe care environments [18].

It is therefore plausible that particular positions within the nursing hierarchy create greater demands for emotional self-regulation, interpersonal confidence, negotiation, and relational management. At the same time, the reverse pathway is equally plausible: individuals with stronger emotion-related self-perceptions may be more likely to seek, obtain, or remain in positions carrying greater managerial responsibility. Because the present design is cross-sectional, the observed associations should be interpreted as organizational correlates rather than evidence of hierarchical progression causing higher trait emotional intelligence.

Gender and the limited explanatory power of professional characteristics

Gender was not independently associated with Global Trait Emotional Intelligence after adjustment for educational and professional variables. This finding is compatible with the broader inconsistency in demographic correlates reported across nurse manager studies and systematic reviews [10,11]. Such inconsistency may partly reflect differences in samples, organizational cultures, emotional intelligence models, and measurement instruments.

A central finding of the present study is the limited explanatory power of the regression model. The combined contribution of gender, educational attainment, managerial position, overall professional experience, and managerial tenure accounted for only 3.4% of the variance in Global Trait Emotional Intelligence (adjusted R^2=0.028). Thus, approximately 96.6% of the observed variance remained unexplained by the variables included in the model. Although some associations reached statistical significance, their magnitude was generally small. For example, master's-level education was associated with an adjusted difference of only 0.196 points on the 7-point TEIQue-SF scale, while managerial tenure showed a coefficient of 0.0063 points per year, which did not reach conventional statistical significance in the primary model (p=0.059). These findings emphasize the importance of interpreting effect magnitude and overall model performance rather than relying primarily on statistical significance.

The limited explanatory power of the model may also reflect the nature of trait emotional intelligence itself. Within Petrides et al.'s framework, trait emotional intelligence represents emotion-related self-perceptions embedded within the broader domain of personality [3]. Educational qualifications, professional experience, and organizational position are relatively distal characteristics that may not adequately capture the psychological and interpersonal processes underlying these self-perceptions. Potentially relevant factors include broader personality traits, emotional self-regulation, reflective capacity, interpersonal experiences, organizational climate, mentoring relationships, occupational stress, and social support. Selection processes may also contribute, as individuals with particular emotional or motivational characteristics may be more likely to pursue postgraduate education or managerial positions.

Importantly, these potential explanations remain theoretical possibilities rather than findings of the present study, since the relevant variables were not measured. The low R^2 should therefore be interpreted as evidence that the professional and organizational characteristics examined provide limited explanatory information about individual differences in trait emotional intelligence. Future research should incorporate more proximal psychological and organizational variables and consider longitudinal and multilevel designs to better understand the factors associated with emotional functioning among nurse managers.

Implications for nursing management

The findings have implications for how healthcare organizations approach the preparation and continuing development of nurse managers. In the present sample, overall professional experience provided little explanatory information about Global Trait Emotional Intelligence. Moreover, the limited explanatory power of the full model (R^2=0.034) indicates that professional seniority, educational attainment, and managerial position do not adequately account for individual differences in emotion-related self-perceptions. These findings highlight the need to investigate psychological, interpersonal, and organizational factors more directly, rather than relying primarily on observable career characteristics when seeking to understand trait emotional intelligence.

Recent evidence supports this position. A 2025 scoping review of transition programs for first-line nurse managers found that effective preparation typically involves structured training, experiential learning, reflective practice, mentoring, and theoretically informed developmental approaches rather than reliance on experience alone [19]. The same review emphasized that organizational factors, mentoring opportunities, and workload conditions can either facilitate or obstruct managerial development. Similarly, contemporary competency research highlights communication, relational leadership, adaptability, staff support, and change management as central elements of nurse manager preparation [15,20].

The association observed between master's-level education and Global Trait Emotional Intelligence should therefore be interpreted within this broader developmental context. The present findings do not establish that postgraduate education causes higher trait emotional intelligence; however, they suggest that educational trajectories may capture aspects of professional development that simple career duration does not. Graduate and continuing education may provide opportunities for reflection, critical appraisal, interpersonal learning, and exposure to complex organizational problems. At the same time, selection effects remain possible, as individuals with particular motivational or emotion-related characteristics may be more likely to pursue advanced education.

Particularly relevant to the present study is recent work using the TEIQue-SF itself. In a 2025 study of nurse managers, Carlucci and Ma reported a positive association between emotional intelligence and self-leadership, suggesting that emotion-related self-perceptions may coexist with broader self-regulatory and leadership capacities rather than being reducible to accumulated seniority [21]. This finding is conceptually consistent with the present results, although differences in design and sampling preclude direct comparison.

Emerging 2026 qualitative evidence further suggests that emotional intelligence in nurse managers is expressed dynamically through self-awareness, emotional regulation, social awareness, and relationship management during actual leadership encounters [18]. Such findings support a shift away from viewing emotional intelligence as an isolated personal resource and toward understanding how emotional capacities are enacted, supported, or constrained within managerial roles and organizational settings.

Accordingly, healthcare organizations may benefit from distinguishing among career duration, managerial competence, and emotional functioning when planning leadership development. Rather than assuming that emotional and interpersonal capacities will emerge through time in post, developmental strategies may need to combine formal education, reflective learning, mentorship, relational supervision, and organizational conditions that allow nurse managers to exercise and refine these capacities. This interpretation is especially pertinent given that the professional and structural variables included in the present study explained only a small proportion of variance in Global Trait Emotional Intelligence.

Taken together, contemporary evidence increasingly suggests that emotional functioning in nurse managers should be understood at the intersection of individual dispositions, professional development, leadership practice, and organizational context [17-21]. The present findings add to this literature by showing that structural indicators are not equally informative: overall career duration appears largely unrelated to trait emotional intelligence, whereas educational attainment and managerial position show more consistent associations. This distinction may help move the literature beyond broad questions of whether "experience matters" toward the more specific question of which experiences, educational pathways, and organizational contexts are relevant to emotional functioning in nursing management.

Strengths and limitations

The present study has several strengths. The large multicenter sample included nurse managers from 81 healthcare organizations and multiple levels of the nursing management hierarchy. A further strength was the explicit distinction between total professional experience and managerial tenure, variables that may otherwise be treated as interchangeable despite representing different forms of occupational exposure. The use of cluster-robust standard errors also accounted for the nested organizational structure of the sample.

Several limitations should nevertheless be acknowledged. First, the cross-sectional design precludes causal and developmental interpretation. It remains unclear whether particular educational and organizational experiences contribute to differences in trait emotional intelligence or whether individuals with different levels of trait emotional intelligence follow different educational and career trajectories. Second, the TEIQue-SF is a self-report measure and assesses emotion-related self-perceptions rather than objectively tested emotional ability [3,5]. Third, potentially relevant factors such as personality characteristics, formal leadership training, mentoring, organizational climate, job demands, and social support were not included in the present analysis. Fourth, the relatively small numbers of Nursing Directors and participants with doctoral degrees reduced statistical precision for these categories.

Fifth, no formal adjustment for multiple comparisons was applied. Consequently, the possibility of chance findings cannot be excluded, particularly for associations with p-values close to the conventional significance threshold. Individual associations should therefore be interpreted cautiously, with greater emphasis on effect sizes, CIs, and the limited explanatory power of the overall regression model (R^2=0.034).

Sixth, the present analyses did not examine potential differences in trait emotional intelligence according to clinical department or specialty, such as emergency care, intensive care, or other clinical settings. Previous research has suggested that emotional intelligence may vary across clinical specialties, although differences in measurement approaches limit direct comparisons [22]. Furthermore, personal circumstances, family relationships, and extracurricular experiences were not examined and may contribute to individual differences in emotional self-perceptions. In addition, depressive symptoms and other aspects of current psychological state were not assessed. Although the TEIQue-SF is designed to measure relatively stable emotion-related self-perceptions, participants' current psychological state may influence their self-reported responses, particularly those related to well-being. These possibilities should be considered when interpreting the findings and explored in future research.

Finally, the study was conducted in the Greek public healthcare system; differences in organizational structures, professional pathways, and promotion practices should be considered when generalizing the findings to other healthcare systems.

Conclusions

In this large multicenter cross-sectional study of nurse managers, the professional and organizational characteristics examined collectively explained only 3.4% of the variance in Global Trait Emotional Intelligence. Overall professional experience was not independently associated with trait emotional intelligence, while managerial tenure showed a small association whose statistical significance depended on model specification. Master's-level education and selected managerial positions demonstrated modest positive adjusted associations, but these findings should not be interpreted as evidence of strong explanatory relationships or causal effects.

The principal lesson of this study is that readily observable educational and career characteristics provide limited information about individual differences in trait emotional intelligence. More proximal psychological and contextual factors, including personality characteristics, emotional self-regulation, reflective capacity, interpersonal experiences, organizational climate, supervisory support, and occupational

demands, may be relevant. However, these possibilities remain hypotheses because they were not directly examined in the present study.

Future research should incorporate these psychological and organizational dimensions and employ longitudinal and multilevel designs to clarify their relationships with trait emotional intelligence. Such research may provide a more comprehensive understanding of emotional functioning among nurse managers and inform the development of evidence-based approaches to nursing leadership and professional development.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Disclosures

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