

Validation of the Emotional Intelligence Scale for University Instructors in Ethiopia

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Abstract

Emotional intelligence (EI) is a crucial skill in contemporary workplaces and education, but there needs to be more valid and reliable measures of emotional intelligence for university instructors in Ethiopia. This study aimed to validate the Emotional Intelligence Scale (EIS) for this population, using a sample of 654 instructors from Ethiopian public universities who completed the EIS and gave informed consent. The data was split into two and subjected to exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The results indicated that EIS consisted of 12 items on two factors: emotional self-awareness and self-regulation. The EIS had favorable psychometric properties such as high factor loadings, high measure of model fit indices, and internal consistency. All EIS items had content validity ratio (CVR) of above 0.75, which is the minimum criterion for retention. Thus, the EIS had a high content validity index of 0.928, demonstrating that its items were relevant and representative of the content domain. We assessed construct validity of the measurement model, and results showed that both convergent and discriminant validity were high, as the values exceeded the recommended thresholds of 0.5 and 0.75, respectively. The EIS also indicated a high level of emotional intelligence among instructors. Implications of these findings are discussed.

Keywords: *Emotional Intelligence, validation, university instructors, Ethiopia, factor analysis, higher education.*

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Introduction

Enhancing the quality of education and the effectiveness of instructors has been a longstanding focus of educational research. Emotional intelligence has become an important element in educational settings, affecting how teachers teach, how students learn, and how the classroom environment feels. Emotional intelligence involves various skills and competencies related to identifying, comprehending, communicating, and managing emotions (Mayer et al., 2016; Salovey & Mayer, 1990). It is increasingly recognized as an essential trait for instructors in fostering positive relationships, facilitating effective communication, and creating supportive learning environments (Brackett et al., 2019; Wollny et al., 2020).

Emotional intelligence is not a fixed concept that can be assessed and used in a similar manner in different cultural settings. Cultural aspects such as: the rules of behavior, beliefs, and ways of communicating can affect how emotional intelligence is seen and shown in a specific cultural environment (Matsumoto & Hwang, 2012; Petrides & Furnham, 2006). Therefore, validating emotional intelligence measures within specific cultural settings is crucial to ensure their meaningful interpretation and application. Cross-cultural validation studies have played a pivotal role in examining the universality and applicability of emotional intelligence measures across different cultural contexts. These studies have investigated factor structures, reliabilities, and validities of emotional intelligence across different cultural contexts, providing valuable insights into the generalizability and cultural specificity of these measures (Cherniss & Golman, 2001; Lawrence et al., 2020).

In the Ethiopian higher education context, there is a growing recognition of the importance of emotional intelligence in instructors' professional development and its

potential impact on student outcomes. However, there are no locally validated tools to assess emotional intelligence specifically tailored to Ethiopian university instructors. This knowledge gap hinders our ability to fully understand the emotional intelligence profiles of instructors in Ethiopia and develop evidence-based interventions to enhance their teaching practices and well-being. This study contributes to the broader field of educational psychology by extending our understanding of emotional intelligence in diverse cultural and educational contexts. It aligns with the growing body of research, emphasizing the importance of cross-cultural validation studies in providing culturally sensitive and contextually relevant tools for assessing emotional intelligence (Emmerling & Boyatzis, 2012; Wollny et al., 2020). The findings of this study will not only inform the development of effective interventions and training programs to enhance emotional intelligence among Ethiopian university instructors but also contribute to global knowledge on emotional intelligence and its relevance in an educational context. Therefore, this study aims to validate the emotional intelligence scale for university instructors in Ethiopia. The scale developed by Petrides (2009) in different cultural settings requires rigorous psychometric validation to ensure its reliability and validity within the Ethiopian context. Thus, this tool validation study is specifically intended to:

- explore the underlying factor structures of the emotional intelligence tool for instructors.
- confirm the factor structures of emotional intelligence measures identified through exploratory factor analysis (EFA).
- determine the validity and reliability (internal consistency) of items measuring instructors' emotional intelligence.
- investigate the level of emotional intelligence among instructors.

Literature Review

Introduction

Emotional intelligence (EI) is a vital skill for university instructors, as it can enhance their work performance and satisfaction in various ways. EI is the ability to perceive, understand, express, and regulate emotions in oneself and others (Fiori & Vesely, 2019). Thus, Emotional intelligence is operationally defined as "the instructor's ability to be aware of one's own emotions and the feelings of others in any situation, and then his or her ability to control his or her own emotions so as to create suitable relationships with people in an organizational setting". It can help instructors deal with stress, inspire their students, create supportive learning settings, and work well with their peers (Rinas et al., 2020). However, there is a lack of valid and reliable measures of EI for university instructors in Ethiopia. This literature review aimed to examine the psychometric properties of the Emotional Intelligence Scale (EIQue) for university instructors in Ethiopia. The EIQue is a self-reported measure of EI that assesses the self-control, emotionality, and sociability of instructors (Petrides, 2009). The EIQue depends on the trait model of EI, which views EI as a set of personality traits that are relatively stable and influenced by genetic factors (Petrides & Furnham, 2006). The EIQue is a tool that measures how good someone is at EI. Many people have used and tested the EIQue in different places and situations, but we don't know how well it works for teachers in Ethiopia. That's why this study intends to find out if the EIQue can help Ethiopian teachers improve their EI and their teaching. However, the applicability and utility of the EIQue for university instructors in Ethiopia remain unknown. Therefore, this study will contribute to the literature on emotional intelligence in education by addressing some of the gaps and challenges that exist in the Ethiopian context.

The Role of Emotional Intelligence in Education Quality and Development

Education quality and its development have long been pressing concerns. Experts in this field have long been interested in the development of educational programs and instructor competencies, especially their capacity to organize the educational process effectively. In the meantime, people frequently overlook emotional intelligence as a personal trait. It is not shocking, given how recently EI has been studied in psychology. Despite the novelty of this concept, professionals rapidly understood its importance (Barrera et al., 2019). Several different skills and aptitudes fall under the umbrella of emotional intelligence. They range from recognizing, analyzing, and categorizing emotions to expressing, controlling, and managing them (Bonesso et al., 2020). Emotional intelligence traits can be seen in the perception of connecting groups of people to provide a specific service within their workplaces. They have been shown to enhance emotional well-being in individuals and boost their capacity to act in a way that benefits students, families, coworkers, and others (Schoeps et al., 2020).

Studying emotional intelligence as part of teachers' preparation is crucial since it directly affects school communities' overall relationships and success (Kotsou et al., 2019). High emotional intelligence is a requirement for those working in the social and educational sectors. According to Tuyakova et al.(2022), it is impossible to develop successful interpersonal communication without first understanding, sharing, and managing the emotions of others. It seems sensible to foster emotional intelligence inside educational institutions to build a peaceful, mindful society.

Cross-cultural Validation of the Emotional Intelligence Scale for University Instructors in Ethiopia

Emotional intelligence is fundamental to humans, and it can vary from culture to culture due to the differences in social norms, values, and how we express emotions (Petrides

& Furnham, 2006). It's all about understanding, managing, and communicating emotions in ourselves and others (Cheung & Gan, 2001). For teachers, having high emotional intelligence can make a difference in their teaching approach and overall well-being, not to mention its positive impact on their students' and universities' growth (Sánchez-Alvarez et al., 2020). However, there are no reliable tools to measure emotional intelligence among Ethiopian university instructors, which prevents us from knowing their emotional profiles and designing effective interventions. In order to fill this gap, this study will conduct a thorough cross-cultural validation of the emotional intelligence scale, which assesses self-control, emotionality, and sociability (Petrides & Furnham, 2006). It effectively conveys that the emotional intelligence scale has been tested and validated in various countries with diverse cultural contexts, including the United Kingdom, Italy, Spain, and China. However, it points out that its suitability in Ethiopia has not been studied. The study explored the factor structures, examined the reliability and validity of the scale, and assessed the levels of emotional self-awareness and emotional self-regulation among Ethiopian university instructors. The findings of this study will not only indicate the development of effective interventions and training programs to enhance emotional intelligence among Ethiopian university instructors but also contribute to global knowledge on emotional intelligence and its relevance in educational settings.

Methods and Materials

Design of the Study

The researchers employed a cross-sectional design to investigate the psychometric properties of the Emotional Intelligence Scale (EIS) for university instructors in Ethiopia.

Participants and Sampling Procedures of the Study

Sample size considerations are integral to structural equation modeling, particularly concerning the number of observed variables (Jackson, 2003). Jackson (2003) emphasizes that when employing Maximum Likelihood (ML) estimation, researchers should give due regard to the minimal sample size relative to the number of model parameters necessitating statistical estimates (q). Jackson(2003) further specifies an optimal sample size-to-parameter ratio of 20:1. In light of this, our study entails 30 total observed variables or indicators, translating to a minimum sample size requirement of 600 participants ($20 \times 30 = 600$). To account for a 10% non-response rate, we selected a sample of 660 instructors from the target population, comprising individuals engaged in educational, research, or community service roles at Dilla and Hawassa universities in Ethiopia. University selection employed simple random sampling via lottery from a roster of all public universities in Ethiopia, leading us to choose Dilla University (DU) and Hawassa University (HU). Consequently, the study sample size determination follows the formulas outlined (Jackson, 2003 & Kothari, 2004). According to these calculations, the minimum sample size for this study is 660, accounting for a 10% response error ($600 + 60 = 660$). Hence, 660 instructors represent the minimum sample size drawn from the target population, and allocation to the two universities are achieved proportionally using Kothari's (2004) stratified proportional sample size formula:

$$n_i = \frac{\sum N_i}{n} \times N_i \quad \text{Where:}$$

n_i = denotes the instructors for each respective university,

n = signifies the determined sample size, and

N_i = represents the total number of instructors at each university.

The sum of instructors across both universities, denoted as $\sum N_i$, is 2,940. With the determined sample size n being 660, the calculated values for n_i are as follows: For Dilla University, n_i equals 285 out of a total population of 1,270. For Hawassa University, n_i equals 375 out of the total population of 1,670.

Thus, only 654 instructors were involved and the rest 6 were non returns and missing. We took our whole sample and split it into two random groups, each with 327 participants. One group was used for exploratory factor analysis (EFA), while the other was reserved for confirmatory factor analysis (CFA). EFA was performed on one subset to explore the underlying factor structure of the EIS. CFA was then conducted on the other subset to confirm the factor structure and evaluate model fit indices.

Data Collection Procedures

The researchers followed a rigorous protocol for the data collection process following standard academic practices. Initially, we obtained ethical approval from the School of Psychology at Addis Ababa University and a support letter to ensure compliance with the university's ethical guidelines. To secure participation, we contacted university presidents, college deans, and department heads and explained the purpose and significance of the study. They also obtained consent from the instructors who agreed to participate. By establishing clear communication channels with the relevant authorities, the researchers aimed to facilitate participant cooperation and ensure adherence to ethical considerations. The data collection process involved the distribution of a paper-based questionnaire comprising closed-ended questions. Before responding, participants were instructed to read the provided directions carefully and to answer all questions honestly. Overall, these comprehensive data collection procedures adhered to academic standards, guaranteeing ethical considerations, informed consent, and optimal conditions for obtaining reliable and valid data.

The Emotional Intelligence Scale

Petrides (2009) developed and validated the emotional intelligence scale in the United Kingdom (UK). The instruments were initially developed to measure the trait emotional intelligence of the academic and non-academic staff in the UK. The study participants were

asked to rate their agreement on each statement on a scale that ranged from 1 referring to completely disagree to 7 referring to completely agree. The Petrides (2009) scale has been widely used and validated in various contexts and populations, such as clinical, educational, and organizational settings. It has shown good reliability and validity and has been translated into many languages. The scale has a comprehensive and flexible structure that allows researchers to measure different aspects of emotional intelligence at different levels of specificity, and it consists of a global score. So, we used this scale that the participants filled out themselves, answering a total of 30 questions. The scale had excellent internal consistency, with 0.89 for male and 0.88 for female respondents.

Instrument Validation Procedures

The instrument adaptation process followed the following procedures.

The Content Validity Assessment

In this phase, expert panels evaluated the content validity of the items. A panel of eight experts did a comprehensive and rigorous evaluation. The panels included social psychologists, developmental psychologists, and foreign language experts with extensive experience in teaching, research, and instrument development. Each of these experts brought a unique perspective and expertise to the table, contributing to the overall robustness of our study. Six of the experts were psychologists with varying educational backgrounds, including individuals holding PhDs and those with MA degrees. These professionals brought a wealth of experience and knowledge in the field of psychology, and their diverse qualifications ensured a well-rounded assessment of the content's validity. Additionally, we included two foreign language experts who held PhDs and possessed academic status in their respective fields. Their expertise was particularly relevant in evaluating our content's linguistic aspects and cultural nuances. The experts checked whether the items adequately and accurately covered the variables and domains they were intended to measure. The experts used the

following operational definition for emotional intelligence as a clue to rate their options from the given three alternatives: "Emotional intelligence is the instructor's ability to be aware of one's own feelings and the feelings of others in any situation and then his or her ability to control his or her own feelings so as to create suitable relationships with people in an organizational setting". Therefore, experts rated each item on a three-point scale from 1 (not essential) to 3 (essential). Based on the ratings of the experts, the researchers calculated the content validity ratio (CVR) for each item using Lawshe's(1975) formula, which is as follows:

$$CVR = \frac{(ne) - (N/2)}{N/2}$$

Where: CVR = content validity ratio, which indicates how appropriate a measuring item is according to a group of experts,

ne = the number of experts who agree on the item's relevance,

N = the total number of experts. Only items with CVR values of at least 0.75 were kept.

All of the emotional intelligence items passed the Lawshe's CVR minimum criteria and were translated into Amharic in several steps. First, linguists and psychologists translated the items from English to Amharic, considering the meaning, context, and technical aspects. Then, the Amharic version was back-translated to English and compared with the original version for consistency. Any discrepancies between the forward and backward translations were resolved and harmonized. Most of the final versions of the translated items were revised based on the feedback before being used in data collection.

A Methodological Approach to Validate Data Collection Tools Using EFA and CFA

Data collection tools were administered to a randomly selected sample of 654 instructors from Dilla and Hawasa Universities to ensure a representative dataset. The reliability of the scale was assessed, and items exhibiting low total item correlations below 0.3 were eliminated (Tabachnick & Fidell, 2001). Exploratory Factor Analysis (EFA) was then employed to validate the factor structures of each latent variable using 327 participants. EFA is a helpful technique that allows researchers to identify the main components of a complex hidden concept that is assessed by multiple items, as Henson and Roberts (2006) suggest. Its primary objective is to streamline the construct's description by reducing the number of items while enhancing its explanatory power. A confirmatory factor analysis (CFA) was conducted with a separate sample of 327 participants to assess the accuracy of the measurement model. In empirical research employing pretested scales, it is common practice to conduct CFA to confirm the validity of the scale and the model. If threshold values are unavailable or the measurement instrument's structure remains unconfirmed, EFA should be performed initially. EFA establishes the relationship patterns between items and measurement factors, laying the groundwork for further exploration and refinement of the instrumentation. By implementing these methodological procedures, this study aimed to enhance the reliability and validity of the measurement instrument, thereby contributing to of producing more credible research outcomes.

Data Analysis

Data were subjected to descriptive and inferential analysis employing SPSS version 25, JAMOVI version 2.3.2, and AMOS version 23. We conducted descriptive analysis with SPSS, performed exploratory factor analysis (EFA) with JAMOVI, and ran confirmatory factor analysis (CFA) with AMOS. Before analysis, the dataset underwent a comprehensive cleaning process. This involved identifying and transforming the wording of negative items

to positive counterparts, and excluding six response sheets that either contained missing values or were not returned. The resulting data were subjected to appropriate statistical tests, and the findings were reported with accurate and meaningful interpretations. The emotional intelligence construct was then decomposed into underlying components using factor analysis with maximum likelihood estimation and varimax rotation. A confirmatory factor analysis with maximum likelihood estimation was used to test the model fit of the factors extracted from emotional intelligence. This model evaluation process examines the alignment between the proposed model and the observed data, allowing for the simultaneous estimation of unknown parameters (Wang et al., 2016). By implementing these rigorous analytical techniques, this study aimed to ensure the validity and reliability of the findings, contributing to the advancement of knowledge in the field.

Ethical Considerations

This research was conducted in strict accordance with the highest standards of objectivity and integrity, adhering to established policies and procedures of the Helsinki declarations. The study was initiated after obtaining ethical clearance from the School of Psychology Ethical Clearance Committee with the reference number SoP-Eth-Co/08/2015. Furthermore, the researchers obtained assistance letters from Addis Ababa University, ensuring the necessary support and collaboration for data collection. To collect the data, permissions, and support letters were obtained from the university administrators and the participants were fully well-versed in the aim, methods, and ethical aspects of the study. They willingly participated by providing written informed consent, acknowledging their understanding of the study's ethical principles. Therefore, this study followed strict ethical procedures and measures to keep the privacy and confidentiality of the participants and this study not only ensures the psychometric qualities of EI but also shows respect and responsibility for ethical research practices.

Results

In this section, the constructs or latent variables that were examined using exploratory and confirmatory factor analyses, as well as the characteristics of the study participants, are discussed. The reliability of each construct and its subscales is assessed using the results of the factor analyses. The frequencies and descriptive statistics of the participants' socio-demographic variables are reported below.

Socio-demographic Characteristics

A total of 654 instructors participated in this study. Of these instructors, the majority, 523 (80%), were identified as male, and the rest 131 (20%) were females. The average age of the instructors was 33 years, with a standard deviation of 6.702, extending from a minimum of 22 to a maximum of 65 age ranges. The largest number of instructors (70.9 %) were found within the age range of 22–35 years, and the smallest proportions, or only 0.9% of the instructors, were found in the age ranges of 56 and above years. Instructors had a mean of 9.41 years of total work experience with a standard deviation of 6.56, extending from a minimum of 1 to a maximum of 44 years of work experience. The majority (51.4%) of instructors had 1-5 years of total work experience and only 2.3% had 21 and above years of total work experience.

On the other hand, instructors had an average of 6.15 years of university work experience with a standard deviation of 3.75, extending from 1 to 22 years of work experience in the universities. Slightly more than 50% or 53.7% of the instructors had 1–5 years of work experience, and only 0.6% or the smallest portion of the instructors had 21 and above years of university work experience. Moreover, when we see the instructors' marital status, the majority (62.2%) of them were married, and 36.9% of the instructors were unmarried. Furthermore, most of the instructors, or 80.3% of them, had the academic rank of lecturer, and only 0.5% of the instructors had an associate professor academic rank.

Table 1

Socio-Demographic Characteristics of the Respondents

Variables		Frequency	Percent
Gender	Male	523	80
	Female	131	20
	Total	654	100.0
Age	22-35 years	464	70.9
	36-45 years	153	23.4
	46-55 years	31	4.7
	56 & above years	6	.9
	Total	654	100
Total Work Experiences	1-5 years	336	51.4
	6-10 years	183	28
	11-15 years	83	12.7
	16-20 years	37	5.7
	21 and above years	15	2.3
	Total	654	100.0
University Experiences	1-5 years	351	53.7
	6-10 years	224	34.3
	11-15 years	66	10.1
	16-20 years	9	1.4
	21 and above years	4	.6
	Total	654	100
Marital Status	Married	407	62.2
	Unmarried	241	36.9
	Divorced	3	.5
	Fatal/died	3	.5
	Total	654	100
Educational Status	Ass. Lecturer	64	9.8
	Lecturer	525	80.3
	PhD/Ass. Professor	62	9.5
	Associate Professor	3	.5
	Total	654	100.0

Results of the Experts' Content Validity Evaluation

This section presents expert evaluations of the items used to measure the factors of emotional intelligence. We asked experts to evaluate how relevant each item was on a scale

from 1 to 3 ratings, where 1 refers to not relevant, 2 refers to somewhat relevant, and 3 refers to very relevant. The content validity ratio (CVR/I-CVI) results for each item is indicated in Table 2. Notably, all items surpassed the Lawshe’s threshold of 0.75, indicating their high relevance and retention in the measurement instrument. By incorporating expert evaluations, this study ensured that the selected items adequately captured the desired emotional intelligence constructs, enhancing the measurement instrument's validity and reliability. The comprehensive evaluation of content validity is valuable in ensuring the quality and appropriateness of the items used in this study. As shown in Table 2, more than half of the items (1,2,3,5,6,7,9,10,12,18,20,21,22,24,25,27,29) have 0.875 CVR ratios, and the rest items (4,8,11, 13, 14,15,16,17,19,23,26,28,30) have CVR ratios of 1.0; this indicated that all of the emotional intelligence items had the appropriate content validity ratios.

Table 2
Expert Content Validity Evaluation of Emotional Intelligence

No.	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert in agreement	CVR/I-CVI	Interpretations
1	3	3	3	2	3	3	3	3	7	0.875	Appropriate
2	3	2	3	3	3	3	3	3	7	0.875	Appropriate
3	3	2	3	3	3	3	3	3	7	0.875	Appropriate
4	3	3	3	3	3	3	3	3	8	1	Appropriate
5	3	3	3	3	3	3	2	3	7	0.875	Appropriate
6	3	3	3	3	3	3	3	2	7	0.875	Appropriate
7	3	3	3	3	3	3	3	2	7	0.875	Appropriate
8	3	3	3	3	3	3	3	3	8	1	Appropriate
9	3	3	3	3	3	3	2	3	7	0.875	Appropriate
10	3	3	3	3	3	3	2	3	7	0.875	Appropriate
11	3	3	3	3	3	3	3	3	8	1	Appropriate
12	3	3	3	3	3	3	3	2	7	0.875	Appropriate
13	3	3	3	3	3	3	3	3	8	1	Appropriate
14	3	3	3	3	3	3	3	3	8	1	Appropriate
15	3	3	3	3	3	3	3	3	8	1	Appropriate
16	3	3	3	3	3	3	3	3	8	1	Appropriate

17	3	3	3	3	3	3	3	3	8	1	Appropriate
18	3	2	3	3	3	3	3	3	7	0.875	Appropriate
19	3	3	3	3	3	3	3	3	8	1	Appropriate
20	3	3	3	3	3	3	2	3	7	0.875	Appropriate
21	3	3	3	3	3	3	2	3	7	0.875	Appropriate
22	3	3	3	3	3	2	3	3	7	0.875	Appropriate
23	3	3	3	3	3	3	3	3	8	1	Appropriate
24	3	2	3	3	3	3	3	3	7	0.875	Appropriate
25	3	3	3	3	3	3	2	3	7	0.875	Appropriate
26	3	3	3	3	3	3	3	3	8	1	Appropriate
27	3	3	3	3	2	3	3	3	7	0.875	Appropriate
28	3	3	3	3	3	3	3	3	8	1	Appropriate
29	3	3	2	3	3	3	3	3	7	0.875	Appropriate
30	3	3	3	3	3	3	3	3	8	1	Appropriate
1	0.866	0.966	0.966	0.966	0.966	0.8	0.9		S-CVI/UA = 0.928		

S-CVI/Ave = $(1+0.866+0.966+0.966+0.966+0.8+0.9)/8 = 0.928$; S-CVI/Ave (Score Content Validity Index average proportion of relevance of items across experts)

Assumptions of Exploratory Factor Analysis

Before conducting exploratory factor analysis (EFA), several assumptions were checked as follows: First, the internal consistency of the measurement items was evaluated by Cronbach's alpha, which was 0.823 for the emotional intelligence (EI) construct measured with 30 items. This value indicated that the construct was unidimensional and above the minimum standard of 0.7 for EFA (Sarstedt, 2019). Second, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to examine the factorability of the correlation matrix. The EI construct had a KMO value of 0.819, which is considered meritorious according to Kaiser(1974), who defined the KMO values as follows: 0.90 is marvelous, 0.80 is meritorious, 0.70 is average, 0.60 is mediocre, 0.50 is terrible, and values less than 0.50 are unacceptable. The KMO value measures the ratio of full to partial correlations and how much variation is shared by all variables rather than just certain pairs of variables influencing correlations. The ideal overall KMO value is 0.70 (Hoelzle & Meyer,

2013; Lloret et al., 2017) While values lower than 0.50 indicate that the correlation matrix is not factorable (Child, 2006; Kaiser, 1974). Bartlett's test of sphericity was also significant at a level of 0.001, indicating that the data were suitable for EFA. Third, the multicollinearity problem was checked by the variance inflation factor (VIF) and tolerance values. The VIF value for EI was 1.159, and the tolerance value was 0.862. These values indicated that there was no multicollinearity, as a VIF value of less than 5 is acceptable according to (Ringle et al., 2014). Fourth, the normality of the EI scores was measured by the skewness, kurtosis, and Z values of the data. The skewness and kurtosis values of the variables were within the normal ranges of 2 for skewness and 7 for kurtosis, according to (Kline, 2016). The Z values, or critical ratios for normality, were also within the range of 1.96. The skewness value for EI was -.244, with a standard error (S.E.) of .135 and a Z-value of -1.81. This implies that the distribution of EI scores was slightly negatively skewed but not significantly different from the normal distribution ($Z < 1.96$). Similarly, the kurtosis value for EI was -.123, with an S.E. of .269 and a Z-value of -.46. This implies that the distribution of EI scores was slightly platykurtic but not significantly different from a normal distribution ($Z < 1.96$). The results of the Shapiro-Wilk normality tests were not significant ($p > .05$), which confirms that the distribution of EI scores did not significantly deviate from normal distributions.

Exploratory Factor Analysis (EFA)

EFA aimed to obtain a highly correlated, rotated matrix with acceptable values of KMO and Bartlett's test of sphericity. The EFA was performed using the maximum likelihood estimation method, varimax rotation, and a cut-off value of 0.50 for factor loadings, which is higher than the default standard of 0.3. Maximum likelihood (ML) is a factor extraction method that helps identify the extracted factor structures with high correlations within their reflective items. It assumes that the observed variables are multivariate normally distributed

and that the model is correctly specified. ML was preferred over other methods, such as principal axis factoring or principal components analysis because it can provide a chi-square test of the model fit, which can be used to compare alternative models or test hypotheses about the number of factors. ML can also provide standard errors and confidence intervals for the factor loadings and factor scores, which can be useful for interpretation and inference. ML is also consistent and efficient, producing unbiased and minimum variance estimates of the parameters as the sample size increases. Varimax rotation is a factor rotation method that aims to achieve a simple structure, meaning that each factor has a few large loadings and many small or zero loadings. It is an orthogonal rotation, meaning it preserves the independence of the factors and the total variance explained by them. Varimax rotation was preferred over other methods, such as oblique rotation or quartimax rotation, because it tends to produce factors that are more interpretable and meaningful, as they represent distinct dimensions of the data. Varimax rotation also tends to produce factors that are more generalizable and replicable as they are less influenced by the specific sample or measurement scale.

Based on Child (2006), items with commonalities less than 0.20 were excluded from further EFA analysis. Likewise, items with total item correlations lower than 0.30 were disregarded, as suggested by (Osborne & Fitzpatrick, 2012). This resulted in the elimination of eight emotional intelligence items. Moreover, ten items did not load on any of the identified components after the initial EFA. Therefore, eighteen items were removed from the final EFA results, and only twelve were retained for confirmatory factor analysis (CFA). Several factors could explain the poor performance of these items, such as cultural influence, response bias, and methodological issues. For instance, the participants came from different ethnic groups and regions in Ethiopia, which could affect the meaning and expression of emotions across cultures. Some items might have been more relevant or appropriate for some groups, leading to differential item functioning or bias (Hambleton & Zenisky, 2011). Another factor could

be the honesty and sincerity of the participants in answering the items. Some participants might have responded in a socially desirable way that reflected their ideal self rather than their actual self. This could reduce the variability and discriminability of the items and affect their psychometric properties (Paulhus & Vazire, 2007).

Results from Exploratory Factor Analysis for the Emotional Intelligence Scale

Emotional intelligence was initially a one-dimensional construct. However, a maximum likelihood analysis with an Eigenvalue greater than 1 and a rotated factor matrix revealed two-factor solutions. These factors were interpretable and considered for confirmatory factor analysis. We chose 12 items based on how strongly they related to two factors. Six items related more to factor one, with loadings between 0.516 and 0.805. Six items related more to factor two, with loadings between 0.517 and 0.635. We then tested these 12 items in the confirmatory factor analysis. As shown in Table 3, emotional intelligence is explained by two extracted factors. These factors account for the total variance before and after rotation. The first factor contributes 21.8%, and the second contributes 37.9% of the total variance after rotation. These factors represent the instructors’ emotional intelligence scale or construct. Hair et al. (2012) recommend that the minimum acceptable explained variance in factor analysis be 50%, but this may not be feasible in the social and behavioral sciences. In this study, the total variance explained by the factors is almost 38%, which is lower than the suggested threshold. However, the items load well on the extracted factors.

Table 3
The Rotated Factor Structures of Emotional Intelligence.

Factor Loadings			
Items	Factors		Uniqueness
	1 Emotional self-awareness	2 Emotional self-regulation	
ESA24	0.805		0.325
ESA20	0.731		0.460
ESA9	0.650		0.577
ESA27	0.562		0.677
ESA23	0.537		0.697
ESA21	0.516		0.717

ESR8	0.635	0.576
ESR18	0.581	0.654
ESR16	0.540	0.691
ESR13	0.540	0.705
ESR14	0.525	0.636
ESR4	0.517	0.732

Results of Confirmatory Factor Analysis

Confirmatory factor analysis was used with 327 participants to check the fitness of the model with the data passed through the exploratory factor analysis. This helped us see how well the items measured each new construct. CFA measures the relationships between observed indicators and latent variables, which represent the underlying constructs they are supposed to measure (Byrne, 2016). This study used CFA with maximum likelihood estimation to test the structure of emotional intelligence. The CFA model was identified and specified using standard methods. We employed several model-fit statistics to assess how well the model aligned with the data. According to Worthington and Whittaker (2006), there are four primary types of model fit indices: overall model fit indices, such as the chi-square test, incremental fit indices like NFI, CFI, and TLI, and absolute fit indices, including RMSEA and GFI. Furthermore, Byrne's work in 2016 recommended five model fit criteria, namely model chi-square (CMIN), adjusted goodness of fit (AGFI), goodness-of-fit index (GFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). By considering these various fit indices, we aimed to comprehensively evaluate the model's goodness of fit and its accuracy in representing the observed data. These indices were used to assess the fit of the CFA models for each latent variable in this study. The common cutoff values for these indices are $CMIN/DF < 5$, $GFI, AGFI, CFI > .9$, and $RMSEA < .08$ (Byrne, 2016). The overall fit of the measurement model was considered acceptable if at least 3–4 of these indices met the threshold values (Hair et al., 2012).

Confirmatory Factor Analysis Results for Emotional Intelligence Items

To test the validity of the EFA factor structure, the researchers performed a confirmatory factor analysis (CFA) that assessed how well the observed variables represented the latent variables. CFA also confirmed the pattern of loadings for each factor that emerged from EFA. In CFA, the measurement model specifies the relationships between indicators and constructs; it links the indicators to the latent variables they are supposed to measure (Byrne, 2016).

To test the structure of emotional intelligence, this study used confirmatory factor analysis (CFA) with maximum likelihood estimation and AMOS 23 software. The model identification and specification methods activated a CFA, which identified each construct's first and second-order models. The study followed the recommendations of Byrne (2010) and Worthington and Whittaker(2006) to measure the model's fit to the data using various fit indices, such as overall model fit: chi-square test, incremental fit: NFI, CFI, and TLI and absolute fit: RMSEA, GFI. The next section presents the results of the CFA models for the construct or latent variable. The study used the following cut-off criteria for model fit indices, as suggested by Byrne (2010): $CMIN/DF < 5$, GFI, AGFI, and $CFI > .9$, and $RMSEA < .08$. However, the study also considered the argument of Hair et al. (2012) that 3 to 4 of these indices within the threshold indicate an acceptable model fit. Moreover, the study followed the caution of McNeish et al. (2017) against mindlessly using cut-off values and quoted their statement that "no single cut-off value for any particular [fit index] can be broadly applied across latent variable models". Therefore, this study conducted confirmatory factor analysis (CFA) on emotional intelligence (EI) with 12 items, which showed two interpretable factor structures.

The first-order first-factor model for emotional self-awareness (ESA) had six items in the initial model. The fit indices were: $\chi^2 = 64.892$, $df = 9$, $p\text{-value} = .000$; $CMIN/DF = 7.210$;

NFI =.919; TLI =.929; CFI =.929; RMSEA =.138; GFI =.936; and AGFI =.851. Only CMIN/DF, RMSEA, and AGFI did not meet the criteria, so the model was modified by covarying e1 and e2. The second model had these fit indices: $\chi^2 = 24.198$, $df = 8$, $p\text{-value} = .002$; CMIN/DF = 3.025; NFI =.970; TLI =.961; CFI =.979; RMSEA =.079; GFI =.973; and AGFI =.930. A further modification was done by covarying e5 and e6, resulting in the final model with these fit indices: $\chi^2 = 10.469$, $df = 7$, $p\text{-value} = .164$; CMIN/DF = 1.496; NFI =.987; TLI =.991; CFI =.996; RMSEA =.039; GFI =.989; and AGFI =.968. The final first-order first-factor model for ESA fit the data well, and all the fit indices were within acceptable ranges (see Figure 1: Revised Model for ESA).

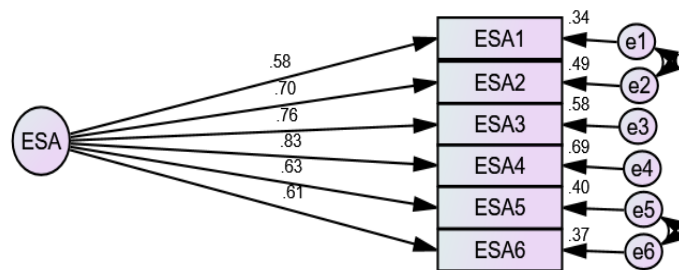


Figure 1. First-Order Measurement Model for Emotional Self-Awareness.

The study examined the first-order factor of Emotional self-regulation to confirm the model fit with the measured variables. The results showed a well-fitted model without modification: $\chi^2 = 11.594$, $df = 9$, $p\text{-value} = .237$; CMIN/DF = 1.288; NFI =.991; TLI =.997; CFI =.998; RMSEA =.030; GFI =.988; and AGFI =.973. All the fit indices were within the recommended range (see Figure 2: Revised Model for ESR).

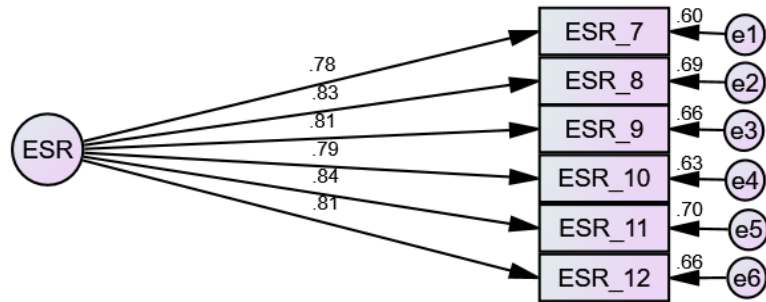


Figure 2. First-Order Measurement Model for Self-Regulation.

The study also measured the first order of the two factors together, ESA and ESR, with 12 items (six items each) using CFA, and the results of the measurement model were: $\chi^2 = 96.036$, $df = 51$, $p\text{-value} = .000$; $CMIN/DF = 1.883$; $NFI = .958$; $TLI = .974$; $CFI = .980$; $RMSEA = .052$; $GFI = .952$; and $AGFI = .927$. All the fit indices were within the acceptable ranges, and there is no need for further modification. The first-order two-factor CFA model fit the data well, and the correlation between the two factors was .68 (see Figure 3: Revised Model for ESA and ESR).

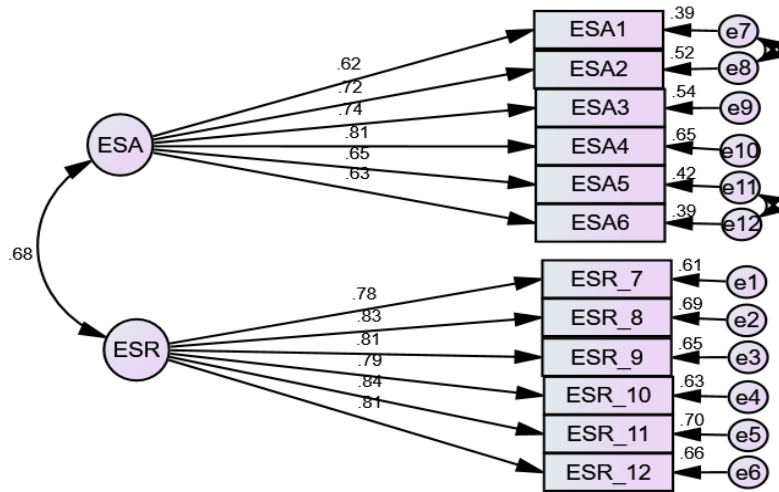


Figure 3. First-Order Two-Factor Measurement Model for Emotional Self-Awareness and Emotional Self-Regulation.

The study computed the final CFA using the two-factor first-order models to confirm the second-order factor CFA measurement model. The results of the second-order CFA model were: $\chi^2 = 96.036$, $df = 51$, $p\text{-value} = .000$; $CMIN/DF = 1.883$; $NFI = .958$; $TLI = .974$; $CFI = .980$; $RMSEA = .052$; $GFI = .952$; and $AGFI = .927$. All the fit indices met the acceptable range, and no model modification was needed. However, these results were similar to the first-order two-factor CFA measurement models (see Figure 4: Revised Model for EI, ESA, and ESR).

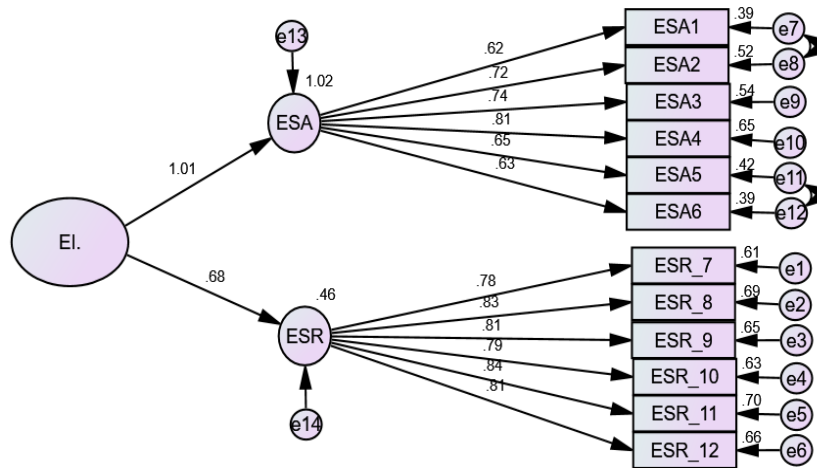


Figure 4. Second-Order Structural Measurement Model for Emotional Intelligence.

The Reliability and Validity of the Instruments

The reliability of the emotional intelligence measure was tested using Cronbach’s alpha and composite reliability (CR) to examine the internal consistency of the emotional intelligence scale and its subscales. Mcneish (2017) stated that Cronbach’s alpha coefficient measures test-retest reliability and data collection techniques' dependability. Composite reliability assesses how well a latent construct or factor is measured by a set of items or indicators. It resembles Cronbach’s alpha, but it considers the varying contributions of the items to the construct. The higher the composite reliability, the more consistent the items are in measuring the same construct. A typical criterion for composite reliability is at least 0.7, but it can differ based on the number and type of items. Cronbach’s alpha is often considered a lower bound estimate of the true reliability of a scale, while composite reliability is more accurate and realistic (Raykov, 1997). The study eliminated irrelevant items and increased internal consistency by removing items that lowered the alpha values. Construct validity is about how well a concept, idea, or behavior can be translated or transformed into a

functioning and operating reality through operationalization. Convergent validity (CV) and discriminant validity (DV) are two components of construct validity. Table 4 shows the results.

Table 4
Reliability of Emotional Intelligence and Its Subscales (N = 327)

Scales	Number of items	Cronbach alpha/ α	Composite reliability (CR)	Construct validity	
				CV	DV
Emotional self-awareness	6	.854	.868	.49	.7
Emotional self-regulation	6	.919	.920	.66	.81
Emotional intelligence	12	.915	.941	.56	.75

Inter-Correlations of the Subscales

After calculating the reliability of revised items for each subscale and establishing their statistical significance, the inter-correlation of subscales was computed. Exploratory factor analysis revealed two factors of the emotional intelligence scale: emotional self-awareness and self-regulation. Table 5 displays a moderate ($r = .621$) and statistically significant ($p < .01$) inter-correlation between these two factors, indicating that they measure the construct of emotional intelligence.

Table 5
Inter-Correlation of the Subscales of Emotional Intelligence.

Variables	Mean	SD	Emotional Self-awareness
Emotional Self-awareness	32.55	3.63	1
Emotional Self-regulation	30.84	6.57	.621***

*** $p < 0.001$ (2-tailed).

Table 6 shows the descriptive results of the two-factor structure: emotional self-awareness and emotional self-regulation. Only 12 items, six for each factor, were considered. The mean values of the items in emotional self-awareness extended from 4.82 to 5.49, with a

standard deviation between 1.24 and 1.72. The factor loadings of this factor are high, extending from 0.516 to 0.805, and the items are consistent with each other, with alpha values of 0.854. Factor two measures emotional self-regulation, and its items have average values between 4.59 and 5.34, with a standard deviation of 1.58 to 1.78. The items in factor two also load moderately on it, from 0.517 to 0.635, and they are consistent with each other having an alpha value of 0.919.

Table 6

Summary of the Descriptive and Exploratory Factor Analysis Results (N = 327).

Factors	Items	Mean	SD	Factor Loadings	Alpha / α
Factor 1:	Given my circumstances, I feel pretty good about myself.	5.1	1.4	.805	.854
	In general, I am happy with my life.	5.1	1.6	.731	
Emotional self-awareness	Overall, I am comfortable with my current situation.	4.8	1.7	.650	
	I generally believe that everything is good in my life.	4.8	1.5	.562	
Factor 2:	In general, I know my emotions and feelings and how I feel.	5.4	1.2	.537	
	I would generally describe myself as a good negotiator or communicator.	5.0	1.4	.516	
	Generally, I find it difficult to know exactly what emotion I feel.	5.3	1.6	.635	
Emotional self-regulation	I often find it difficult to motivate myself.	4.5	1.7	.581	
	I often find it difficult to express my feelings to people close to me.	4.9	1.7	.540	
	Those people who are close to me often express their complaints that I do not treat them right.	5.1	1.5	.540	
	I often find it difficult to adjust my life or daily life to the circumstances.	5.1	1.6	.525	
	I often find it difficult to control my emotions.	5.0	1.7	.517	

Norming Instructors' Emotional Intelligence Measure

To analyze the emotional intelligence of instructors in Ethiopian public universities, the mean and standard deviation scores of their raw data were calculated. The instructors were classified into high and moderate emotional intelligence groups based on their observed mean scores since there is no standard criterion for determining emotional intelligence levels. The results indicated that the instructors had a high level of emotional intelligence, as their actual mean scores surpassed the expected ones.

Discussion

This study aimed at validating the emotional intelligence scale for university instructors in Ethiopia and investigating their level of emotional intelligence. The findings of this validation study indicate that university instructors in Ethiopia have two components of emotional intelligence: how well they know their own emotions and how well they control their emotions. These extracted factors were confirmed by the confirmatory factor analysis and the two-factor structure accounted for 38% of the total variance in the scale, which is acceptable in the social and behavioral sciences field of studies. As shown in Table 2 and 4 the emotional intelligence scale also showed good content and construct validity, with an S-CVI/Ave of 0.928, convergent validity of above 0.5, and discriminant validity of above 0.7, and reliability with Cronbach's alpha of 0.915 and CR of 0.941.

The instructors in this study had high levels of EI. Emotional self-awareness has a mean of 32.6 with a standard deviation of 3.63, and emotional self-regulation has a mean of 30.8 with a standard deviation of 6.57. This implies that there are high levels of instructors' emotional self-awareness and emotional self-regulation. These emotional intelligence skills

are crucial for instructors, as they can enhance their teaching effectiveness and their students' learning outcomes. This finding is consistent with previous studies focused on the role of emotional intelligence in higher education. According to Halimi et al. (2020), self-emotion appraisal, which is a component of emotional self-awareness, was positively related to the academic achievement of college students in Kuwait. Similarly, Khassawneh et al.(2022) reported that EI competencies, which include emotional self-regulation, significantly affected educator behavior and student success in higher education institutes in the United Arab Emirates. Nonetheless, other studies disagree with our findings. They looked at how instructors in different places and cultures used emotional intelligence. For example, Williams (2021) studied online instructors who taught students from far away. They found that the instructors used emotional intelligence skills to better manage themselves, make positive emotional bonds, and be more aware of their own and students' thinking.

We can conclude that the findings of our study agree with what others have found before. For example, Imtiaz et al. (2016) found that teachers in Pakistan had high emotional intelligence than other factors. Wolle (2022) also showed that emotional intelligence helped leaders in Ethiopian public universities to be more effective. But our study may only work for some situations or ways of teaching, like online, mixed, or combined learning, where you might need different emotional intelligence skills. We can also look at other parts of EI, like how instructors feel for others, understand others, and get along with others. These might be important for instructors too. We can also see how EI affects how well instructors teach and how well students learn and what other things might change these effects. We can find out the best ways to use EI in teaching and how to help instructors improve their EI skills. We found that the instructors had a lot of emotional intelligence, which means they have the skills that can make them better teachers and their students' better learners. Some other studies agree with us, but some don't, about how EI works in higher education.

Moreover, emotional self-awareness and emotional self-regulation have positive and significant relationships, implying that instructors who are more aware of their own emotions can also regulate them more effectively. This finding is partially supported by Khassawneh et al.(2022), who also found that emotional self-awareness and emotional self-regulation were important for educators' performance and student success in higher education in the UAE. According to Petrides and Furnham (2000), emotional intelligence is a personality trait with two main components. The first one refers to how well you can understand and express your own emotions, indicating the emotionality of the individuals. The second one refers to how well you can control your impulses, motivations, and emotions implied by the self-control or emotion regulations of the individuals. In line with this investigation, the findings of this study indicated that emotional intelligence for university instructors in Ethiopia also has two components: the first one is emotional self-awareness, which is part of emotionality, and the second one is emotional self-regulation, which is part of self-control. Cooper and Petrides (2010) did some fascinating research on emotional intelligence, and they discovered four important components. The first component is emotionality, which focuses on how well someone can express and understand their emotions. The second component is self-control: This is all about how skilled someone at managing and coping with his/her own emotions. The third component is sociability: This component deals with how well a person can read and handle the emotions of others. The fourth component is well-being: This component is all about how happy and satisfied someone feels with their emotions.

However, this study showed that emotional intelligence for university instructors in Ethiopia has only two parts: self-awareness and self-control. The high level of emotional intelligence among university instructors in Ethiopia may reflect their awareness and regulation of their emotions in their teaching profession. When an individual identifies and understands one's feelings and how they affect one's actions, one has emotional self-awareness. This is an important part of self-awareness that helps instructors stay aligned with

their purpose and principles (Dishon et al., 2018). An individual has emotional self-regulation when an individual can handle his/her feelings or keep them from taking over in critical moments. It also involves planning for the future and coping with stress. Self-regulation can help instructors maintain their calmness and happiness even in the most challenging situations (Dignath & Veenman, 2021). In conclusion, this study validates a two-component emotional intelligence scale for university instructors in Ethiopia, revealing high levels of emotional self-awareness and emotional self-regulation. These skills, essential for effective teaching, align with previous findings in higher education. However, variations in emotional intelligence components across studies suggest the need for further exploration, especially in diverse teaching contexts.

Conclusions

University instructors in Ethiopia need to develop their emotional intelligence to enhance their teaching effectiveness and well-being. This study validated an emotional intelligence scale for this specific group and culture and revealed their level of emotional self-awareness and emotional self-regulation. These two factors play a crucial role in effectively managing motions in the classroom and fostering positive relationships with both students and colleagues. Moreover, this study also provided a dependable and valid tool for measuring and assessing emotional intelligence among university instructors in Ethiopia, with versatile applications ranging from selection and evaluation to development and research. Furthermore, the research addresses a notable gap in the existing literature by exploring the cross-cultural relevance of emotional intelligence, particularly within Ethiopian higher education landscape.

Nevertheless, it's important to recognize and address certain limitations that surfaced during the study. One notable limitation is the reliance on self-report measures, which opens the door to potential biases, distortions, or socially desirable responses. To enhance the study's

robustness, future research endeavors should consider incorporating more objective methods, such as behavioral observations, physiological measures, or peer ratings, to complement and validate the data obtained through self-reporting. Another limitation was the lack of outcome variables, such as teaching performance, student satisfaction, or instructor well-being, which could have demonstrated the effects and benefits of emotional intelligence for university instructors. Future studies should use more relevant variables, such as student feedback, academic achievement, or instructor burnout, to examine the impact of emotional intelligence on teaching effectiveness and instructor well-being. Furthermore, future studies should develop and evaluate interventions to improve emotional intelligence among university instructors, such as training programs, coaching sessions, or feedback mechanisms. Emotional intelligence is a personal trait and a social skill that can be learned and improved. How can university instructors in Ethiopia enhance their emotional intelligence, and how would it impact their performance and satisfaction? These are important questions that deserve further attention and investigation.

In conclusion, this study underscored the vital importance of enhancing emotional intelligence among university instructors in Ethiopia. It validated a specialized emotional intelligence scale tailored to this specific group and culture and revealed the significance of emotional self-awareness and self-regulation for managing classroom dynamics and nurturing positive relationships. Moreover, the study furnished a reliable tool for measuring emotional intelligence among Ethiopian university instructors, offering valuable applications in selection, evaluation, development, and research contexts. While acknowledging the limitations of this research, such as the reliance on self-report measures and the absence of outcome variables, it illuminated a compelling path forward. Future studies can leverage more representative samples, objective methodologies, and pertinent variables to explore the multifaceted impacts of emotional intelligence on teaching effectiveness and instructor well-being. Furthermore, developing and assessing interventions, like training programs and

coaching sessions, can facilitate the growth of emotional intelligence among university instructors. Ultimately, this study highlighted that emotional intelligence is not only a personal trait but also a learnable and improvable social skill, presenting a promising avenue for elevating the performance and satisfaction of educators in Ethiopian higher education institutions. These findings beckon further investigation and underscore the transformative potential of emotional intelligence in the realm of academia.

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