Estimating Measurement Invariance on Emotional Intelligence Scale across Gender and Age among Undergraduates

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A B S T R A K

Kekhawatiran kritis dalam memperkirakan invariansi pengukuran skala kecerdasan emosional schutte berdasarkan jenis kelamin dan usia di kalangan mahasiswa sarjana. Penelitian ini bertujuan untuk menganalisis lima pertanyaan penelitian, yang dianalisis menggunakan analisis faktor eksploratif bersama dengan matriks korelasi untuk menjelaskan hubungan antar variabel yang diteliti. Penelitian ini menggunakan desain penelitian multimetode multi-sifat cross-sectional, yang diambil dari sampel acak 300 mahasiswa sarjana tahun pertama yang dipilih dari tiga universitas. Skala Kecerdasan Emosional Schutte, dengan koefisien alpha Cronbach sebesar 0,872, berfungsi sebagai instrumen utama pengumpulan data. Hasil penelitian menunjukkan bahwa Skala Kecerdasan Emosional Schutte menunjukkan kecocokan model yang baik, dibuktikan dengan statistik kecocokan chi-kuadrat ($X^2(220) = 955,19$, $p < 0,05$). Hal ini menunjukkan bahwa skala kecerdasan emosional schutte menunjukkan kesesuaian yang kuat dengan model yang digunakan dalam penelitian ini. Namun, penting untuk mempertimbangkan bahwa kebaikan kecocokan chi-kuadrat dapat dipengaruhi oleh ukuran sampel, sehingga mendorong pemeriksaan indeks kecocokan model tambahan. Lebih lanjut, dalam populasi Nigeria, 23 dari 33 item dalam Skala Kecerdasan Emosional Schutte ditemukan cocok untuk individu dalam rentang usia remaja dan dewasa muda.

A B S T R A C T

Critical concerns in estimating measurement invariance of the Schutte emotional intelligence scale by gender and age among undergraduate students. This research aims to analyze five research questions, which are analyzed using exploratory factor analysis together with a correlation matrix to explain the relationship between the variables studied. This study used a cross-sectional, multi-method, multi-trait research design, drawing on a random sample of 300 first-year undergraduate students selected from three universities. The Schutte Emotional Intelligence Scale, with a Cronbach's alpha coefficient of 0.872, served as the main instrument for data collection. The results showed that the Schutte Emotional Intelligence Scale demonstrated good model fit, as evidenced by the chi-square goodness-of-fit statistic ($X^2(220) = 955.19$, $p < 0.05$). This shows that the Schutte Emotional Intelligence Scale shows strong suitability with the model used in this research. However, it is important to consider that the chi-square goodness-of-fit may be affected by sample size, prompting examination of additional model fit indices. Further, within the Nigerian population, 23 out of the 33 items in the Schutte Emotional Intelligence Scale were found to be suitable for individuals in the age range of adolescence and emerging adulthood.

1. INTRODUCTION

Emotional intelligence (EI) has garnered widespread recognition as a pivotal factor influencing various facets of individuals' lives, both personally and professionally. EI encompasses the capacity to perceive, comprehend, regulate, and employ emotions effectively (Murphy & Janeke, 2009; Shatalebi et al.,

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2012). Its significance extends to academic performance, interpersonal relationships, leadership effectiveness, and overall psychological well-being. In the context of academia, comprehending the significance of emotional intelligence (EI) in students' scholastic achievements and their capacity to coexist harmoniously holds profound implications. Educational institutions, particularly universities, endeavor to create an environment that transcends mere cognitive development and actively fosters emotional growth among students (Barkhordari et al., 2016; Rahim, 2022). This emotionally nurturing milieu is acknowledged to exert a profound impact on various dimensions of students' lives, encompassing not only their academic triumphs but also their interpersonal dynamics and overall psychological well-being (Esmaeelzadehazad et al., 2021; Huerta et al., 2018).

Research has consistently demonstrated that emotional intelligence is intricately interwoven with students' academic performance and their capacity to navigate the multifaceted landscape of educational institutions. Academic accomplishments, while significantly influenced by cognitive abilities, are equally shaped by emotional competencies (Badaru & Adu, 2022; Méndez-Giménez et al., 2020). These competencies include recognizing and comprehending one's own emotions, accurately perceiving the emotions of others, effectively regulating emotional responses, and employing emotions judiciously to facilitate learning and social interactions (Dunn & Mulvenon, 2009; Vargo et al., 2003).

Emotional intelligence plays a multifaceted role in academia. It aids students in managing stress and anxiety, enabling them to perform optimally in examinations and coursework (Cong & Li, 2022; Siddiqui & Soomro, 2019). Additionally, emotional intelligence is closely tied to students' interpersonal relationships, facilitating effective communication, collaboration, and conflict resolution among peers and with educators. Furthermore, the emotionally supportive atmosphere fostered by educational institutions can profoundly influence students' psychological well-being. Emotional intelligence empowers students to cope with the challenges of academic life, reduce the risk of burnout and emotional exhaustion, and enhance their overall resilience (Kamal & Ghani, 2014; Taheri & Jadidi, 2016).

Nevertheless, the utilization of such measurement instruments necessitates consideration of potential variations in emotional intelligence across diverse demographic groups, including gender and age. It is imperative to investigate whether these instruments yield consistent and reliable measurements when applied to different populations, as this profoundly influences the validity of research findings and the efficacy of interventions designed to enhance emotional intelligence among students (Dunn & Mulvenon, 2009; Retnawati, 2016). Therefore, this study seeks to address a critical research gap pertaining to the measurement invariance of the Schutte Emotional Intelligence Scale (SEIS) across gender and age groups within an academic context. Through a rigorous examination of measurement invariance, it is aimed to determine whether the SEIS produces consistent and equitable results for distinct demographic groups (Bai et al., 2020; Wang & Liu, 2020). This investigation is warranted to enable meaningful comparisons and accurate interpretations of emotional intelligence scores.

The justification for this study is multifaceted. Firstly, the emotional well-being of students and its connection to academic success is a subject of escalating concern in educational research. While emotional intelligence has been acknowledged as a pivotal factor, there remains a dearth of research exploring the consistency of measurement instruments like the SEIS across diverse demographic groups within academic settings in Nigeria (Alavinia & Ebrahimpour, 2012; Kamal & Ghani, 2014). Secondly, the understanding whether the SEIS exhibits invariance across gender and age groups is instrumental in devising targeted interventions to enhance students' emotional intelligence. Tailored programs that acknowledge the specific emotional needs of distinct demographic groups can significantly contribute to students' academic achievements and overall well-being. Lastly, this study aligns with the research on the measurement invariance of EI instruments, especially in a multicultural and multinational context (Barkhordari et al., 2016; Dudek & Heiser, 2017). The novelty of this study contain SEIS function equitably across different populations is crucial, as EI assessments are increasingly adopted in academic and organizational contexts worldwide. Therefore, the main purpose of this study is to analyze whether the measurement invariance structure underlying emotional intelligence scale is relevant and equivalent across gender and age groups among undergraduate students of the University.

2. METHOD

The study employed a cross-sectional multi-traits multimethod research design to establish the construct validity of a scale across different gender and age groups (Creswell. J.W., 1999). Each dimension of the scale represents a trait measured by a specific method. The primary aim was to estimate the measurement invariance of the emotional intelligence scale among various groups of undergraduates, ensuring its validity across different demographics. Three hundred undergraduates were randomly selected to participate in the study. Random sampling ensured equal opportunity for participation and

represented the population effectively. This selection included students from three universities in Oyo state: University of Ibadan, Lead City University Ibadan, and Ladoke Akintola University of Technology Ogbomoso. Additionally, four faculties were randomly chosen from each university, with 25 students per faculty, resulting in a total of one hundred respondents per university. In this study, a structured questionnaire was used for data collection due to the high literacy level among participants. It was adapted after reviewing relevant literature and consulting Education Faculty experts. Foreign-authored scales were included, prompting a pilot study to evaluate their reliability and need for localization in the Nigerian context. The Emotional Intelligence Scale (EIS) utilized in this study, social and emotional intelligence model, comprises 33 self-report items measuring dimensions like interpersonal skills, self-regard, empathy, and problem-solving (Elmahdi et al., 2018; Ozdamli & Ozdal, 2018). Responses were recorded on a four-point Likert scale, indicating frequency from "never true" to "always true." High scores reflected higher emotional intelligence levels. Its psychometric properties, including factorial, construct, convergent, and discriminant validity, were established through factor analysis and correlations with related measures.

The EIS's reliability was affirmed with a Cronbach's alpha of 0.89 in a pilot study. The questionnaires were administered to undergraduate students across various faculties with permissions obtained from relevant authorities. Data collection spanned two weeks, yielding 300 responses out of 310 distributed questionnaires. The method of analysis adopted including network correlation matrix, exploratory and confirmatory factor analysis, and multiple group confirmatory factor analysis, were conducted using R programming and JASP statistical packages to address research questions.

3. RESULT AND DISCUSSION

Result

For adequate selection of item; mean, standard deviation (to check for floor and ceiling effect), network correlation matrix was used in estimating the degree to which item cluster around each order. It in a preliminary analysis to determine unidimensionality among the items of emotional intelligence scale and as well helps in identifying nonresponsive items and to reduce item redundancy. Items having r-value less 0.30. 26 items survived on emotional intelligence scale while 7 items (EIS28, EIS17, EIS14, EIS16, EIS13, EIS2 and EIS22) were expunged in this section. Network correlation matrix is show in Figure 1.
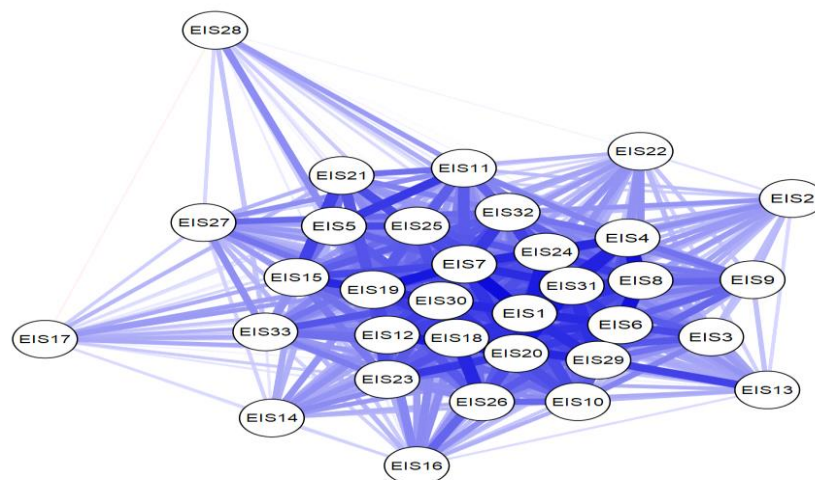

Figure 1. Network Correlation Matrix

To certify the assumption of factorability Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity was conducted. Overall KMO=0.899 and Bartlett's Test of Sphericity (Approx. Chi-Square (528) = 4246, p<.01). This reveals that the sample size was adequate enough KMO >0.6 (Field, 2000). Bartlett's Test of Sphericity was found significant. This implies that the proportion of the variance in the measures of emotional intelligence scale is caused by the underling factors of the scale which implies an acceptable factorability potential. Parallel analysis scree plot showing number of factors to be retained is show in Figure 2.
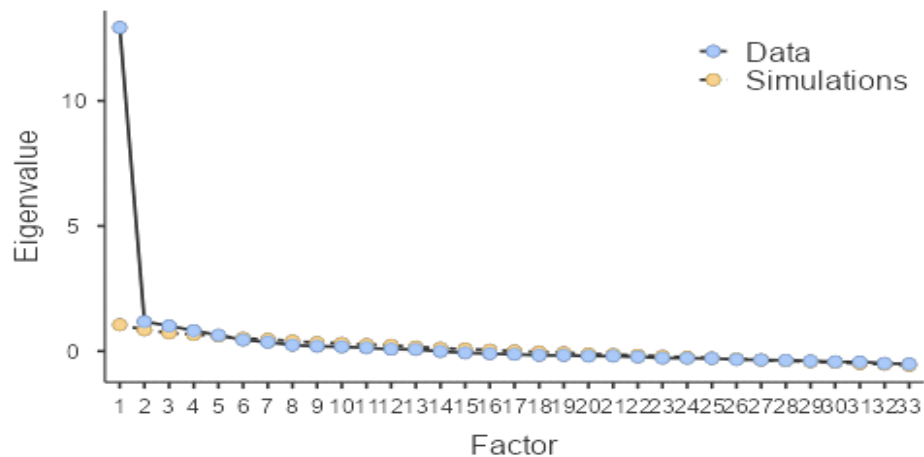
Figure 2. Parallel Analysis Scree Plot Showing Number of Factors to be Retained

Exploratory Factor Analysis (EFA) with oblimin rotation was conducted on all 33 items of the emotional intelligence scale on the five factors (positive affect, others-emotion, happy emotion, self-emotion, and non-verbal emotion). Factor solutions were based on the following criteria: eigenvalues of 4.0(although eigenvalue 1.0 or greater), factor loadings of .40 or greater and rotated factor. The majority of the items initially merged into seven factors above the postulated factor structure. As a means to "clean up" the model, the parallel analysis scree plot test was conducted to determine the number of factors retained in the scale; the number of factors to retain was determined by comparing the simulated model to the actual data which suggested that 5-factor models were the most appropriate fit. The total variance explained by the factors extracted is show in Table 1.

Table 1. Showing the Total Variance Explained by the Factors Extracted

Summary			
Factor	**SS Loadings**	**% of Variance**	**Cumulative %**
1	4.82	14.60	14.6
2	4.44	13.45	28.1
3	3.55	10.75	38.8
4	3.15	9.56	48.4
5	1.48	4.49	52.9

Table 1 reveals that the factor analysis of five factors produced the cleanest factor structure for the 33-item scale; the five-factor accounted for some percentage of variance respectively (14.60, 13.45, 10.75, 9.56 and 4.49) the factors combined accounted for 52.9 percent of the variance. The structure of factor loading via the extraction is show in Table 2.

Table 2. Showing the Structure of Factor Loading via the Extraction

Items	Factor Loadings					Uniqueness
	1	**2**	**3**	**4**	**5**	
EIS18	0.711					0.287
EIS6	0.578					0.265
EIS26	0.565					0.508
EIS16	0.517					0.752
EIS25	0.506					0.420
EIS20	0.500	0.419				0.237
EIS30	0.448			0.407		0.314
EIS23						0.572
EIS10						0.553
EIS22						0.839
EIS14						0.835
EIS31		0.794				0.192
EIS24		0.760				0.233

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Items	Factor Loadings					Uniqueness
	1	2	3	4	5	
EIS4	0.647					0.378
EIS13	0.471					0.301
EIS8	0.446					0.381
EIS9						0.702
EIS2						0.841
EIS7			0.706			0.125
EIS21			0.593			0.503
EIS19			0.578			0.292
EIS15			0.572			0.429
EIS1			0.490			0.253
EIS17						0.855
EIS3						0.677
EIS32				0.869		0.174
EIS29				0.475		0.301
EIS27				0.411		0.704
EIS33				0.402		0.629
EIS12						0.411
EIS11					0.612	0.370
EIS5					0.464	0.482
EIS28						0.744

Base on Table 2, after oblimin rotation 23 items loaded strongly above 0.4 (while 10 items were removed because they loaded below 0.4) on the five factors subscales (positive affect, others-emotion, happy emotion, self-emotion, and non-verbal emotion) of emotional intelligence scale (certifying the rule of thumb). The communality reveals a range of common variance shared among the items of the scale, 0.125-0.800 (from 12.5% to 80.0%).

Internal Convergence Validity

The significant relationship among all the factors of emotional intelligence scale is show in Table 3.

Table 3. Zero Order Correlation Showing Relationship Among the Factors of Emotional Intelligence Scale

	1	2	3	4	5
Positive affect	—	0.607	0.455	0.536	0.168
Others-emotion		—	0.537	0.560	0.115
Happy emotion			—	0.427	0.212
Self-emotion				—	0.264
Non-verbal emotion					—

*significant at 0.05 (2-tailed)

Table 3 reveals that the three factors of emotional intelligence scale (positive affect, others-emotion, happy emotion, self-emotion, and non-verbal emotion) were found to be significantly correlated with one another; this indicates that the factors converge within itself which is an evidence of internal convergence validity. The emotional intelligence scale display significant satisfactory reliability coefficient result is show in Table 4.

Table 4. Showing the Reliability Coefficient of Dissertation Efficacy Scale

	Emotional intelligence Scale		
	Factors of the scale	Cronbach alpha	McDonalds(ω)
1	Positive affect	0.723	0.844
2	Others-emotion	0.784	0.862
3	Happy emotion	0.832	0.834
4	Self-emotion	0.860	0.872
5	Non-verbal emotion	0.791	0.792
Total	General reliability(Emotional intelligence scale)	0.794	0.865

*Significant ≥ 0.7

Table 4 reveals good reliability coefficient satisfying the criteria specified by Josephine and Muraina (2023) that says a good reliability coefficient should be 0.7 and above. These therefore indicate that, the Schutte emotional intelligence scale is reliable enough to be used. To answer this question a multi-group confirmatory factor analysis was estimated for the overall five factor-model and for each group through a configural and metric invariance modelling. The result is presented in Table 5.

Table 5. Goodness of Fit Indices for All Groups and Models Showing Measurement Variances

	Category	Model	RMSEA	CFI	TLI	χ^2	df	P
Benchmark			<0.06	>0.90	>0.90	<3		>0.05
Group	Overall	5-factor model	0.0818	0.972	0.914	955.19	220	<.001
Gender	Male	Configural	0.124	0.951	0.814	852.1	132	<.001
		Metric	0.124	0.946	0.939	832.2	132	<.001
	Female	Configural	0.132	0.926	0.931	803.0	132	<.001
		Metric	0.123	0.929	0.940	852.8	132	<.001
Age	Less than 18yrs	Configural	0.064	0.923	0.903	3.13	87	>0.05
		Metric	0.007	0.993	0.986	3.21	87	>0.05
	19-22yrs	Configural	0.050	0.981	0.972	2.01	87	>0.05
		Metric	0.034	0.975	0.978	2.91	87	>0.05
	23-26yrs	Configural	0.143	0.965	0.975	24.21	92	<.001
		Metric	0.119	0.989	0.978	24.01	92	<.001
	27-29yrs	Configural	0.110	0.987	0.981	32.22	92	<.001
		Metric	0.104	0.901	0.885	33.20	92	<.001
	30yrs and above	Configural	0.129	0.822	0.823	23.01	92	<.001
		Metric	0.122	0.827	0.842	23.52	92	<.001

Considering the rule of thumb for the fitness of multi-group confirmatory factor for measurement equivalence through invariance; the comparative fit index (CFI): should range from 0 to 1, with larger values indicating better fit; a CFI value of 0.90 or larger is generally considered to indicate acceptable model fit. The root mean square error of approximation (RMSEA). The RMSEA should range from 0 to 1, with smaller values indicating better model fit. With a value of .06 or less is indicative of acceptable model fit.

From Table 5 the five factor model of Schutte emotional intelligence scale revealed an appealing fit value;$X^2(220)= 955.19,p<.05$. This indicates a good fitness of the model. But base on the assumption that says chi-square goodness of fit is influenced by sample size; this gave rise to other model fit index which among others CFI and RMSEA is considered in this study displayed a good fit of the model. TLI= 0.914< 0.95 and CFI=.972>.90, however RMSEA shows mis-fit having recorded RMSEA=.081>.060. By implication the overall model of Schutte emotional intelligence scale did not show a holistic fitness despite the TLI and CFI are good. Then CFA model is showing the overall five factor measurement model of the schutte emotional intelligence scale is show in Figure 3.
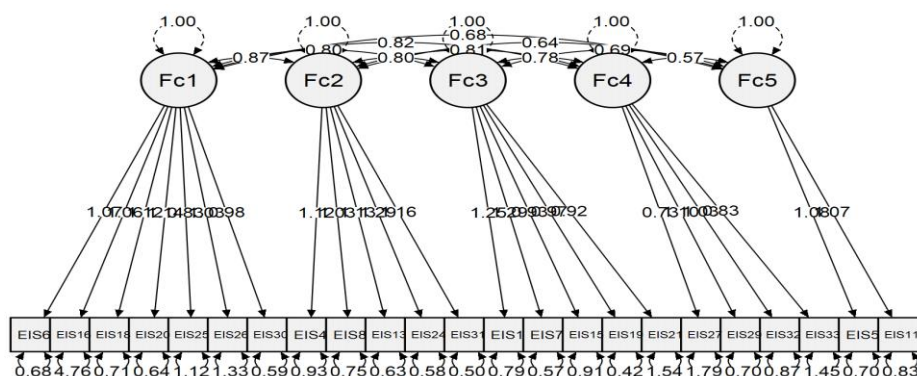

Figure 3. CFA Model Showing the Overall Five Factor Measurement Model of the Schutte Emotional Intelligence Scale

Measurement Variance based on Gender

The measurement invariance of Emotional intelligence test based on gender reveals that on the configural model structure of boys or girls partially fit well with the theoretical or hypothetical factor structure. Partial fitness was recorded having satisfy the benchmark TLI, and CFI except the p-value, chi-square value and RMSEA. By implication, the configural invariance is satisfied when the basic factor structure is invariant across gender groups without being constrained. It means that boys and girls conceptualize the construct (emotional intelligence) in same way.

While, the metric model structure for boys and girls also showed partial fitness when considering how each of the indexes meet the benchmark. The p-value, chi-square value and RMSEA did not satisfy the criteria for good fit. However, TLI, and CFI met the benchmark for the goodness of fit measures. By implication the metric model of the Schutte emotional intelligence scale indicates that boys and girls responded to the scale in an identical way having constrained the model weight to zero at estimation stage. Having understood that the metric invariance finds out whether boys and girls respond to the items in identical ways. When this measurement equivalence is satisfied, the obtained ratings of the genders can be compared or considered similar.

Measurement Variance based on Age

The measurement invariance of Emotional intelligence scale based on age-range (less than 18yrs, 19-22yrs, 23-26yrs, 27-29yrs and 30yrs and above) as shown in Table 5 reveals that on the configural model structure of various age-range fit well with the theoretical or hypothetical factor structure. Schutte emotional intelligence scale showed good fit on the configural model among some age-range of less than 18yrs and 19-22yrs having met the benchmark for the various indexes; RMSEA, CFI, TLI, chi-square and p-value.

In contrast, some class of age-range (23-26yrs, and 27-29yrs) partially fit well with the theoretical or hypothetical factor structure except those within the age of 30yrs and above. Having met the benchmark for some fit indexes such as CFI and TLI except RMSEA, chi-square and p-value. It could be said that the Schutte emotional intelligence scale on the configural model is partially fit for those within the ages of 23-26yrs, and 27-29yrs. However, those within the age of 30yrs and above did not meet up with the benchmark. Configural model indicates that on a natural level without setting a constraint on the model. It also implies when the model is allowed to vary freely. This indicates that Schutte emotional intelligence scale fit well for those having age less than 18yrs and those between 19-22yrs, but moderately fit for those within the ages of 23-26yrs, but not for those within the age of 30yrs and above.

The measurement invariance for the metric model structure of Emotional intelligence scale based on age-range (less than 18yrs, 19-22yrs, 23-26yrs, 27-29yrs and 30yrs and above) as shown in table 5 reveals that on the metric model structure of various age-range fit well with the theoretical or hypothetical factor structure. Schutte emotional intelligence scale showed good fit on the metric model among some age-range of less than 18yrs and 19-22yrs having met the benchmark for the various indexes; RMSEA, CFI, TLI, chi-square and p-value.

On the other hand, Schutte emotional intelligence scale showed a partial metric invariance to ages between 23-26yrs, and 27-29yrs except for age of 30yrs and above. Having met the benchmark for some fit indexes such as CFI and TLI except RMSEA, chi-square and p-value. It could be said that the Schutte emotional intelligence scale on the metric model is partially fit for those within the ages of 23-26yrs, and 27-29yrs. However, it does not show fitness for people within the age of 30yrs and above based on the benchmark. Metric model indicates that when a model is constrained to zero, it creates a default and equal ground for various age ranges. It also indicates that metric invariance is tested by constraining factor loadings (i.e., the loadings of the items on the constructs) to be equivalent across groups of reference.

Discussion

This study explored measurement invariance within the Schutte Emotional Intelligence Scale across gender and age groups at the university level, using a sample of 300 young adults. Results indicated general invariance across genders and ages, except for one dimension below the age of 30 (Cebollero-Salinas et al., 2022; Wechsler et al., 2018). Partial invariance was found across five dimensions for gender, and scalar invariance was noted for Social Responsibility among 18-22 year-olds. The findings suggest that responses may be influenced by demographic factors within the Nigerian context (Ayanlade & Jegede, 2016). Non-invariance detected in the EQ-i2.0 scales, especially at the scalar level, questions the accuracy of group comparisons including these items. It is recommended to exclude non-invariant items from factor analyses across groups (Gnambs & Kaspar, 2014). Further investigation is required to assess the practical impact of non-invariance at the scale level. The study also underscores the importance of emotional intelligence in achieving objectives, despite the limitations of measurement invariance analysis (Barkhordari et al., 2016; Fearnley & Amora, 2020).

More so, emotionally intelligent groups, focused on objectives, are less likely to be sidetracked by personal issues, understanding the negative impact of emotions on outcomes (Alfonso-Benlliure et al., 2021; Philippe et al., 2020). High achievement correlates with high emotional intelligence (E.I.), a link not seen at lower E.I. levels. Emotional intelligence predicted undergraduates' coexistence and academic performance, with varying correlations based on performance levels (Bailey et al., 2009; Kamal & Ghani, 2014). Empathy and self-emotion management is foster group cohesion and cooperation.

Emotionally intelligent individuals create safe, supportive environments, encouraging trust and open communication, leading to reliable and consistent behavior among undergraduates. The study's failure to confirm the expected relationship between emotional intelligence and task fulfillment suggests that a broader model of emotional intelligence might be more appropriate for certain contexts. The willingness of emotionally intelligent people to share information was also noted. The results of confirmatory factor analysis (CFA) indicated that the Schutte Emotional Intelligence Scale (SEIS) maintains the five-factor structure observed in its original version (Al Mamun et al., 2022; Alavinia & Ebrahimpour, 2012). Moreover, the factors representing SEIS dimensions exhibited strong interrelationships, supporting the notion that SEIS factors are interconnected and measure distinct components of the same construct. Overall, the SEIS demonstrate reliability and validity, making it suitable for assessing emotional intelligence (EI) in leadership, management, and organizational behavior contexts. Although statistically significant differences were found in "Other's emotion" (OE) and "Positive affect" (PA) across gender and age groups, the effect size was small for "Self emotion" (SE) (Sutton & Crobach, 2022; Young et al., 2018).

To further validate the SEIS, evidence based on test content, relationships with other variables, and internal convergent validity processes are essential. Gender differences were identified, underscoring the need to analyze measurement invariance between males and females, as done in prior studies (Wallace, 2022; Yang et al., 2021). Future research should explore these analyses to bolster our findings. Recent warnings by previous study highlight the importance of establishing measurement equivalence across cultures, especially as multinational organizations increasingly rely on emotional intelligence (EI) for personnel selection (Cindy & Silver, 2016). This study addressed this concern by investigating the measurement invariance (MI) of the SEIS across gender and age groups. Results revealed that the SEIS maintains form invariance, suggesting that respondents use a comparable frame of reference when completing the instrument.

However, the scalar invariance model was only partially supported as higher factor loadings and lower thresholds so higher response scores were found for respondents on three items assessing the dimension "other emotion". As this dimension is the only dimension with motivation-like items, this result indicates that the last conceptual reason mentioned above (i.e. use of motivation-like items in some EI scales) might be responsible for the invariance.Where do we go from here? on the one hand, these results bode well for the equivalence of SEIS ratings on the dimensions "self-emotion appraisal", "others emotion", and "self-emotion" across differentgender and age (Nardo et al., 2022; Sutton & Crobach, 2022). On the other hand, we suggest that cross-cultural comparisonsusing the dimension "positive affect" should proceed cautiously. Given the well-documented influence of culture on motivationally oriented constructs, a rephrasing of the "positive affect" items in the SEIS is likely to improve the cross-cultural viability of this dimension. This admonition might also be relevant for other EI measures that include motivation-like items, such as Bar-On's EQ-I (Rincón-Flores et al., 2020; Sukenti et al., 2021). Generally, the domain would greatly benefit from further research endeavors resulting in an improved EI questionnaire which (a) has a strong theoretical basis (e.g. one based on the four-branch EI model), and (b)exhibits exact model fit regardless of the context (e.g. country) in which the questionnaire is used.

Measurement invariance analyses are crucial for ensuring the robustness and applicability of psychological instruments across different demographic groups and contexts. Researchers and practitioners should exercise caution when comparing scores on this specific dimension across gender and age groups, as the observed differences may be influenced by the inclusion of motivation-related items. Researchers must consider the influence of culture, response styles, and item content when assessing emotional intelligence across diverse populations.

4. CONCLUSION

The study examined the measurement invariance of Schutte emotional intelligence across genders and age groups (adolescents and youth). Results indicated partial fit for the overall 5-factor model, despite good TLI and CFI. Evidence suggested measurement invariance across genders but variance based on age. Configural model fit well for ages less than 18 and 19-22, partially for ages 23-29, but not for 30 and above. The metric model showed partial fit for both genders, with TLI and CFI meeting benchmarks but not p-

value, chi-square, or RMSEA. Thus, Schutte emotional intelligence is suitable for ages less than 18 and 19-22, marginally for 23-29, but not for 30 and above.

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