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FACTOR STRUCTURE OF THE ROSENBERG SELF ESTEEM SCALE IN NIGERIAN SECONDARY SCHOOL STUDENTS: IMPLICATIONS FOR COUNSELLING

Florence C. Omumu

Department of Arts and Social Sciences Education, Faculty of Education Delta State University, Agbor. Email: <u>florence.omumu@unidel.edu.ng;</u> <u>florence.omumu@yahoo.com</u>

Abstract

This study aimed to verify the Rosenberg self-esteem scale (RSES) completed by 700 students in Delta State, Nigeria. In addition, the researcher sought to split the sample into clusters so that tailored counselling interventions could he administered more easily. Through random sampling, the final sample of secondary consisted 700 school students, with 52.1% of females and 23.1% of rural students. Students from private, public, and faith-based schools make up

26.1%, 49.3%, and 24.6% of the sample. Confirmatory factor analysis demonstrated that the two related factor models best suited the overall sample's data and the male and female subsamples. Internal consistency was found to be good on the Finally. three clusters scale. were discovered. These findings support using the RSES' two-factor related model for evaluation in self-esteem secondary school.

Keywords: Self-esteem, Rosenberg self-esteem scale, secondary school students, reliability, factor loading, clusters, counselling.

Introduction

The Rosenberg self-esteem Scale (RSES) is a frequently used self-esteem measure in social science and education research (Mimura & Griffiths, 2007; Tinakon & Nahathai, 2012). Morris Rosenberg created it in 1965 and it is now extensively utilized in psychology, health, education, and psychiatry. The RSES is a brief, easy-to-use Likert scale with ten items answered on a four-point scale ranging from strongly disagree (1) to strongly agree (2). (4). Half of the items are favourably stated in the original form, while the other half are negatively worded. The RSES has a score of 10 - 40, with a higher score indicating a better sense of self-esteem. According to Rosenberg (1965), self-esteem is a good or negative attitude toward oneself. When seeing a person as an object, their self-concept consists of their ideas and feelings. According to Smith and Mackie (2007), self-concept refers to how we think about ourselves, whereas self-esteem refers to how we feel. Self-esteem enables people to confront life with more self-assurance, compassion, optimism, and other qualities contributing to goal-setting and achievement. It also helps people be more ambitious without focusing on achievement but on innovation (Galanou et al., 2014). Self-esteem growth improves an individual's capacity to treat others with respect and kindness and form positive interpersonal interactions while avoiding negative ones. In the classroom and business, selfesteem boosts creativity and productivity.

Positive self-esteem protects children and adolescents against mental anguish and depression and allows them to cope well with challenging and stressful life events (Hosogi et al., 2012). If a child's self-esteem is low, they are more prone to experience psychological

University of Delta Journal of Contemporary Studies in Education Vol. 1 No. 1 issues. Assessing a child's or adolescent's self-esteem aids in developing a solid counselling treatment plan (Hosogi et al., 2012). Self-esteem research is important in counselling because it has been linked to psychological well-being (Aloba et al., 2016; Sanchez & Barron, 2003). It has also been linked to the influence of the environment and family educational style (Alonso & Roman, 2005), academic achievement (Fathi-Ashtiani et al., 2007; Ferradas et al., 2020; Zare & Riasati, 2012), delinquent behaviours (Owens, 1994; Eremie & Chikweru, 2015).

Rosenberg (1965) claims that the RSES is one-dimensional. It means the scale is only measuring one key component. The RSES has been translated into several other languages (Galanon et al., 2014; Gomez-Lugo et al., 2016; Mimura & Griffiths, 2007). The instrument's widespread use and cross-cultural investigations in up to 53 countries (Gomez-Lugo et al., 2016; Hyland et al., 2014; Martin-Albo et al., 2007; Mckay et al., 2014; Quilty et al., 2006; Schmitt & Allik, 2005) have indicated that the scale has dimensional structural issues. According to certain studies, the scale is one-dimensional (Martin-Albo et al., 2007; Quilty et al., 2006; Schmitt & Allik, 2005; Wang et al., 2001). There have also been some studies findings that suggest the scale is bidimensional, with two variables (Galanou et al., 2014; Gomez-Lugo et al., 2016; Supple et al., 2012).

In Nigeria, the Rosenberg Self-Esteem Scale has been utilized in several investigations. The RSES has been used to address medical issues (Loto et al., 2010; Okoive et al., 2015; Okwaraji et al., 2019), security awareness (Ugwuegede et al., 2018), and dangerous sexual behaviour among teenagers (Ugwuegede et al., 2019; Enejoh et al., 2016). There is no evidence that the RSES was revalidated in their works. Due to the effect of culture and environment on psychological conceptions, revalidation of an existing scale in a nation is quite important. The Rosenberg Self-Esteem Scale was validated among adult samples in Nigeria by Oladipo et al. (2014.) Their findings revealed that the scale is unidimensional and that just four questions out of ten should be included on the scales if the RSES, designed for teenagers, is used on adult samples in Nigeria. The items are 2, 5, 6, and 9. They highlighted that one of their study's primary limitations was the small sample size (n=458) recruited from the adult population. It is necessary to utilize the actual population for which the scale was designed to determine its dimensionality in the Nigerian cultural milieu. For academics, counsellors, and instrument creators, the issue of dimensionality in the RSES has major implications. If the RSES contains two factors, a person may score differently on both, one high and the other low, and the findings of these two factors will be taken into account when interpreting the child's self-esteem level. Furthermore, if Item Response Theory (IRT) is used for further analysis, the results will be erroneous if dimensionality is not considered. Some IRT models can suit a unidimensional scale, and other IRT models can fit a multidimensional scale (like the bidimensional) scale (Peak & Cole, 2020).

It is critical to have self-esteem assessment tools tailored to our situation and have acceptable psychometric qualities. As a result, the RSES' dimensionality must be determined across population subgroups. The study also aims to group students into clusters depending on their self-esteem, making it easier to find the right counselling solution for each group. Clustering is one of the most often used data segmentation research methods (Chowdhary et al., 2020). Cluster analysis may be used to split a data collection into subgroups based on predetermined criteria. Cluster analysis is based on similarity and dissimilarity among people within groups in a particular data collection. It is a widely utilized marketing tactic

University of Delta Journal of Contemporary Studies in Education Vol. 1 No. 1 (Chowdhary et al., 2020; Dolnicar, 2008; Hub et al., 2006). It may be used to separate the population of students based on their behaviour and attitudes. By dividing the sample of students into subgroups, the counsellor will be able to identify the needs of each group and deliver counselling treatment tailored to their specific needs.

Research Questions

- 1. What is the dimensionality of the RSES across the population subgroup?
- 2. What is the nature of cluster forms based on the student's self-esteem?

Methods

Participants

The researcher randomly chose 20 schools from Delta State (seven from Delta South and Delta Central senatorial districts each, while six from Delta North Senatorial District). Students were randomly selected from the 20 secondary schools for this descriptive research. The final sample consisted of 700 secondary school students, with 52.1% of females and 23.1% of rural pupils. Students from private, public, and faith-based (mission) schools make up 26.1%, 49.3%, and 24.6% of the sample, respectively (see Table 1) Table 1

Demographic profile of the sample

Demographic prome of the sample			
Characteristics	Frequency n (%)		
Gender			
Male	335 (47.9%)		
Female	365 (52.1%)		
School Location			
Rural	162 (23.1%)		
Urban	538 (76.9%)		
School type			
Private	183 (26.1%)		
Public	345 (49.3%)		
Faith-based	172 (24.6%)		

Measure

The participants completed a study questionnaire that included basic demographic information and the Rosenberg self-esteem measure (RSES). Gender, school location, and school type are all variables in the questionnaire. The self-esteem of secondary school students was assessed using a 10-item scale that assesses the respondents' sense of self-esteem. The total score runs from ten to forty, with higher values indicating better levels of self-esteem. The RSES has been used to assess self-esteem in various Nigerian communities (Adewuya et al., 2009; Loto et al., 2010). After getting authorization from the school authorities, the researcher and three study assistants gave the questionnaire to the students. The students also granted their approval by consenting to participate in the study. The students spent an average of 10 minutes completing the survey.

Data Analysis

The demographic characteristics and scores on the research measures were explained using descriptive statistics. Confirmatory factor analysis (CFA) was utilized to determine the UDJCSE 3

University of Delta Journal of Contemporary Studies in Education Vol. 1 No. 1 number of latent factors underlying the scale. Two models were investigated, with two gender-related subgroups and the total sample. The following models were compared in particular. Model 1 is a unidimensional model with ten items. Model 2, with ten items and two linked components, appreciative (positively oriented items) and depreciative (negatively oriented items) (see figure 1). The two models were tested on the entire research sample, male and female samples. The number of clusters was confirmed using the hierarchical approach of cluster identification. Then the K-means clustering analysis was performed to validate the number of clusters previously found using the hierarchical method and to arrange the sample into clusters.

Model 1

Model 2



Note: SE= Self-esteem, POS= Appreciative, NEG= Depreciative Figure 1: Model 1 and Model 2 of the RSES

Results

The results of the tests carried out are reported in this section. Model fit for the confirmatory factor analysis model

Table 2				
Model fit test				
Model	χ^2/df	CFI	RMSES	TLI
Criteria	$1 < \chi^2/df < 3$	≥.90	≤.08<.1	≥.90
Total Sample				
Model 1	2.97	0.66	0.98	0.67
Model 2	2.98	0.92	0.083	0.97
Male Sample				
Model 1	2.01	0.74	0.91	0.76
Model 2	2.78	0.91	0.083	0.91
Female Sample				
Model 1	2.13	0.89	0.94	0.79
Model 2	2.84	0.92	0.08	0.94

Note. CFI= Comparative fit index; RNSEA= Root mean square error of approximation; TLI= Following the criteria for model fit (Table 2), model 1 (unidimensionality) had the worse fit across the three samples. Model 2 has a good fit across the three samples except for RMSEA in the female sample, which was outside the expected range.

Reliability test

Table 3					
The reliability test of	of key construct				
Sample	Construct	Ν	No. of	Cronbach's Alpha	Mc Donald's
			items	α	ω
Total Sample	Model 1	700			
	Self-esteem		10	0.634	0.677
	Model 2	700			
	Appreciative (SEP)		5	0.855	0.858
	Depreciative (SEN)		5	0.701	0.714
Male Sample	Model 1	335			
	Self-esteem		10	0.644	0.612
	Model 2	365			
	Appreciative (SEP)		5	0.871	0.889
	Depreciative (SEN)		5	0.771	0.782
Female Sample	Model 1	365			
	Self-esteem		10	0.692	0.610
	Model 2	365			
	Appreciative (SEP)		5	0.781	0.802
	Depreciative (SEN)		5	0.887	0.872

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The reliability test of the construct (Table 3) depicts that all the Cronbach's alpha (α) and McDonald's ω values were above the minimum threshold limit, i.e., above 0.6 (Mehra et al., 2020). However, the reliability index for model 2 was higher across the three samples.

Table 4							
Factor loa	ading o	f RSES fo	or the three	samples a	nd models		
Model	Item	Total Sample		Male Sample		Female Sample	
		Factor1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
Model 1	P1	.958		.994		.964	
	N2	.297		.355		.335	
	P3	.981		.932		.989	
	P4	.809		.805		.805	
N N F N	N5	.412		.371		.222	
	N6	.413		.471		.361	
	P7	.809		.842		.842	
	N8	.317		.399		.299	
	N9	.413		.311		.218	
	P10	.739		.756		.756	
Model 2	P1	.956		.991		.934	
	P3	.920		.902		.913	
	P4	.815		.810		.810	
	P7	.809		.841		.841	
	P10	.733		.752		.752	
	N1		.761		.911		.903
	N5		.498		.427		.394
	N6		.366		.911		.912
	N8		.565		.383		.391
	N9		.417		.357		.357

The factor loading for model 1 ranges from .297 - .958, .311 - .994, and .222 - .989 for the total sample, male sample, and female sample respectively. For model 2, the factor loading ranges from .366 - .956, .357 - .991, and .357 - .934 for the total sample, male sample, and female sample respectively. A good factor loading should be $\ge .35$. All the items in model 2 across the various samples had their loadings greater than .35. However, for model 1, items N2 and N8 (total sample), N2, N5, N8, and N9 (female sample) had loadings below .35. A look at these items revealed that the items measure negatively written items.

Segmentation of the secondary school students

The hierarchical clustering and the K-mean cluster classification resulted in a three-cluster classification.

Table 5

Factor loading

Number of clusters in the sample

Variables		Clusters		
	1	2	3	
	n=208	n=171	n=301	

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Appreciative (SEP)	.32630	-1.37491	.64697
Depreciative (SEN)	-1.24557	.39151	.61229
Self-esteem (SE)	46008	96750	.93186



Note: All scores for the variables were transformed to a Z score Figure 2: The three clusters for the sample

Table 5 and figure 2 show that the clusters can be described as Cluster one consists of students with low self-esteem. Cluster two consists of students with low self-esteem and low appreciative score. Cluster three consists of students with high self-esteem.



In favor of null: log_w(BF₀₁) = -1.38, a = 1.00





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In favor of null: log_w(BF₀₁) = -26.99, a = 1.00

Figure 3: Distribution of gender, school location and school types among the clusters

Most rural students are in cluster 3, while students from urban schools are evenly distributed among the three clusters. More than 40% of the male and female students are in cluster 3. While more than 30% of the male students are in cluster 2, more than 30% of the female students are in cluster 1. More than 40% of private, public, and mission school students are in clusters 1, 3, and 2.

Discussion

The factor structure of the 10-item RSES was investigated, and the sample segmentation was based on the variables. The sample is made up of Delta State secondary school students. According to the findings, the associated two-factor model performed better in various subsamples. The results differed from those predicted by the scale's producer. The RSES is one-dimensional (Rosenberg, 1965). However, according to various studies, the RSES is bidimensional (Galanou et al., 2014; Gomez-lugo et al., 2016). Even though the RSES has two elements, we found that the factors are connected and measure the key construct of self-esteem in this study.

The number of factors produced by a scale can be affected by social and cultural variables, and if the factors are linked, it becomes obvious. A scale must be revalidated before utilizing it in any socio-cultural environment. A scale could have two factors in one cultural setting, whereas it might only have one in another. According to Paek and Cole (2020), a scale might be one-dimensional in one sample but multidimensional in another. Researchers, counsellors, and psychologists will better understand secondary school students in Delta State self-esteem if they consider RSES to have two factors.

The scale has a high level of reliability. Both models have an internal consistency of more than.60. Model 2 had a higher reliability index. These reliability estimations were in line with the findings of previous investigations (Bagley et al., 1997; Galanou et al., 2014; Martin-Albo et al., 2007). Counsellors need improved solutions as teenage psychosocial difficulties become more prevalent. Segmentation is a good place to start, and then the

University of Delta Journal of Contemporary Studies in Education Vol. 1 No. 1 counsellor may target the appropriate section with a suitable counselling intervention. This research helps to show that secondary school students are not a homogeneous group. Three segments were discovered in this investigation. Counsellors can create treatments or therapies for these segments based on their characteristics.

All of the data in the study is mostly self-reported data. Second, because the scale was administered by trained research assistants rather than the researcher alone, there may be discrepancies in the scale administration technique. The researcher could not administer the questionnaire by herself because of the wide geographical spread of the sample. Furthermore, the sample only included one Nigerian state. As a result, caution should be applied when extrapolating the findings to other geographical locations in the country or the overall population. Despite these constraints, this appears to be the first study to evaluate the factor structure of the RSES using several models among Nigerian secondary school students and identify the clusters that exist within the study population. The researcher believes the scale is accurate and valid for measuring the fundamental characteristics of self-esteem among secondary school students in Delta State and other Nigerian states with similar socio-cultural settings. The scale was confirmed to be a bidimensional scale by the research. More research on the factors of this scale, employing samples from diverse socio-cultural settings throughout Africa, is needed. Studies on the psychometric features of the scale utilizing Item Response Theory are still needed.

Conclusion

The findings support the RSES' bidimensional structure. The scale reliability and validity are good. In addition, the sample was separated into three clusters to aid counsellors in delivering tailored counselling treatments and therapies. Consequently, the findings support using the RSES as a two-factor scale among Delta State secondary school students. Therefore, the counselling implications of this study are many, some of which are that counsellors can use the RSES to identify students with low self-esteem and provide the needed interventions. The tool will help to erase assumptions and guesses but empirically establish the need for help and counselling.

Recommendations

The following recommendations were made:

- Researchers and psychometricians should treat the RSES as a bidimensional scale when carrying out item analysis using Item Response Theory
- Researchers and counsellors should feel free to use the RSES to identify secondary school students' self-esteem levels.
- Counsellors should provide interventions for each of the identified clusters.
- When carrying out counselling in urban and rural settings among secondary school students in Delta State, the presence of these clusters should be considered. This consideration should extend to gender and school-type variance as it applies to the various clusters.
- Further studies should be conducted using different socio-cultural settings with other classes of students like university students.

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