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Examining the Psychometric Properties of the Rosenberg Self-Esteem Scale in Eritrean Youth

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Abstract

Self-esteem (SE) is one of the most widely studied constructs within the social sciences. While a variety of instruments and methods have been developed to assess SE, the Rosenberg Self-Esteem Scale (RSES) remains the most extensively used scale worldwide to evaluate SE. Although the RSES has been validated and utilized in numerous settings around the world, and despite its brevity and general ease of administration, it has only been used in a remarkably few settings in Africa. Moreover, to date, it has not been used to explore SE in any country within Northeast Africa. The present study, focusing on Eritrea, a young, developing country, examines the psychometric properties of a translated version of the RSES. The translated RSES was administered to a sample of young Eritreans. Results from the self-report questionnaires show that the translated RSES has a single factor structure, as well as demonstrates high internal consistency and reliability. Additionally, findings suggest that Eritrean youth generally have high SE, while one-way ANOVA results reveal a statistically significant difference in SE between male and female respondents. Specifically, male respondents had higher scores, and higher SE compared to female respondents. The translated RSES is a reliable and valid scale that is suitable and appropriate for use with young Eritreans.

Keywords

Africa, Eritrea, Reliability, Rosenberg Self-Esteem Scale, Self-Esteem, Validity

1. Introduction

Self-esteem (SE) is one's overall attitude or evaluative judgment, whether positive or negative, towards oneself (Brown, 2007; Coopersmith, 1967; Rosenberg, 1965). An important issue during youth and adolescence, SE is one of the most widely studied constructs in the social sciences (Tomas & Oliver, 1999), and it

has been examined in relation to general health and wellbeing, emotional functioning, and numerous other topics. For example, low SE has been associated with delinquency (Kaplan, 1980; Leung & Lau, 1989), eating disorders (Brechan & Kvalem, 2015; Button et al., 1997; Paterson et al., 2006), depression (Dori & Overholser, 1999; Rice et al., 1998), deterioration in mental health (Marshall et al., 2014), suicide (Wichstrom, 2000), and difficulty developing positive support networks (Marshall et al., 2015). Additionally, high SE has been associated with psychological well-being (Kususanto & Chua, 2012; Sánchez & Barrón, 2003), positive body image and body satisfaction (Abell & Richards, 1996; Frost & McKelvie, 2004; Gleason et al., 2000), life satisfaction and improved quality of life (Çivitçi & Çivitçi, 2009; Diener & Diener, 1995; Muñoz & Alonso, 2013), adaptation to the social environment (Silbereisen & Wiesner, 2002), emotional stability (Zeigler-Hill et al., 2015), and improved academic and work performance (Aryana, 2010; Ferris et al., 2010).

While a variety of instruments and methods have been developed to assess SE, the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) remains the most extensively used scale worldwide to evaluate SE (Blascovich & Tomaka, 1993; Gray-Little, Williams, & Hancock, 1997; Marsh, Scalas, & Nagengast, 2010; Robins, Hendin, & Trzesniewski, 2001). Notably, the RSES has been translated into dozens of languages, such as French (Vallieres & Vallerand, 1990), Italian (Prezza, Trombaccia, & Armento, 1997), and Persian (Shapurian, Hojat, & Nayerahmadi, 1987), and used within numerous countries, including Canada (Bagley, Bolitho, & Bertrand, 1997), Chile (Rojas-Barahona, Zegers, & Förster, 2009), Colombia (Gómez-Lugo et al., 2016), Estonia (Pullmann & Allik, 2000), Germany (Michaelides et al., 2016; Roth et al., 2008), Japan (Mimura & Griffiths, 2007), Singapore (Ang et al., 2006), and Spain (Martín-Albo et al., 2007), among many others (Schmitt & Allik, 2005).

However, although the RSES has been utilized in numerous settings around the world, and despite its brevity and general ease of administration, it has only been used in a remarkably few settings in Africa, such as Burundi (Fromont et al., 2017), Tanzania, the Democratic Republic of Congo, and South Africa (Schmitt & Allik, 2005; Westaway, Jordaan, & Tsai, 2015; Westaway & Maluka, 2005), and Nigeria (Oladipo & Bolajoko, 2014). Notably, to date, no research has examined SE utilizing the RSES within Northeast Africa. The present study, conducted in Eritrea, a young, developing country, explores the psychometric properties of a translated version of the RSES in a sample of young Eritreans (N = 253).

The present study is significant for several reasons. Given the dearth of studies on the RSES in Africa, the current study helps to increase understanding of the psychometric properties and cross-cultural validity of the RSES. As the first study exploring SE and the RSES in Eritrea and one of the few addressing these topics in the region, the present study also broadens the research spectrum and enhances existing literature and knowledge. Moreover, it provides a useful baseline or reference point for future studies or further research. Finally, while most

research on SE has tended to focus exclusively on young women, this study also offers some important insight into SE among young men.

The outline of the paper is as follows. The next section provides a general overview about the RSES. This is followed by an outline of the methods. Subsequently, the results and discussion are presented. The final section concludes.

2. The Rosenberg Self-Esteem Scale

The RSES measures levels of SE, or one's overall sense of worthiness as a person. The 10-item instrument involves a series of statements about positive and negative feelings or emotions. Participants are asked to rate their level of agreement with statements on a 4-point Likert scale (e.g., 1 = *strongly disagree*, 4 = *strongly agree*), with negative statements being reverse scored. Overall scores can range from 10 to 40, with higher scores reflecting higher SE.

Originally developed to measure SE within a sample of adolescent Americans, the RSES has become one of the most extensively used instruments to assess SE worldwide. Its popularity and widespread acceptance are based on several factors, including its brevity, simplicity, uncomplicated language, and general ease of administration (Bagley et al., 1997; Baumeister et al., 2003; Blascovich & Tomaka, 1993; Gray-Little et al., 1997; Green & Pritchard, 2003; Huang & Dong, 2012; Pullmann & Allik, 2000; Schmitt & Allik, 2005; Stormer & Thompson, 1996).

Notably, in numerous studies within different population groups and across a variety of settings, the RSES has demonstrated high levels of validity and reliability. Although the RSES was developed as a unidimensional scale, several studies have presented contradictory findings regarding its dimensional structure, with some studies supporting one dimension while others supporting a two dimension structure (Martín-Albo et al., 2007; Bagley et al., 1997; Hyland et al., 2014; Kaplan & Pokorney, 1976; Pullmann & Allik, 2000; Rojas-Barahona et al., 2009; Tomas & Oliver, 1999).

However, despite its general simplicity, effectiveness, and widespread use globally, the RSES has only been utilized in a remarkably few settings within Africa. To date, it has not yet been used in any studies of SE in Northeast Africa. The present study, the first of its kind in Eritrea and one of the few addressing the RSES or SE in the region, examines the psychometric properties of a translated version of the RSES in a sample of young Eritreans.

3. Methods

Using the *Back Translation* method (Berry, 1989; Brislin, 1986; Sousa & Rojjanasrirat, 2011), the RSES was translated into Tigrigna, one of Eritrea's national working languages and the most widely spoken language in the country. The RSES was first translated into Tigrigna by an interdisciplinary group of bilingual professionals and experts, all of whom possess considerable experience. Subsequently, it was blindly translated back into English by another group of bilingual

professionals and experts. Discrepancies in translation were identified and resolved through discussions and coming to a consensus. Prior to distribution, a draft of the translated RSES was also pilot tested on a small sample of high school and university students in order to identify potential interpretation or comprehension difficulties and improve the final version.

Self-report questionnaires, comprising the translated RSES, as well as a brief section about basic demographic information (e.g., age, gender, etc.), were randomly distributed to students enrolled in a large high school located within a large city in the central region of Eritrea. Participants were given instructions and provided consent forms prior to completing questionnaires during the class time of a required course. In total, 253 students completed questionnaires (mean age = 17.29, SD = 0.96). Generally, students require only a few minutes each to complete the questionnaire, while questions raised were minimal.

For analysis, descriptive statistics were examined, while a one-way analysis of variance (ANOVA) procedure was conducted in order to determine possible differences in SE between male and female respondents. Internal consistency and factor structure of the translated RSES were explored as follows.

Internal Consistency and Reliability

Internal consistency and reliability was measured in several ways. First, Cronbach's alpha was calculated. The most popular and widely used statistical test to measure internal consistency, Cronbach's alpha reflects the extent to which items within an instrument measure various aspects of the same characteristic or construct. Cronbach's alpha ranges in value between zero and one, with values closer to one indicating higher internal consistency and values closer to zero indicating lower internal consistency (Connelly, 2011; Cronbach, 1951; Litwin, 2003; McMillan & Schumacher, 2001; Nunnally & Bernstein, 1994).

Additionally, item-to-scale correlations and inter-item correlations were calculated. Inter-item correlations are also standard within the literature. They examine the extent to which scores on one item are related to scores of all other items in a scale, while item-to-scale correlations examine the extent to which scores on one item are related to the scale overall. If a scale is internally consistent and measures a single latent construct, items within the scale should correlate with the overall scale and they should be positively correlated (Clark & Watson, 1995; Cohen & Swerdlik, 2005; DeVellis, 2003; de Vet et al., 2011).

Factor Structure

To examine the factor structure of the translated RSES, exploratory factor analysis using principal component analysis (PCA) with varimax rotation was conducted. PCA is a powerful and commonly used statistical technique that helps to identify the possible underlying factor structure of a set of observed variables or items (Child, 1990; Furr & Bacharach, 2013; Sarstedt & Mooi, 2019). The sample size (N = 253) was sufficiently large to conduct PCA (Comrey & Lee, 1992; Gorusch, 1983; MacCallum et al., 1999), while the suitability of the sample and data for PCA was assessed through conducting the standard Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity. The results of the

KMO test (KMO = 0.902) and the Bartlett's test ($\chi^2 = 563.314$; df = 45; $p = 0.000$) demonstrated that the data are appropriate for performing PCA (Field, 2009; Kaiser, 1974; Sarstedt & Mooi, 2019; Williams, Brown, & Onsman, 2012) (see **Table 1**).

Factor selection and extraction was determined by the Kaiser-Guttman criterion, which extracts all factors with an eigenvalue greater than 1, and the scree plot method, which provides a visual display to help determine the number of factors to retain. Both methods are standard and conventional (Comrey & Lee, 1992; DeVellis, 2003; Li et al., 2019; Westaway et al., 2015; Zwick & Velicer, 1986). The minimum factor loading value for an item to load on a given factor was ≥0.50, as recommended by a large body of literature (Comrey & Lee, 1992; Norris & Lecavalier, 2010; Tabachnick & Fidell, 2007).

4. Results

Eritrea—General Country Background

Eritrea is a young, low-income country located within the Horn of Africa. After waging one of Africa's longest liberation wars of the 1900s, it eventually gained independence in 1991. Eritrea has an area of approximately 124,000 square kilometers, and is divided into six main political administrative regions. The country has a population of approximately 3.5 million people, which is distributed between nine separate ethno-linguistic groups, and its per-capita GDP is approximately $US 780. The population of Eritrea is split almost evenly between Christianity and Islam, with each representing nearly half of the population (EPHS, 2010; IMF, 2016; World Bank, 2018) (see **Figure 1**).

Figure 1. Eritrea geographic setting. Image credit: https://commons.wikimedia.org/wiki/File:LocationEritrea.svg.

Table 1. KMO and Bartlett's test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.902
Bartlett's Test of Sphericity	Approx. Chi-Square	563.314
	df	45
	Sig.	0.000

Eritrea has made commendable progress within the health sector: life expectancy has increased; maternal, infant and child mortality rates have reduced dramatically; immunization coverage has rocketed; malaria mortality and morbidity have plummeted; and HIV prevalence has decreased considerably (Eritrea MDG, 2014; Pose & Samuels, 2011; UNDP, 2014; WHO, 2017). Although these developments reflect considerable progress, the country continues to face a variety of significant issues, including regional conflict and instability, poverty reduction, socio-political challenges, erratic rainfall and the potential for severe drought, infrastructure development, food security, a shortage of skilled labor, and macroeconomic imbalances (AfDB, 2016; EPHS, 2010; Eritrea MDG, 2014; IMF, 2003; Pose & Samuels, 2011; World Bank, 2018).

Table 2 shows that the respondents' total scores on the translated RSES ranged from 17 to 40, with a mean of 31.16. This mean is relatively high and quite similar to the means reported by a number of other studies from different countries (Bagley et al., 1997; Gómez-Lugo et al., 2016; Martín-Albo et al., 2007). The mean total score reported here is also noteworthy and interesting since previous work has suggested that in many collectivistic cultures, such as Eritrea's, lower total scores and levels of SE can be expected since individuals may be more self-critical or less likely to assert an independent self (Brand, 2004; Bond & Cheung, 1983; Feather & McKee, 1993; Li et al., 2019; Page & Cheng, 1992; Twenge & Crocker, 2002). However, the relatively high total scores reported in the present study may be attributable to several factors. First, while Eritrea has traditionally had a collectivistic culture, there is also a great sense of pride, independence, confidence, and self-reliance permeating the society. Moreover, Eritreans, particularly youth, have been increasingly exposed to Western norms and cultural influences (through mass media and information and communication technologies, for example), which may be leading to or encouraging a greater sense of individualism, independence, and self.

Table 2. Translated RSES scores among Eritrean youth.

N	Total: 253 Males: 100 (39.53%) Females: 153 (60.47%)				
Age	Mean: 17.29 SD: 0.96				
Average Score on RSES	31.16				
Maximum	40				
Minimum	17				
One-way Analysis of Variance (ANOVA)					
	Males	Females	*F*	*p*-value	*F-crit*
Rosenberg Self-Esteem Scale	Mean: 32.29	Mean: 30.42	9.02	0.003***	3.88

***$p < 0.01$.

A large body of work has reported that males have higher scores on the RSES, and thus higher SE, than females (Bagley et al., 1997; Kling et al., 1999; Martín-Albo et al., 2007; Robins et al., 2001; Verkuyten, 2003). A one-way ANOVA was conducted in order to determine possible differences in SE between male and female respondents. The results are displayed in **Table 2**. The average score for males was 32.29 and for females 30.42. Results from the one-way ANOVA reveal a statistically significant difference in scores between the two groups. Specifically, males had significantly higher total scores on the translated RSES than females ($F = 9.02$; $p = 0.003$).

The one-way ANOVA results indicate that males have significantly higher SE than females, which is consistent with the general literature. This finding can be partly explained by socio-cultural norms, traditional gender roles, and stereotypical socialization. Throughout much of its history, Eritrea has been a highly conservative and tradition-bound country, with strong patriarchal ideologies. Historically, deeply-rooted socio-cultural norms regarded females as less intelligent than and subordinate to males, and both expected and encouraged them to be deferential, humble, modest, and reserved. In contrast, males were expected to be strong, independent, assertive and confident, while also encouraged to not display emotion, or show signs of fear and weakness. Although considerable and perceptible socio-cultural changes have unfolded in the country in recent years, these longstanding socio-cultural expectations and patriarchal norms continue to exist to some degree. Thus, they may exert a significant influence and still have bearing on the SE of young males and females.

The Cronbach's alpha coefficient for the translated RSES, shown in **Table 3**, was 0.82. This is well above the commonly suggested threshold of 0.70, and reflects a high and satisfactory level of internal consistency (George & Mallery, 2003: p. 231; Hair, Ringle, & Sarstedt, 2011; Litwin, 2003; Nunnally & Bernstein, 1994). Importantly, deleting any individual item did not result in a higher alpha of the scale, demonstrating the suitability for retaining each of the items. **Table 3** also presents the inter-item and item-scale correlations for the translated RSES. As the results illustrate, while the individual items in the scale are relatively homogenous and do not reflect too broad or diverse a construct, they are suitably unique and do not indicate great overlap or redundancy (Allen & Yen, 2002; Clark & Watson, 1995; Cohen & Swerdlik, 2005).

Notably, the results presented in **Table 3**, including both the Cronbach alpha coefficient and the various correlation values, are comparable and very similar to both the original RSES as well as studies using the RSES in other countries (Blascovich & Tomaka, 1993; Campbell et al., 1996; Gómez-Lugo et al., 2016; Martín-Albo et al., 2007; Pelham & Swann, 1989; Rosenberg, 1965; Schmitt & Allik, 2005; Vallieres & Vallerand, 1990).

The results of the PCA, presented in **Table 4**, suggest a one factor solution. The single factor had an eigenvalue of 3.89 and accounted for 38.903% of the variance. Each of the items on the translated RSES was strongly loaded onto this first factor (≥0.50). No other factors had eigenvalues greater than 1 and each

Table 3. Internal consistency and reliability of translated RSES.

RSES Item and Scale Correlations											
	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Scale
Item 1	1										
Item 2	0.43	1									
Item 3	0.39	0.38	1								
Item 4	0.28	0.33	0.37	1							
Item 5	0.36	0.38	0.30	0.30	1						
Item 6	0.37	0.41	0.32	0.36	0.35	1					
Item 7	0.24	0.26	0.24	0.25	0.27	0.23	1				
Item 8	0.40	0.39	0.30	0.30	0.27	0.36	0.26	1			
Item 9	0.29	0.29	0.23	0.34	0.34	0.28	0.25	0.36	1		
Item 10	0.35	0.30	0.32	0.31	0.29	0.34	0.27	0.33	0.37	1	
Scale	0.65	0.68	0.60	0.62	0.62	0.67	0.50	0.68	0.60	0.60	1
Cronbach α—Scale				0.82							
Cronbach α if Item 1 deleted				0.79							
Cronbach α if Item 2 deleted				0.79							
Cronbach α if Item 3 deleted				0.80							
Cronbach α if Item 4 deleted				0.80							
Cronbach α if Item 5 deleted				0.80							
Cronbach α if Item 6 deleted				0.79							
Cronbach α if Item 7 deleted				0.81							
Cronbach α if Item 8 deleted				0.80							
Cronbach α if Item 9 deleted				0.80							
Cronbach α if Item 10 deleted				0.80							

Table 4. PCA results of translated RSES.

	Eigenvalue	% of Variance
Component 1	3.89	38.903
Component Matrix		Component 1
Item 1		0.67
Item 2		0.69
Item 3		0.62
Item 4		0.61
Item 5		0.62
Item 6		0.65
Item 7		0.50
Item 8		0.64
Item 9		0.60
Item 10		0.62

explained only small amounts of variance. An examination of the scree plot indicates a one factor structure which, being consistent with the Kaiser-Guttman criterion, suggests that one factor is most appropriate. The single factor structure demonstrated by the translated RSES generally aligns with most of the international literature on the RSES reporting that SE is represented by a unitary latent construct (Corwyn, 2000; Gray-Little et al., 1997; Huang & Dong, 2012; Martín-Albo et al., 2007; Mimura & Griffiths, 2007; Pullmann & Allik, 2000; Tomas & Oliver, 1999; Westaway & Maluka, 2005).

5. Conclusion

SE is one of the most widely studied constructs in the social sciences, and the RSES remains the most extensively used scale worldwide to evaluate SE. However, although the RSES has been utilized in numerous settings around the world, and despite its brevity, effectiveness, and general ease of administration, it has only been used in a remarkably few settings in Africa. The present study aimed to examine the psychometric properties of a translated version of the RSES in a sample of young Eritreans.

PCA results reveal that the translated RSES has a single factor structure, which accounts for 38.903% of the variance. The translated RSES also demonstrates high internal consistency and reliability. Additionally, findings suggest that Eritrean youth generally have high SE, while one-way ANOVA results reveal a statistically significant difference in SE between male and female respondents. Specifically, male respondents had higher scores, and higher SE compared to female respondents. Notably, the findings from the present study are highly consistent with the original RSES, as well as much of the extant literature which has explored the RSES within different settings around the world.

In conclusion, the present study presents strong evidence that the translated RSES is a reliable and valid scale that is appropriate for use with young Eritreans. Given its overall ease of administration and understanding, as well as its brevity, the scale may be a practical and valuable tool in research and clinical settings in the country. Moving forward, more work and research on the RSES, and SE more generally, is greatly merited. Future research incorporating the translated RSES can help to increase knowledge and understanding of SE in the country, which are still quite limited, while the translated RSES may be useful in clinical or practice settings. For instance, it can help in screening and identifying youth with low SE who may be at risk of social or mental health problems, such as depression.

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Conflicts of Interest

There are no conflicts of interest to declare.

Ethics and Consent

Data supporting the conclusions of this article is available from the corresponding author and can be accessed upon reasonable request. All procedures performed were in accordance with the 1964 Helsinki Declaration and its later amendments. Permission for the study was granted by the National Ministry of Information (Asmara) and administrative bodies of all institutions. Informed consent was obtained from all participants.

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