Reliability and Validity of the Self-Esteem Scale in Greek Educational Context

Karapanagiotou[1] A., Rokka[2] St., Filippou[3*] F., & Bebetsos[4] E

[1]*Democritus University of Thrace, Department of Physical Education & Sport Sciences, Campus Komotini, 69132,*
[2]*Democritus University of Thrace, Department of Physical Education & Sport Sciences, Campus Komotini, 69132, Greece*
[3]*Democritus University of Thrace, Department of Physical Education & Sport Sciences, Campus Komotini, 69132, Greece*
[4]*Democritus University of Thrace, Department of Physical Education & Sport Sciences, Campus Komotini, 69132, Greece*
*CorrespondingAuthor

Abstract: The aim of this research was to confirm the Greek version of the Rosenberg Self-esteem Scaleon Middle School students and to explore gender and age (class attendance) as factors that differentiate self-esteem. The internal consistency has also been examined. The survey involved 160 male and female school students. The scale consisted of ten (10) items in total, out of which five (5) measure the positive and five (5) the negative emotions of participants. Data analysis included among others: descriptive and inferential statistics, confirmatory factor analysis, reliability analysis, discriminant and convergent validity, t-test for independent sample, and one-way ANOVA analysis. The results of the confirmatory factor analysis demonstrated that the hypothesized model produced a significant $\chi2$ (134.75), normed fit index (.90), and comparative fit index (.92). The root mean square error of approximation (.59) has also been considered to assess the degree of fit of the model. Composite reliability (> .919) and variance extracted (> .533) of the Self-esteem Scale demonstrated an acceptable reliability coefficient. Results analysis revealed the following conclusions: a. The Rosenberg's Self-esteem Scale in its Greek adaptation for ages 12-15 consists of only one factor that examines overall self-esteem. b. Gender does not differentiate self-esteem at these ages. c. The attendance class does not differentiate the self-esteem of high school students.

Keywords: middle school; anxiety; self-confidence; body image.

1. Introduction

According to Harter (2006), even if there is no single definition of self-esteem since it has been attributed in many ways by the researchers who have dealt with it, the various definitions do not have major differences as will be proven below. Cooley (1902), one of the first having dealt with the concept of self-esteem, defines it as the overall attitude that the individual has towards himself, regardless of personal judgments concerning specific aspects of his life. Rosenberg in 1965 defines self-esteem as the positive or negative attitude that one forms towards oneself, while for Coopersmith (1967), self-esteem refers to the value that the individual attributes to himself and which is expressed through the attitudes that the individual himself develops towards himself. To a significant extent its acquisition contributes the full acceptance that the person had from his parents in childhood as well as from the degree of self-esteem that his parents had for themselves.

Similar views have been expressed by Frost and McKelvie (2005) as well as by Sedikides and Gress (2003). More specifically, the former consider self-esteem as the overall appreciation that a person has for himself while the latter treats it as the degree of evaluation of his worth, self-respect, and self-confidence as well as the degree of positive or negative views that one has about oneself.

According to Altmann and Roth (2018), even though the most widespread and much-used scale that measures self-esteem is the one proposed by Rosenberg (1965), there are still some problems in dealing with and measuring it. According to the authors, Rosenberg treats self-esteem as an individual trait with fluctuations, while Altmann and Roth perceive these fluctuations as an error in their measurement since they believe that there must be stability in their measurement. Nevertheless, the Rosenberg's scale was translated and used in many countries including France (Gana, Alaphilippe, & Bailly, 2005), Germany (Roth, Decker, Herzberg, & Brahler, 2008), Spain (Martín-Albo, Núñez, Navarro, & Grijalvo, 2007), Italy (Confalonieri, Gatti, Ionio, & Traficante, 2008), United Kingdom (Dhingra, 2013), Portugal (Tagarro & Galinha, 2016). According to the above researchers, as well as with many others, Rosenberg's scale presented problems in adapting it to a

single dimension. This problem was already known since 1976, when Hensley and Roberts were trying to use a/the scale, discovered through data statistical analysis, that the scale is actually composed of two factors instead of one, as Rosenberg claimed. Other researchers, such as Wang, Siegal, Falck, & Carlson (2001), decided to use only the five positive items of the scale, while some others used only the negative ones (Gana, Alaphilippe, & Bailo, 2005; Motl & DiStefano, 2002). A different solution was proposed by Greenberger, Chen, Dimitrieva, and Farruggia (2003) who chose to keep all the ten (10) items of the scale and name the two factors positive and negative self-esteem.

Therefore, this study aimed to confirm the Greek version (Galanou, Galanakis, Alexopoulos, & Darviri, 2014) of the Self-esteem Scale (RSES) (Rosenberg, 1965). More precisely, the paper tried to explore gender and class attendance as factors that differentiate self-esteem. Finally, the internal consistency has also been examined.

2. Materials and Methods

2.1 Participants
The survey involved a total sample of 160 middle school students – 85 males (53.13%) and 75 females (46.87%) - who attended school in the region of Eastern Macedonia - Thrace. From them, 50 (28 or 17.5% male and 22 or 13.75% female students) attended the 7th grade, 56 (27 or 16.88% male and 29 or 18.13% female students) the 8th grade, and 54 (30 or 18.75% male and 24 or 15% female students) the 9th. The selection process of the sample was as follows: in the beginning the schools that would participate in the survey have been selected via lottery, followed by student's selection also via lottery procedure.

2.2 Procedure
Researchers asked and got the permission of the Ethics Committee of the Democritus University of Thrace (Greece) in order to be able to undertake the survey. Afterwards, permission has been requested from the Ministry of Education in order for the research to be conducted in schools.

2.3 Measurement instrument
For data collection, the Greek version (Galanou, Galanakis, Alexopoulos & Darviri, 2014) of the Rosenberg Self-esteem Scale (RSES; 1965) has been used. According to Ciarrochi, Heaven, and Fiona (2007), the scale was designed for middle and high school students but over the years it was also used in surveys involving adults.The scale consists of ten (10) items, of which five (5) are measuring the positive and five (5) the negative emotions of participants.

The answers were given in a four-point Likert type scale, where one stood for "absolutely disagree", 2= "disagree", 3= "agree" and 4= "absolutely agree". The total score of self-esteem is calculated from the sum of the 10 items, after having reversed the answers of the five questions that measure negative emotions, so that all ten answers are in the positive direction.The score can range from 10, the lowest, to 40, the highest.According to Rosenberg (1965), the higher the score, the greater the self-esteem of the person.

The scale was used with very good behavior in Greece (Cronbach's a.81) (Galanou, Galanakis, Alexopoulos & Darviri, 2014), in Spain (Cronbach's a.85) (Martín- Albo, Nunez, Navarro, & Grijalvo, 2007)and Francophone Canada (Cronbach's a.70) (Vallieres & Vallerand, 1990).

2.4 Statistical Analysis
For the data collection the following statistical analysis have been performed:
a. descriptive and inferential statistics,
a. confirmatory factor analysis: The fit indices, which were considered, and their acceptable values are: namely minimum discrepancy ($\chi 2$), df, $\chi 2/df<5$, RMSEA<.08, SRMR<.05, CFI>.90, and NFI>.90 (Bentler, 1990),
b. reliability analysis, discriminant, and convergent validity,
c. t-test for independent sample,
d. One-way Anova analysis.

3. Results

To control data's and variables' suitability, the criteria such as the partial correlation coefficient (KMO - Kaiser- Myer – Olkin) and Bartlett's Test of Sphericity (Hair, Black, Babin, Anderson, & Tatham, 2009; Teixeira, Rosado, & Nunes, 2020), and Measure of Sampling Adequacy (MSA) have been used.

From the results' analysis it is obvious that the statistical criterion of Kaiser-Meyer-Olkin is remarkably high (.894) and indicates a high enough correlation between the data of research. Moreover, from the values

Bartlett's Test of Sphericity (Approx Chi-Square =933.62, df =45, p=.000) has been rejected the zero hypothesis that correlation's table is the unitary one. The value of "Measure of Sampling Adequacy" (MSA) has been considered and according to the results, all the indicators are within the limits -the index ranges between .864 the lowest, and .942 the highest- (Hair, Anderson, & Tatham, 1998).

A Confirmatory Factor Analysis via LISREL 8.80 was conducted to further examine the structure of the Greek version of the Rosenberg Self-esteem Scale. The hypothesized model consists of one latent variable, namely "Self-esteem". The results of the confirmatory factor analysis demonstrated that the hypothesized model produced a significant $\chi2$ (134.75), and $\chi2/df$ (134.75/35) = 3.85, p = .001. The NFI and CFI were found to be .90 and .92, respectively. The RMSEA value for the hypothesized model was found to be .059 and SRMR = .044.

The factor showed particularly good reliability since the CR index takes value .919. In terms of discriminant and convergent validity, the AVE index showed a marginally acceptable value of .533 (Table 1).

Table 1. Composite reliability and average variance extracted

Factor: Self-esteem	Factor loading	Composite reliability	Average variance extracted
On the whole, I am satisfied with myself	.72		
At times I think I am no good at all	.74		
I feel that I have a number of good qualities	.74		
I am able to do things as well as most other people	.72	0.919	0.533
I feel I do not have much to be proud of	.68		
I certainly feel useless at times	.72		
I feel that I'm a person of worth, at least on an equal plane with others	.66		
I wish I could have more respect for myself	.77		
All in all, I am inclined to feel that I am a failure	.74		
I take a positive attitude toward myself	.80		

3.1 Differences in relation to gender

The Independent-sample t test analysis was applied to check whether there were statistically significant differences in the self-esteem between boys and girls. The results showed that there was no statistically significant difference due to the gender of the sample (Table 2).

Table 2. Means and Standard deviation in relation to self-esteem according to gender

Factor	Total		Boys		Girl		Significance	
Self-esteem	*M*	*SD*	*M*	*SD*	*M*	*SD*		
	3.36	.57	3.42	.54	3.30	.60	$t_{(158)}$=1.36	p=.335

3.2 Differences in relation to class attendance

In order to determine whether there were statistically significant differences in the self-esteem of students' in relation to class attendance, the one-way ANOVA analysis was performed. The results showed that there were not statistically significant differences due to the age/class attendance for the factor self-esteem of the sample (Table 3).

Table 3. Means and Standard deviation in relation to self-esteem according to class attendance

Class attendance	M	SD	Significance
7th	3.39	.54	$F_{(2,157)}$=.167 p=.847
8th	3.33	.66	
9th	3.37	.51	
Total	3.36	.57	

4. Discussion

Self-esteem is a crucial factor for human existence since it determines a successful course in every period of people's lives. This becomes even more pronounced at young ages since during that period the foundations for a successful adult lifeare laid (Amariotakis, 2021).

The results of the confirmatory analys is revealed the existence of only one factor that explores the overall self- esteem. The results contradict the results of other surveys (Green bergeretal., 2003; Prezzaetal.,1997), as well as the ones of Galanou, Galanakis, Alexopoulos, and Darviri (2014) according to which the scale is composed of two related factors. This is probably due to both cultural differences and the age of the sample since, especially in the research of Galanou, Galanakis, Alexopoulos, and Darviri (2014), the sample consisted of adult students while in the present research students aged between 12 and 15 years old. At this point, it needs to be noted that during the completion of the questionnaires, the researchers asked students if there was any wording that they did not understand and needed further explanation.Regarding the internal coherence of the factor and thus the scale, the indicators considered were Composite reliability and Average variance extracted. The values obtained by both indicators prove the very good internal coherence of the factor, while they confirm at the same time the structural validity of the factor, i.e. the existence of a factor.

The levels of self-esteem are particularly high since Mean is 3.36 with the highest possible value being 4. This value was formed by both boys and girls since gender is not a factor in differentiating self-esteem. This result is in line with Papanis' view (2011) that gender does not differentiate general self-esteem. However, it differentiates individual elements of self-esteem such as interpersonal relationships or what success is. It is important to notice that there is no common point, and opinions varying regarding how they perceive themselves. Similar results have been seen in the group of study which does not differentiate participants' self-esteem. According to Papanis (2011), at these ages self-esteem may change day by day and depend directly on failure or success in areas of direct interest to adolescents.

Results analysis, revealed the following conclusions: a. The Rosenberg's Self-esteem Scale in its Greek adaptation for ages between 12 and 15 consisted of only one factor that examines the overall self-esteem. b. Gender factor does not differentiate self-esteem at these ages. c. The class attendance does not differentiate the self-esteem of middle school students.

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