

# The First Self-Administered Survey in North Korea: A Glimpse of Self-Esteem of North Koreans Compared with Peers in 53 Other Countries<sup>1</sup>

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**Abstract:** The survey findings in the paper<sup>2</sup> provide a glimpse, for the first time in social science, of how people in Democratic People's Republic of Korea (DPRK, also known as North Korea) that many consider "a hermit kingdom" perceive their own self-esteem and how that compares with the self-esteem of peers in scores of collectivist and individualist countries, including the United States and Republic of Korea (ROK, also known as South Korea). The PSI Institute for Data Science and Interdisciplinary Research (PSI) conducted this rare survey in DPRK. Launched in the summer of 2012 in DPRK, the PSI offers an interdisciplinary, intensive teaching program of survey methodology and survey statistics for university students and professionals in developing countries. Held initially at DPRK's only private and international university, the PSI brought together a teaching faculty of 13 international scholars to do pro bono teaching of survey methodology and interdisciplinary research to more than 250 DPRK undergraduate and graduate students. Arriving from Switzerland, Germany, Australia, Qatar, Britain, and the United States, the PSI faculty planted the seeds of science diplomacy for potential future leaders of survey methodology in East Asia. The PSI faculty conducted a self-administered survey of students at a privately-funded international university, assessing their self-esteem based on the Rosenberg Self-Esteem Scale (RSES), the most widely used self-esteem measure in social science research.

**Key Words:** self-administered survey, cross-cultural survey methodology, North Korea, self-esteem, Rosenberg

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<sup>2</sup> The DPRK survey data collected for the paper will be publicly released in the ISR Foundation website, [www.isr2020.org](http://www.isr2020.org).

## 1. Introduction

Launched in July 2012, the PSI Institute for Data Science and Interdisciplinary Research (PSI) has instructed undergraduate and graduate students in the Democratic People's Republic of Korea (DPRK, also known as North Korea) in statistics and research methodology classes. In 2012, PSI conducted a survey using the Rosenberg Self-Esteem Scale (RSES) with 252 students in the DPRK. The survey was the first ever in social science history to measure and study self-esteem in the DPRK, a country known as the "hermit kingdom." Much is unknown and remains elusive when it comes to the North Korean people and their own self-esteem. This study assesses the feasibility of the use of the RSES to measure self-esteem in a sample of North Koreans and, where possible, compares the DPRK self-esteem with similar samples from countries of diverse characteristics. We begin the following section with an in-depth review of literature relevant to self-esteem, turns to the research questions and describes the methodology and data used to answer the proposed research questions. We present and discuss findings based on descriptive and multivariate analysis, and conclude the paper.

## 2. Literature Review

### 2.1 Overview of the Rosenberg Self-Esteem Scale (RSES)

The RSES is the most widely used measure of self-esteem in social science research (Heatherton & Wyland, 2003). It was developed by sociologist Morris Rosenberg (1965), who defined self-esteem as the overall positive or negative evaluation of one's worth. Self-esteem is one of the components that form self-concept, which Rosenberg defined as the "totality of the individual's thoughts and feelings with reference to himself as an object" (Rosenberg, 1979).

Thus self-esteem is closely tied to four principles of self-concept formation: reflected appraisals, social comparisons, self-attributions, and psychological centrality (Rosenberg & Pearlin, 1978). People constantly gauge others' perceptions of them during social interactions, and the reflected appraisals formed from this process influence their own sense of self (Jaret, Reitzes & Shapkina, 2005). The social comparisons component suggests that relative social status compared to others has a significant role in the formation of self-concept. Self-attribution is the process of observing and evaluating one's own actions and behavior and tends to have a self-serving bias. Psychological centrality involves the relative importance of different traits or skills in forming global self-esteem, which is the attitude of an individual toward the self as a totality. Performance in skills that one values highly is more likely to affect self-esteem than performance in areas that one does not care as much about.

The RSES, a Likert-type scale with 10-items as shown in Table 1, was originally developed with a sample of 5,024 high school juniors and seniors from 10 high schools in New York State. The main goal of the study was to specify the effect of social factors on self-esteem and the influence of self-esteem on behavior (Rosenberg, 1965).

Table 1. *The Rosenberg Self-Esteem Scale (RSES)*

	<b>1 = Strongly Agree</b>	<b>2 = Agree</b>	<b>3 = Disagree</b>	<b>4 = Strongly Disagree</b>
1. On the whole, I am satisfied with myself.	SA	A	D	SD
2. At times I think I am no good at all.	SA	A	D	SD
3. I feel that I have a number of good qualities.	SA	A	D	SD
4. I am able to do things as well as most other people.	SA	A	D	SD
5. I feel I do not have much to be proud of.	SA	A	D	SD
6. I certainly feel useless at times.	SA	A	D	SD
7. I feel that I'm a person of worth.	SA	A	D	SD
8. I wish I could have more respect for myself.	SA	A	D	SD
9. All in all, I am inclined to think that I am a failure.	SA	A	D	SD
10. I take a positive attitude toward myself.	SA	A	D	SD

NOTE: Source - Rosenberg (1965).

## 2.2 Drivers of Self-Esteem

What determines self-esteem? Rosenberg observed that self-esteem is subject to external influences and that it affects one's evaluation of one's worth, thus leading to a positive or negative orientation towards oneself. His findings with the RSES suggest that social structural factors, such as families, communities, race, and ethnicity, relate to self-esteem (Rosenberg, 1989). Rosenberg's studies of self-esteem in youth from different economic classes, religions, and ethnicities showed that the subculture of broad social groups is a more likely factor in self-esteem than the prestige rank of those groups. Students who have been raised in a dissonant social environment, where their social group is a minority, are more likely to have low self-esteem compared to those who have been raised in an environment where their social group was the majority or a mixed environment due to experiences of prejudice and cultural dissimilarity. The neighborhood has a larger influence on a child's self-esteem than broader society does (Rosenberg, 1989).

The impact of any given component on global self-esteem will depend on its importance to the individual, according to the concept of psychological centrality. For example, Rosenberg and Pearlman (1978) showed that the more importance an individual places on money, the stronger the relationship between the individual's income and self-esteem. The same principle applies to socioeconomic status, academic performance, and other possible factors of self-esteem. Self-esteem partly derives from the ability to adhere to sociocultural norms. In the case of gender, assuming that gender is a social construction, the basis of self-esteem differs for men and women just as different racial groups base their self-esteem in different criteria (Josephs, Markus & Tafarodi, 1999). Men have a more autonomous, independent, or individualistic sense of self, whereas women have a more collectivist, ensemble, or connected self. Women with high self-esteem feel more interdependent and connected with others, and men with high self-esteem feel more independent and separate from others. The definition of self-esteem differs for men and women because they adhere to different cultural norms.

### **2.3 Correlates of Self-Esteem**

Effects of high self-esteem include enhanced initiative and happiness, whereas low self-esteem has been found to be related to depression (Baumeister, Campbell, Krueger & Vohs, 2003). Though studies have found a correlation between adolescent self-esteem and delinquency, school performance, and depression, it is unclear whether they are causes or effects. The negative effect of depression on self-esteem is greater than the effect of self-esteem on depression (Rosenberg, Schooler & Schoenbach, 1989). People with low self-esteem are more likely to suffer anxiety. Four factors associated with self-esteem—instability of the self-image, presenting self, vulnerability, and feelings of isolation—contribute to the relationship between self-esteem and anxiety (Rosenberg, 1965). In Sinclair's study of self-esteem across demographic groups within the US, RSES was negatively correlated with neuroticism but positively correlated with extraversion, openness, and conscientiousness (Sinclair et al., 2010).

Self-esteem affects social position. People with low self-esteem are less likely to be active participants or leaders in formal and informal groups because they are less likely to gain respect from others and are relatively unassertive. People with low self-esteem are also relatively uninterested in public affairs, but even those who are interested are less likely to discuss their views because of their interpersonal attitudes. Those with low self-esteem tend to turn their interests inward, leading to apathy about public affairs. This characteristic could have implications for the operation of a democratic society (Rosenberg, 1965).

### **2.4 Cross-Cultural Applications of the RSES**

Previous studies have demonstrated the validity of the RSES across languages and cultures. Schmitt and Allik (2005) administered the RSES to college students in 53 countries. In all 53 nations, global self-esteem was positively correlated with extraversion and negatively correlated with neuroticism. There were a few insignificant correlations, but these occurred in countries with low internal reliability of the RSES. Additionally, 51 countries showed positive correlations between self-esteem and a positive "model of self," which is formed based on childhood experiences of caregiving and affects relationships

throughout adult life. The consistency of these external equivalence findings supports the view that self-esteem functions similarly in all cultures. All 53 nations scored above the theoretical midpoint of the RSES, suggesting that generally positive self-evaluations are universal. However, several countries in Asia and Europe scored close to the midpoint (Schmitt & Allik, 2005). It was also observed that more individualistic countries, mostly European, tend to have larger variation in individual self-esteem than collectivist, mostly Asian, countries. This may be explained by the fact that more collectivist cultures tend to avoid the extremes or the endpoints of a scale.

Farruggia's study (2004) of self-esteem in the US, Czech, China, and South Korea also confirmed the cross-cultural relevance of the RSES. With Item 8 ("I wish I could have more respect for myself") of the RSES deleted due to cultural misinterpretation, which was also the case in Schmitt's study, the two-factor model of the RSES showed equivalence across the four countries. Item 8 singularly showed almost no correlation with self-esteem in China or Korea. This could be attributed to a cultural difference in the interpretation of "wishing" as aspiring to an ideal condition instead of desiring more of something that one lacks. US and Czech adolescents had higher averages of positive and negative self-esteem than Chinese and Korean adolescents. Korean adolescents had the lowest self-esteem scores, and there was a strong correlation between self-esteem and parental education. However, contrary to hypotheses about the effects of a collectivist or individualist culture on self-esteem, neither the individualistic nor the collectivist societies shared similar results. Farruggia inferred that there must be cultural differences other than collectivism or individualism that contribute to the difference in self-esteem between China and Korea, similar collectivist societies, and between Czech and the US, which are similar individualist societies.

There has been much research done to compare self-esteem between collectivist and individualist cultures. Tafarodi and Walters (1999) hypothesized that there was a trade-off between self-liking and self-competence, which are two distinct dimensions of global self-esteem, and that collectivist cultures cultivate higher self-liking and lower self-competence and vice versa for the individualist cultures. Self-competence refers to the "generalized sense of one's efficacy or power," and self-liking is the "generalized sense of one's worth as a social object." Whereas self-competence tends to rely on more personal goals and criteria, self-liking is defined by socially transmitted values (Tafarodi & Walters, 1999, p. 798). Their study of British and Spanish college students confirmed their hypothesis. Schmitt and Allik's study added evidence to support this trade-off hypothesis. After controlling for covariance, comparison of the data from the most individualistic countries (Australia, Belgium, Brazil, France, Italy, Netherlands, New Zealand, Switzerland, UK, US) and the most collectivistic countries (Bangladesh, Botswana, Chile, Democratic Republic of the Congo, Hong Kong, Indonesia, Malaysia, Peru, Serbia, South Korea) supported the "trade-off" hypothesis. Sinclair's study (2010) also confirmed Tafarodi's hypothesis; self-competence was higher and self-liking lower in demographic groups with individualist cultures in the US, and the reverse pattern emerged mostly in collectivist cultures.

### 3. Research Questions

The first research question we study is to assess the extent to which the RSES is a reliable and valid tool of measuring young adult's perception of self in DPRK, a society where collectivity prevails over the individual. The RSES has been chosen for our study for several reasons: it has been widely used in social research for decades and is therefore largely proofed, generally has high reliability, and is easy to administer and score. Moreover, the scale has been shown to be valid across countries and cultures. There have been some methodological issues regarding the factor structure of the scale, mainly focusing on whether it is a one-dimensional or a two-dimensional model. The robustness and reliability of the RSES make it suitable to be employed in a country as singular as DPRK, yet we should assess it with real data collected from people in DPRK, a daunting task given a variety of challenges to accessing and studying people in the country.

The second research question is to identify the correlates of self-esteem particularly in DPRK. According to our literature review, a number of factors such as happiness level, social position, and interest in certain topics are correlated with RSES. We would like to examine if this is the case in DPRK. The third research question builds on the previous one: using correlates of the RSES we find with the DPRK survey, we aim to identify a set of key factors that account for self-esteem of people in DPRK. To accomplish this, we will use multivariate regression analysis. The final research question we address is to compare and contrast, where feasible, the level and character of self-esteem of young adults in the secluded country of DPRK to those of young adults in other countries with various social and political features. This is where we leverage data from prior studies that employ the RSES and make cross-national comparison where feasible.

### 4. Methodology

The PSI developed a self-administered survey that was designed for studying the self-esteem of people in DPRK (see Appendix). The survey form included the RSES as well as a number of questions asking about the demographic background and socioeconomic status of the respondent. The final sample included 259 respondents; item response varied between 202 and 252 participants due to item nonresponse for some questions. The RSES is a Likert-type scale of measuring self-esteem with ten items answered on a four-point scale ranging from strongly disagree (1) to strongly agree (4). Half of the items are positively worded while the other half are negatively worded to prevent any potential response bias. Total scores range from 10 to 40 with a higher score corresponding to a higher level of self-esteem. We use sub-scales of the RSES to measure self-competence and self-liking (Sinclair et al., 2010). Questions 15 to 19 of the survey questionnaire were used to measure self-competence and questions 20 to 24 were used to measure self-liking (see Appendix).

We have conducted descriptive analysis to understand the relationship between the mean RSES scores and demographic background variables. T-tests were primarily used throughout the analysis. We also compared the mean self-esteem score of DPRK students with that of other countries. We conducted factor analysis to appraise the extent to which RSES is reliable and valid in the DPRK context and in consideration of the RSES as

tested in scores of other countries. Additionally, we leveraged data from previous studies to compare the self-esteem of young adults in DPRK with that of peers in other countries.

## 5. Analysis and Findings

### 5.1 Descriptive Analysis

The sample size of the study was 259, but due to item nonresponse, the sample size for the RSES was 249. The RSES for the 249 DPRK students was calculated using questions 15 to 24 (see Appendix). After checking the missing values, we found three cases with no response for Q15-Q24, one case with three missing values, and 17 cases with one missing value. For the cases with complete nonresponse, the RSES scores were set as missing. For the cases containing partial item nonresponse, the series means were used as replacement. Results below show basic distribution of the RSES among the DPRK sample.

Table 2. *RSES Scores of Young Adults in DPRK*

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>SD</b>
RSES	249	13	38	28.66	3.417

The mean score is 28.66, which is above the theoretical midpoint of the scale, indicates general positive self-evaluation (a score between 15 and 25 is considered to be average). The response distribution, after removal of the outliers, seems to be normal for the global “self-esteem” construct (See Figure 1). We note that Cronbach’s Alpha, a measure of internal reliability of a scale, has a modest value of 0.68. In addition, the results also appear normal for the positively worded and the negatively worded items, respectively (see Figures 2 and 3).

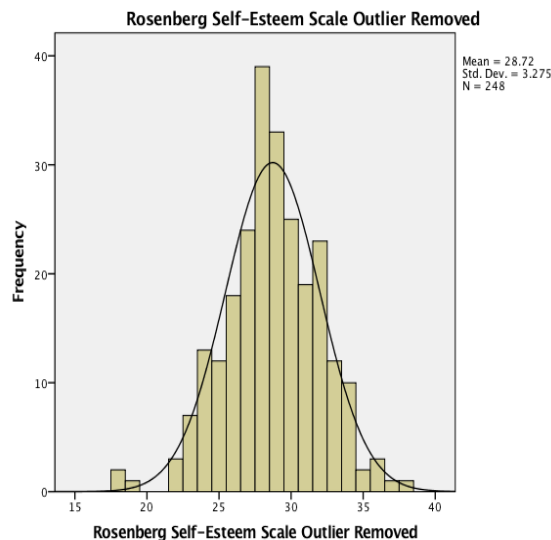
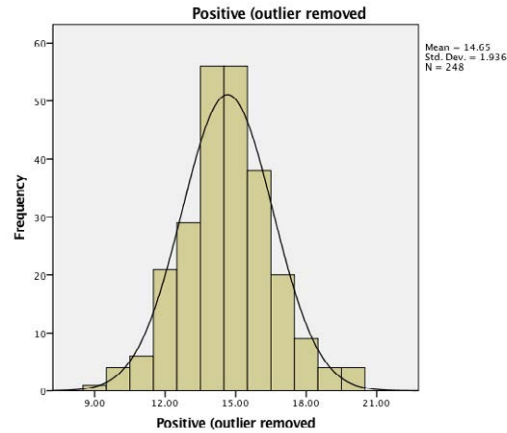
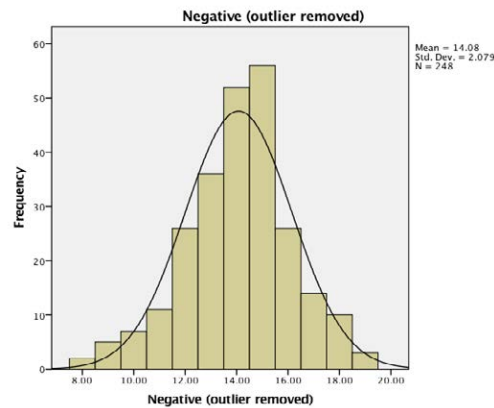


Figure 1. Response distribution of Rosenberg Self-Esteem Scale (RSES)



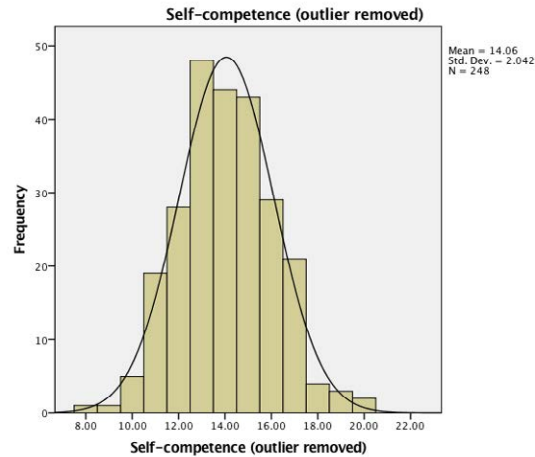
**Figure 2.** Response distribution of RSES: positively-worded items



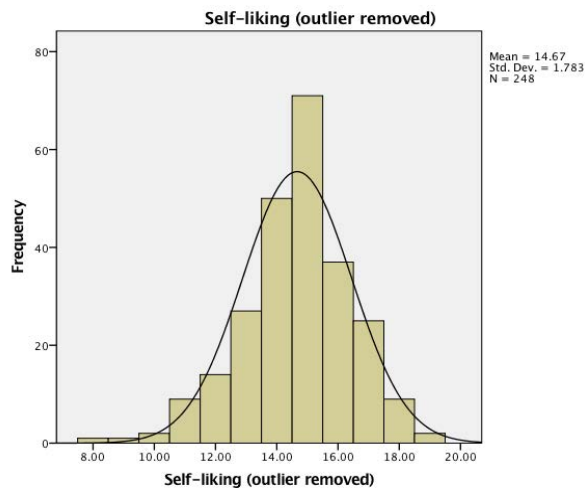
**Figure 3.** Response distribution of RSES: negatively-worded items

As shown in Figures 4 and 5, the response distribution, after removal of the outliers, seems to be normal also for each measure of “self-competence” and “self-liking.” A two-tailed T-test has been carried out to compare the mean responses in the two measures “self-competence” (14.06 with SD of 2.04) and “self-liking” (mean of 14.67 with SD of 1.8) which represent two dimensions of global self-esteem. Questions 15 to 19 of the survey questionnaire were used to measure self-competence; Questions 20 to 24, self-liking (see Appendix). The results indicate a statistically significant difference between the two means ( $p = 0.05$ ). Cohen's effect size of -0.328 suggests a small to moderate effect size.





*Figure 4.* Response distribution of RSES: self-competence



*Figure 5.* Response distribution of RSES: self-liking

## 5.2 Correlates of Self-Esteem of People in DPRK

We performed one-way Analysis of Variances (ANOVA) to examine relationships between self-esteem and a list of contextual variables from the survey. The objective of ANOVA was to understand plausible relationships between self-esteem and measures of interest as discussed in literature and to isolate explanatory variables we may use in the next step of multivariate analysis. The tested variables are the following:

### Education variables

- Level of education
- Major at university
- Relative English proficiency
- Course-taking pattern

Person-level psychological variables

- Self-reported health
- Self-reported happiness
- Favorite colors chosen by respondent

Social support and SES variables (proxy measures)

- Number of siblings (proxy of social support)
- Father's and mother's education
- Prior university attended by respondent (proxy of social prestige)
- Favorite sports

The first five measures are education-related variables that have been found to be correlates of self-esteem (e.g., level of education, major). The next group of variables are social psychological variables that are known to be related to self-esteem and self-concept (e.g., health, happiness). Health is a major social issue in DPRK where malnutrition and tuberculosis (TB) have been widespread for decades and, in the last several years, prevalence of multidrug resistant tuberculosis (MDR-TB) has been notably increasing. The last group of variables are proxy measures of socio-economic or social support variables that have shown to be related to self-esteem (e.g., parents' education, presence and number of siblings).

According to Table 3 below, the variables revealed to have a significant relationship to self-esteem are as follows: major at university, English proficiency, level of health, and level of happiness. Additionally, independent T-tests were conducted to compare the means of RSES scores of participants who attended different types of courses. The results showed that students who took probability/statistics courses obtained significantly higher RSES scores. Participants who were international finance and management majors had significantly higher RSES scores than did students who were electronic engineering and computer science majors.

**Table 3.** Correlates of North Korean Self-Esteem based on *ANOVA Analysis*

<b>Variable</b>	<b>F-test</b>	<b>p-value</b>
Major at university	2.811	0.040*
Prior attended university	0.503	0.734
Relative English proficiency (self-reported)	8.559	0.000*
Favorite sports	0.363	0.0923
Favorite colors	0.290	0.884
Number of siblings	1.225	0.296
Father's education	0.503	0.734
Mother's education	0.681	0.606
Relative level of health (self-reported)	6.162	0.002*
Relative level of happiness (self-reported)	3.515	0.031*

NOTE: P-value with an asterisk indicates statistical significance at .05 level.

Relative English proficiency is associated with a higher self-esteem. This language skill is especially important for students who are attending the only privately funded university in DPRK, where English is the official language of instruction. As expected, one's own self-reported health in comparison to others has a significant influence on the self-esteem of the students. This is not surprising because one's health is generally considered a key component of self-concept. Among young people in western countries, where malnutrition and infectious diseases are residual, the concept of basic health has often been replaced by more complex ones such as body image and health-related behaviors.

Less obvious is the fact that no significant relationship has been found between one's self-esteem and parental education level among the DPRK people. Education is highly valued in many societies, including DPRK, which remains to be Confucian and conservative, and thus it was expected that parental education would have an influence on the participants' self-esteem.

### 5.3. Factor Analysis of the RSES with a DPRK Survey

We have performed factor analysis to the ten items of the RSES. After extraction of the factors under the chosen criterion, only three out of ten components are retained (eigenvalues > 1). The first three factors account for almost 50 percent of the total variability.

**Table 4.** *Factor Analysis of the Ten Items of the Rosenberg Self-Esteem Scale with the North Korean subjects*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.598	25.982	25.982	2.598	25.982	25.982
2	1.275	12.752	38.733	1.275	12.752	38.733
3	1.109	11.088	49.822	1.109	11.088	49.822
4	.941	9.411	59.233			
5	.871	8.708	67.942			
6	.803	8.031	75.973			
7	.698	6.984	82.956			
8	.618	6.179	89.135			
9	.586	5.858	94.992			
10	.501	5.008	100.000			

The rotated component of the matrix has the effect of optimizing the factor structure, thus simplifying interpretation with three factors shows the loadings as in Table 5. Factor loadings represent how much a latent factor explains a manifest variable. The closer the loadings are to -1 or 1, the stronger the effect of the factor on the variable. We notice, for example, that the first three variables strongly load onto the first factor.

**Table 5.** *Rotated Component Matrix* of the Ten Items of the Rosenberg Self-Esteem Scale with the North Korean subjects

Rosenberg Self-Esteem Scale Items	Component		
	1	2	3
6. Feeling Useless at Times (reversed) (mean replaced)	.731		
9. Feeling of Being a Failure (reversed) (mean replaced)	.713		
2. Think You Are No Good at Times (reversed) (mean replaced)	.711		
1. Feeling Satisfied with Self (mean replaced)		.755	
5. Feeling Lack of Pride (reversed) (mean replaced)		.626	
4. Feeling of Doing Things as Well as Others (mean replaced)		.438	
10. Taking Positive Attitude Toward Self (mean replaced)		.401	
8. Wish to Have More Self Respect (reversed) (mean replaced)			-.721
7. Feeling of Self Worth (mean replaced)			.702
3. Feeling of Possessing Good Qualities (mean replaced)			.629

If we force the number of factors to be 1, the factor matrix changes as shown in Table 6. In the one factor model, there seems to be a weak loading with the ninth item and little loading on Item 8, the description of which, in relation to the wishful statement, was subject to cultural misinterpretation. The loadings between the one factor and the remaining nine items range between 0.4 and almost 0.6. Roth et al. (2008) and a comparative study of 53 countries (see chapter 4.4 “Comparison of DPRK Self-Esteem with 53 Nations”) seem to support the suitability of a one-factorial structure in most nations. This remains true with the DPRK case.

**Table 6.** *Component Matrix* of the Ten Items of the Rosenberg Self-Esteem Scale with the North Korean subjects

Rosenberg Self-Esteem Scale Items	Component
	1
6. Feeling Useless at Times (reversed) (mean replaced)	.599
7. Feeling of Self Worth (mean replaced)	.591
10. Taking Positive Attitude Toward Self (mean replaced)	.590
2. Think You Are No Good at Times (reversed) (mean replaced)	.587
5. Feeling Lack of Pride (reversed) (mean replaced)	.575
3. Feeling of Possessing Good Qualities (mean replaced)	.535
9. Feeling of Being a Failure (reversed) (mean replaced)	.451
1. Feeling Satisfied with Self (mean replaced)	.430
4. Feeling of Doing Things as Well as Others (mean replaced)	.332
8. Wish to Have More Self Respect (reversed) (mean replaced)	

#### 5.4 Factors to Account for Self-Esteem of People in DPRK with Multivariate Analysis

We built models consisting of multiple explanatory variables by leveraging self-esteem literature, the particular context of North Korea, and findings from a series of exploratory models. We tested three sets of models: the first series of nested models uses the 9-item Rosenberg Self-Esteem Scale (RSES) as the dependent variable. The second series of models uses the self-competence subscale as the dependent variable, and the third series uses the 4-item self-liking subscale as the dependent variable.

The first simple model we created was to regress RSES on self-reported health level. We separated the 4 possible health levels the survey respondents could choose from into two categories (very healthy vs. others). Table 7 shows that one's self-reported health level is significant at the 0.05 level.

**Table 7.** Basic Model 1: *RSES regressed on Health Level*

Variable	Unstandardized coefficient	Standardized coefficient
Intercept	26**	0.00**
Health level	1.5**	0.23**

NOTE: R-squared = 0.043. \* $p < 0.1$ . \*\* $p < 0.05$ .

The next explanatory variable we chose to add to our basic model was one's academic major, because our review of self-esteem literature and exploratory regression models suggested that one's academic major would be an important predictor of one's self-esteem, especially among university students. Our correlation analysis showed that international finance and management majors had higher RSES scores, so we separated the participants into two categories: those majoring in international finance and management and those majoring in other disciplines.

**Table 8.** Basic Model 2: *RSES regressed on Health Level and Academic Major*

Variable	Unstandardized coefficient	Standardized coefficient
Intercept	26**	0.00**
Health level	1.5**	0.21**
Major	1.0*	0.12*

NOTE: R-squared = 0.065. \* $p < 0.1$ . \*\* $p < 0.05$ .

Table 8 shows that one's health level remains significant at the 0.05 level, and one's major is significant at the 0.1 level. The standardized coefficients show that one's health level has a greater impact on RSES than one's major. Also, the R-squared value has

increased from 0.043 to 0.065. This difference represents about a 50% relative increase in the variance explained by the simple health model. This finding from the North Korean sample strengthens empirical evidence from self-esteem literature that one's academic major at a university notably influences self-esteem. According to the concept of psychological centrality, the impact of any given component on global self-esteem depends on its importance to the individual; academic major and academic performance are two components that are very salient to young adults in a university setting.

The next explanatory variable we added to our model was psychological well-being, measured by self-reported happiness level. Similarly to one's health level, we separated happiness level into two categories (very happy vs. all others).

Table 9 shows that the R-squared value for this model remains about the same compared to the previous model. Due to a few missing observations, it is actually slightly smaller. The regression coefficient for happiness level is not significant, but the relative impacts of health level and one's major have both weakened - this can be seen from the smaller standardized coefficients. It does not seem that psychological well-being, measured by happiness level, is an important driver of self-esteem among North Korean university students.

**Table 9.** Basic Model 3: *RSES regressed on Health Level, Academic Major, and Happiness Level*

Variable	Unstandardized coefficient	Standardized coefficient
Intercept	26**	0.00**
Health level	1.2**	0.17**
Major	0.90 ^	0.11 ^
Happiness level	0.52	0.080

NOTE: R-squared = 0.064. \*p < 0.1. \*\*p < 0.05. ^ indicates almost \*.

We decided to add another education variable, English proficiency, given the importance of academic factors in determining students' self-esteem. We inferred that English proficiency would be highly critical to the survey respondents because the university they attend is the only university in the DPRK where English is the official language of instruction. This means that students' academic performance depends heavily on their command of English. For our analysis, we separated the 4 possible English proficiency levels into 2 categories, just like we did for the other explanatory variables.

**Table 10.** Full Model 1: *RSES regressed on Health Level, Academic Major, Happiness Level, and English Proficiency*

Variable	Unstandardized coefficient	Standardized coefficient
Intercept	25**	0.00**
Health level	1.1**	0.15**
Major	0.92^	0.11^
Happiness level	0.51	0.077
English proficiency	1.0**	0.14**

NOTE: R-squared = 0.083. \*p < 0.1. \*\*p < 0.05. ^ indicates almost \*.

Table 10 shows that the regression coefficient of the newly added variable, English proficiency, is significant at the 0.05 level; from the standardized coefficients, we can see that the relative impact of English proficiency on RSES is almost as large as that of health level. Additionally, the R-squared value is now 0.083; this difference in R-squared represents about a 30% relative increase in the variance explained over the prior model. So, it does seem that this new education variable, English proficiency, plays an important role in predicting RSES among the DPRK respondents. Thus far, the most important drivers of RSES are one's perceived health status and English proficiency.

Finally, we decided to add a few demographic control variables: age, social prestige (measured by previous university attended), and social support (measured by the presence of siblings).

Table 11 shows that the only significant explanatory variables are one's health level and one's academic major. Additionally, the R-squared value is not significantly different from the R-squared value of the previous model without the control variables. In other words, this full model provides evidence that *health and one's academic major* remain to be the most critical drivers of self-esteem among North Korean university students, while controlling for key predictors and control variables such as one's age, social prestige, and social support.

**Table 11.** Full Model 2: *RSES regressed on Health Level, Academic Major, Happiness Level, and English Proficiency with Control Variables (Age, Previous University, Presence of Siblings)*

Variable	Unstandardized coefficient	Standardized coefficient
Intercept	25**	0.00**
Health level	1.1**	0.16**
Major	0.97*	0.12*
Happiness level	0.55	0.084
English proficiency	0.71	0.098
Age	-0.0068	-0.0034
Previous university	0.41	0.050
Siblings	0.059	0.0077

NOTE: R-squared = 0.085. \* $p < 0.1$ . \*\* $p < 0.05$ .

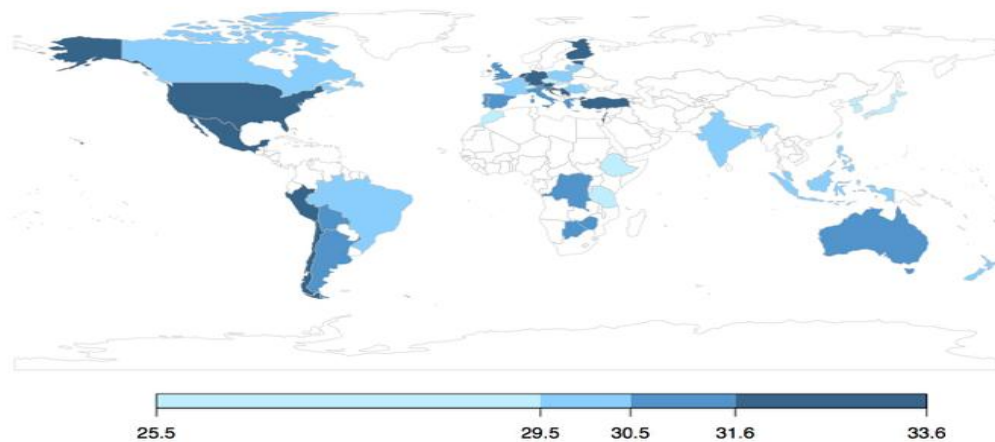
When we repeated the multiple regression analysis using self-competence as the dependent variable, we found that health level was not significant in any of the 5 models. However one's major and English proficiency level were significant in all the models. So, the two education variables were found to be the most critical drivers of self-competence among North Korean students. This finding has important ramifications: it seems to suggest that students at this international university are supported to develop self-competence, which is a sense of "personal efficacy and power."

When we conducted the same multiple regression analysis using self-liking as the dependent variable, we found that one's health level was significant only for the first 2 models. Once at least 3 explanatory variables were included, none of the explanatory variables were significant. In contrast to self-competence, academic factors do not seem to be important predictors of self-liking. However, the coefficient for happiness was very close to significance at the 0.1 level in all the models in which the happiness variable was included. This potential relationship is generally consistent with findings from other studies.



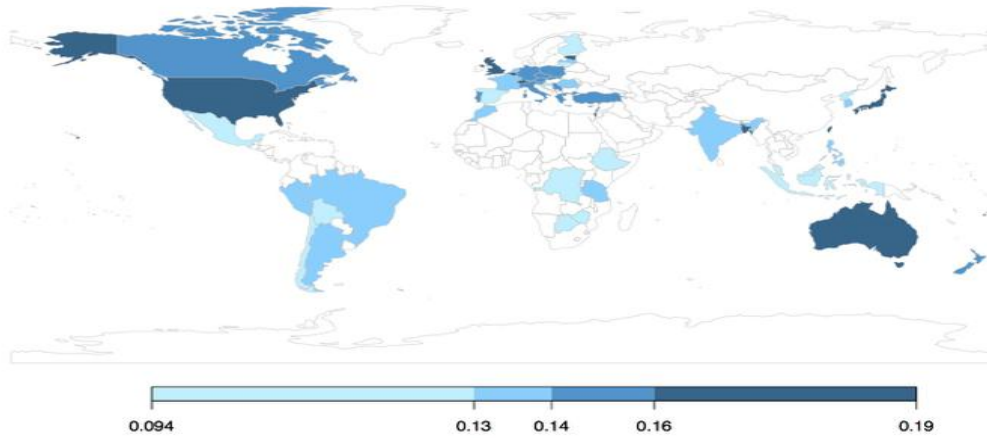
### 5.5. Comparison of DPRK Self-Esteem with 53 Nations

We then moved on to comparing our findings with data from previous studies using data visualizations. In the following world map visualization (Figure 3), the countries are separated into quartiles (equal number of countries in each color range) and their colour corresponds to their mean RSES score (countries without data are in white). The darker the shade of blue, the higher the RSES scores. DPRK, the country of interest, is in the lowest RSES score band, pale blue. It appears as though Asia has the lowest mean RSES scores followed by Africa. Europe and the Americas seem to have generally higher RSES scores, which can be inferred by the higher frequency of dark blue in the two continents. According to Schmitt and Allik, Asian and African countries may have lower RSES scores because of relatively less cultural familiarity with “thinking about their self-esteem” or the concept of self-esteem (2005).



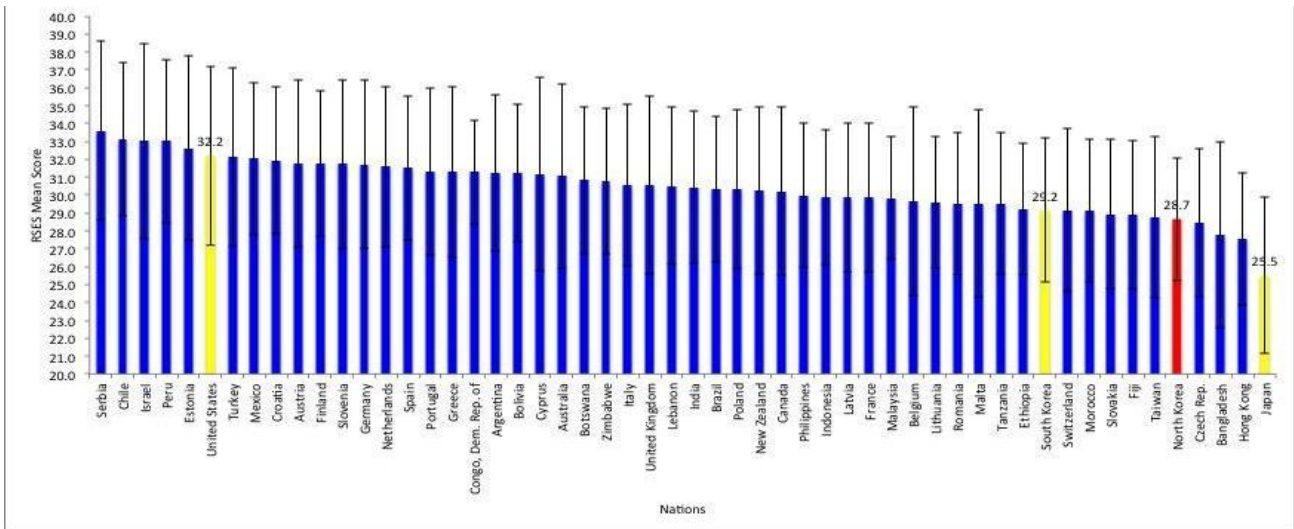
**Figure 3.** Map visualization of mean RSES scores in 54 nations. Data are from Schmitt and Allik (2005) and Chun et. al (2015)

Schmitt and Allik (2005) suggest that people in collectivist cultures generally tend to stay near the midpoint of scales. If this were true, individualist countries would have a higher coefficient of variation in their scores than collectivist countries. Figure 4 below shows that this hypothesis was generally supported. Once again, the countries are separated into quartiles. The darker the shade of blue, the higher the coefficient of variation. Most countries in Asia and Africa, which are usually collectivist, have a lower coefficient of variation. This can be seen by the relatively high frequency of lighter blues in Asia and Africa. Spain, which is considered to be a collectivist country, is in the lowest coefficient of variation range. DPRK, which we consider to be extremely collectivist, is also found in the lowest range. However, there are outliers such as Japan, Taiwan, and Bangladesh, which are all found considered to be collectivist countries but are found in the highest coefficient of variation range.



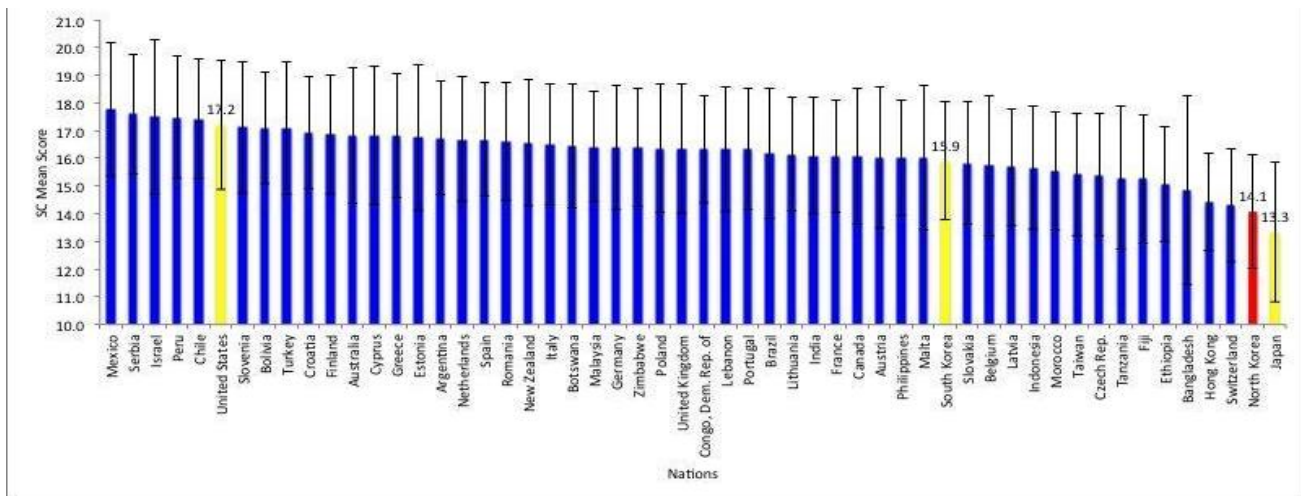
**Figure 4.** Map visualization of coefficient of variation in mean RSES scores in 54 nations. Data are from Schmitt and Allik (2005) and Chun et. al (2015)

The mean RSES score of the 53 tested nations have been plotted on a bar graph in Figure 5 (Schmitt & Allik, 2005). Serbia has the highest mean score and Japan the lowest mean score. A key point to note is how many of the Asian countries are located on the right side of the bar graph and how many of the Western and Middle East countries are located on the left. From this graph, it can be inferred that many of the collectivist Asian societies have a lower mean score compared to the individualistic societies located in the West and Middle East. North Korea’s RSES mean score (colored red in Figure 5) stands amongst the lowest RSES mean score group, which consists of many collectivist societies such as South Korea, Taiwan, Bangladesh, Hong Kong, and Japan. The yellow bar graphs represent the United States, South Korea, and Japan as references for comparison.

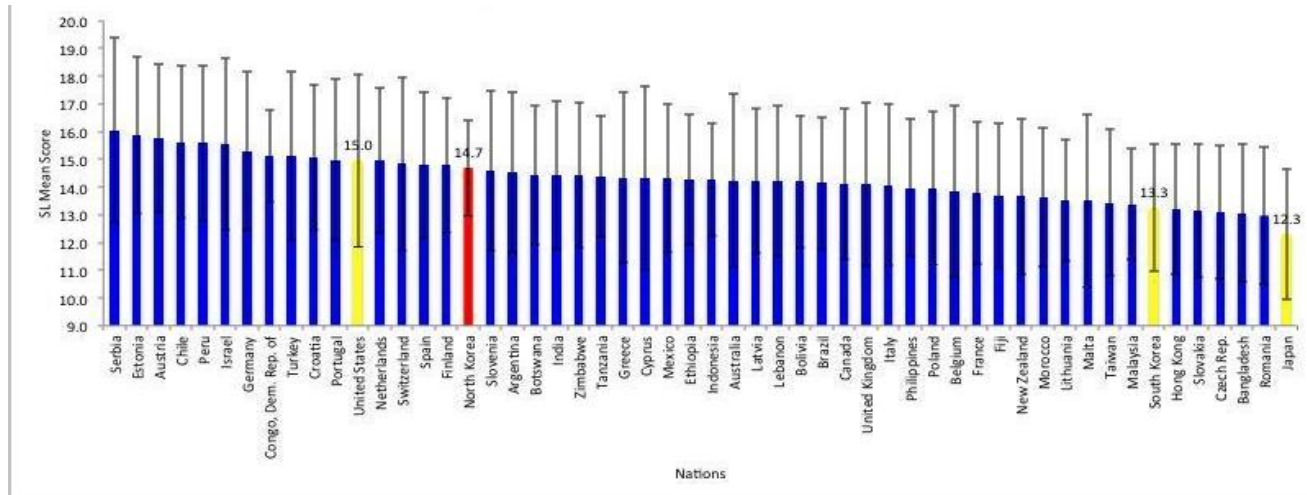


**Figure 5.** Bar graph of mean RSES score of DPRK and 53 other nations. Data are from Schmitt and Allik (2005) and Nguyen et. al (2016)

RSES consists of 10 items to measure the self-esteem of the respondents. According to Tafari & Milne (2002), the 10 items can be equally divided to measure two facets, which are distinguished as self-competence (SC) and self-liking (SL) levels. SC is understood as one's instrumental value and SL as one's intrinsic value. The SC and SL scores were obtained by summing the first five items for SC and the last five items for SL (see Appendix). In the SC bar graph (Figure 6), we can again note the contrast between individualistic and collectivistic cultures. Many of the Asian countries, which are considerably collectivistic, are located on the right side of the bar graph, indicating that collectivist societies tend to have a lower SC mean score. Mexico has the highest SC mean score out of 53 nations, and Japan has the lowest SC mean score. On the contrary, no discrepancy can be found by looking at the SL mean score bar graph (Figure 7), other than North Korea having a relatively high SL mean score. The collectivist and individualistic nations are relatively spread out throughout the graph. Serbia has the highest SL mean score, and Japan has the lowest SL mean score. Once again, for both Figure 7 and 8 the United States, South Korea, Japan, and North Korea's bars have been differentiated for easy comparison.



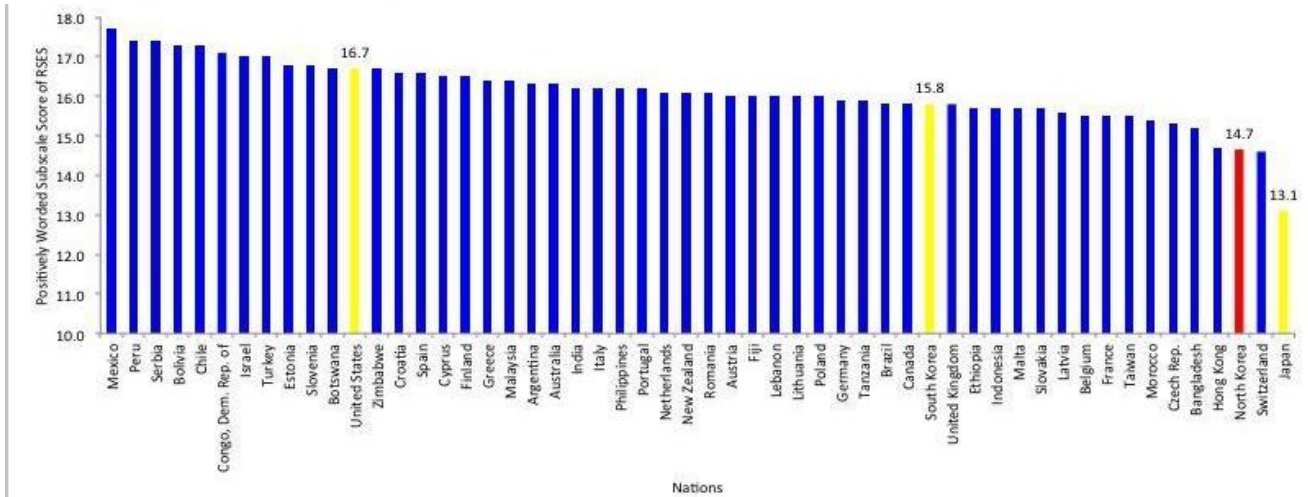
**Figure 6.** Bar graph of self-competence score of DPRK and 53 other nations



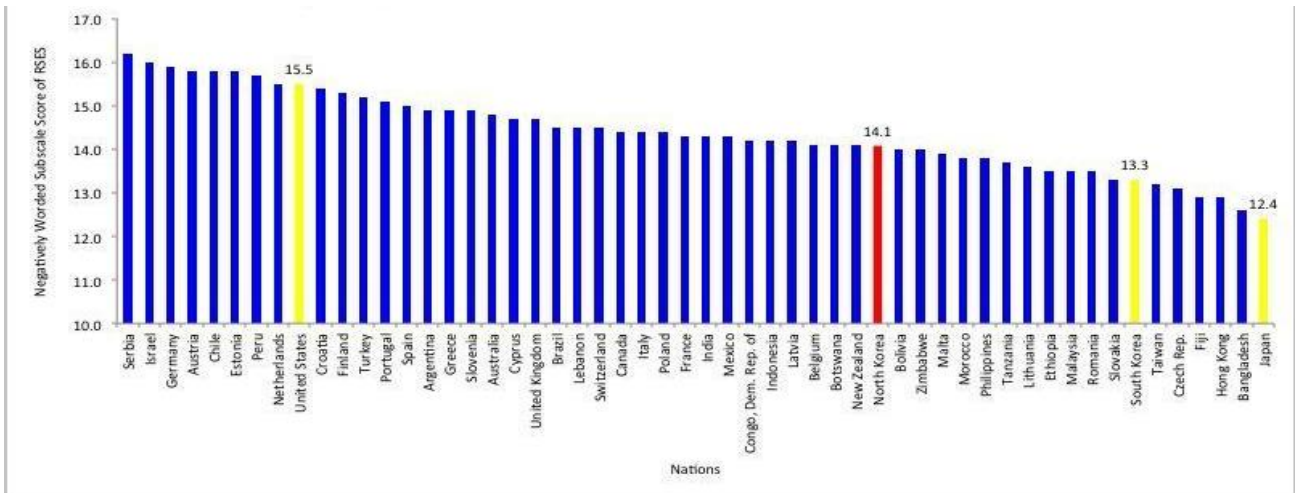
**Figure 7.** Bar graph of self-liking score of DPRK and 53 other nations. Data are from Schmitt and Allik (2005) and Nguyen et. al (2016)

The RSES consists of five positively worded items and five negatively worded items measuring the global perception of self-worth. Cross-cultural studies in the past have presented problems regarding the use of method effects and how it should be included. Some studies recommend the use of method effects in both positively and negatively worded items, and others propose that the solution of the two correlated factors presents the desired outcome. In past studies, accurate cross-cultural procedures were not performed to translate for scale, and the scales were not validated in a university setting, which prevented detailed identification of the subjects' self-esteem and evaluation of its relationship with other variables.

In the Positively Worded Subscales bar graph (Figure 8), we can see that Mexico has the highest mean score whereas Japan has the lowest. Again, many of the individualistic Western and Middle Eastern societies are located on the left side of the bar graph with relatively high mean scores, and many of the collectivist Asian countries are located on the right side of the bar graph with relatively low mean scores. Similar to the Positively Worded Subscale, the Negatively Worded Subscale graph (Figure 9) shows the individualistic nations on the left side of the bar graph and collectivist nations on the right side. For both bar graphs, the United States, South Korea, Japan, and North Korea have been emphasized by differentiating the colors of the bars.



**Figure 8.** Bar graph of Positively Worded RSES Subscale of DPRK and 53 other nations. Data are from Schmitt and Allik (2005) and Nguyen et. al (2016)



**Figure 9.** Bar graph of Negatively Worded RSES Subscale of DPRK and 53 other nations. Data are from Schmitt and Allik (2005) and Nguyen et. al (2016)

### 6. Discussion

Schmitt & Allik (2005) conducted a study to compare self-esteem across countries and cultures by administering the RSES to 16,998 participants (college students and community samples) in 53 nations. This study evaluated structural equivalence—the possession of similar psychometric properties—of the RSES across a number of cultures. The results provide support for the cross cultural equivalence of the scale and the comparability between groups.

On the basis of this equivalence, we attempted to compare our results from the DPRK survey with data from the 53 countries presented in the study by Schmitt & Allik. All 53 nations scored above the theoretical midpoint of the RSES, which indicates that generally positive self-evaluations appear to be universal. The mean value of North Korea is 28.66, which is above the theoretical midpoint of the scale but relatively low. It is close to the values scored by Taiwan (28.77) and South Korea (29.17) and higher than those of Hong Kong (27.54) and Japan (25.50), which has the lowest RSES mean score in the list. All of the Western and South American countries scored higher than DPRK with the exception of the Czech Republic (28.47) and Slovakia (28.94), two Eastern European countries.

Considerable differences exist in the distribution of self-esteem scores across different countries. Scores tend to be clustered at the high end of the distribution in Western cultures (positively skewed distribution) whereas they are closer to the theoretical midpoint in East Asian nations (Diener and Diener, 1995). The distribution of global self-esteem in DPRK, according to this survey, is quite symmetrical (see Figure 1 above) with a standard deviation (SD) of 3.42. If we compare this SD with those of the 53 nations from the study, we notice that it ranks among the smallest along with that of Bolivia, Congo, Ethiopia, Hong Kong, Indonesia, Lithuania, Malaysia, Romania, and Tanzania. This means that variance is relatively small—individuals tend to respond more similarly to all items—and the scores gather close to the mean point.

The scores for each of the two self-esteem subcomponents, SC and SL, are close in DPRK (14.06 and 14.67, respectively). As previously mentioned, SC is defined as a sense of personal efficacy and power, whereas SL is the sense of one's own worth as a social object (Tafarodi & Swann, 1995). In this dual approach, the two components are often viewed as competing in the literature. SC has been found to prevail in individualistic cultures (e.g. Australia, Canada, United Kingdom, the United States), in which self-confidence and personal achievement are more important than social harmony, whereas collectivistic cultures (e.g. Bangladesh, Botswana, Chile, Hong Kong) score higher in SL. The latter emphasizes group goals and conformity over individual needs or desires.

In DPRK, a collectivist country like its closest neighbors, the score for SL, as expected, exceeds the score for SC. This small difference is statistically significant ( $p << 0.05$ , see previous chapter) but may be moderate in force according to the value of Cohen's  $d$  we presented.

## 6. Conclusion

We have demonstrated that it is feasible to conduct a survey in DPRK when the research cause is proper for educational purposes and stays away from politics and any religious issues, and the research outcomes remain apolitical, in order to engage the DPRK research community.

The findings appear to confirm the RSES as a valid measure of self-esteem in DPRK. Analysis of the two subscales of the RSES revealed that young adults in DPRK seem to have higher SL than SC, a trend shown mostly among collectivist countries. Furthermore, analysis of positively and negatively worded RSES items showed that young adults in DPRK appear to be aligned with response behavior shown among collectivist countries.

Our multivariate regression analysis provided evidence that one's perceived health and academic major are the most critical drivers of self-esteem, and that education alone is the most important driver when it comes to accounting for self-competence among DPRK university students. We remind the reader that the comparative investigation of self-esteem among DPRK's young adults was feasible thanks to the existing data available from Schmitt & Allik (2005) as well as the first self-administered survey PSI conducted in DPRK. Note that the value of our findings may be constrained by a census of students limited to the only privately-funded international university in DPRK, yet this sort of methodological limitation remains true with most of samples in other countries that were studied and compared with DPRK.

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**Appendix**Table A.1. *Rosenberg Self-Esteem Scale Used in Survey Questionnaire*

	1 = Strongly Disagree	2 = Disagree	3 = Agree	4 = Strongly Agree
15. I feel that I'm a person of worth, at least on an equal plane with others.	SD	D	A	SA
16. I feel that I have a number of good qualities.	SD	D	A	SA
17. All in all, I am inclined to feel that I am a failure.	SD	D	A	SA
18. I am able to do things as well as most other people.	SD	D	A	SA
19. I feel I do not have much to be proud of.	SD	D	A	SA
20. I take a positive attitude toward myself.	SD	D	A	SA
21. On the whole, I am satisfied with myself.	SD	D	A	SA
22. I wish I could have more respect for myself.	SD	D	A	SA
23. I certainly feel useless at times.	SD	D	A	SA
24. At times I think I am no good at all.	SD	D	A	SA