

Adaptation of De Jong Gierveld Loneliness Scale into Turkish

Derya avdar

Vildan Baęcı

Ergün Cihat orbacı

Seyhan Saritaş

Educational Sciences

Gazi University

Ankara/Turkey

Melike Kbra Taşdelen-Yayvak

School of Foreign Languages Glbaşı

Gazi University

Ankara/Turkey

Abstract

The aim of this study was to adapt the English version of De Jong Gierveld Loneliness Scale into Turkish language. In the adaptation process, translations done by five translators were evaluated by experts in English and Turkish language and psychology. The form prepared after the evaluation process was applied to a study group consisting of 613 students aged between 18 and 25. In order to test the suitability of the factor structure of the adapted scale, explanatory factor analysis and confirmatory factor analysis were conducted. As a result, it was observed that the obtained data confirmed the structure of the two factors as emotional and social. Factor loadings for the corresponding scale were between 0.52 and 0.83 and Cronbach Alfa Internal Consistency Coefficient was calculated .873.

Keywords: De Jong Gierveld Loneliness Scale, factor analysis, internal consistency

1. Introduction

Loneliness is a state that one can encounter in every age level (Rotenberg, 1999) and that can affect their moods, happiness, delight and pleasure. When the research conducted so far has been reviewed, it has been seen that loneliness is one of the most important problems worldwide. Most researchers have conducted theoretical and experimental studies so far considering that loneliness is an essential issue (Weiss, 1973) and have made a different definition of loneliness. One can understand that these definitions have the same understanding basically even if they look different in appearance. According to Weiss (1973), loneliness is lack of social relationships between individuals or the deprivations of emotions such as sincerity and intimacy. The feeling of loneliness arises from the distresses experienced in one or more relationships between people. According to Perlman and Peplau (1981), loneliness is the distance between the point one desires in his/her social relationships and the point he/she is really in. Besides, Perlman and Peplau (1982) defined loneliness as bad experiences of individuals in their social relationships in both qualitative and quantitative aspects.

De Jong Gierveld (1987, 1988) also described loneliness as feeling dissatisfied in relationships, not being able to attain the quality one wishes and lacking of desired relationships. Rottenberg, MacDonald and King (2004), considered loneliness as negative psychological experience that the individuals had in their childhood about interpersonal trust. According to Demirli and Demir (2004), loneliness is a phenomenon that is followed by undesired feelings such as anxiety, anger, hopelessness, sadness and depression and that is experienced by every individual in particular periods of time. According to Schmitt and Lawrence (1985), interpersonal interaction emerges when social needs of people are not met, when there is deficiency in social rewards and when personal needs of people are not provided. There are different views on the dimensions of loneliness in the studies conducted on loneliness. Most researchers regard loneliness as a structure consisting of one dimension (Russell et al., 1984).

However, Weiss (1973) put forward two dimensions as “social loneliness” and “emotional loneliness” in order to introduce the multidimensional structure of loneliness; and defined social loneliness as lacking of intimate and sincere relationships, and emotional loneliness as the deficiency of communication in social networks. According to Mellor and Edelman (1988), emotional loneliness is the lack of trust in someone special or precious. Weiss (1973) stated that social loneliness might emerge as a result of relocation and this situation would be resolved by making friendship with someone new. In addition to this, Weiss indicated that emotional loneliness could emerge when one had no one he/she could trust like a friend and that one should build sincere and intimate relationships with new friends so as to overcome this feeling. Pinguart and Sorensen (2001) defined social loneliness as spending time alone because individuals did not belong to any social relation network or they could not adapt any social network. Qualter (2003) described emotional loneliness as lacking close relationships while he regarded social loneliness as lacking social relationships. DiTomasso and Spinner (1973, 1997) considered loneliness in two dimensions. After having applied social and emotional loneliness scale for adults, they separated emotional loneliness as romantic and family dimensions as a result of the principal components analysis.

Weiss (1973) put forward different indicators for these loneliness scales. He stated that emotional loneliness could cause severe loneliness, anxiety, severe uneasiness, touchiness, desolation and constant compliments; and that social loneliness could cause dependency, depression, desultory manners, marginality, nonsense behaviors, self-talking and alcohol problems. Beside these problems, he claimed that these two kinds of loneliness could have common symptoms such as poor concentration, stress, nervousness, insomnia and lack of focusing. According to Salimi (2011), loneliness is a fact of life and people experience this feeling from time to time. Loneliness is experienced by both males and females; however, considering the research conducted has been reviewed, while males are lonelier than females in some circumstances (Tümkeya, Aybek, Çelik, 2008) other research reveals that females suffer more loneliness than males (Borys, S. & Perlman, 1985). There are a good number of studies conducted on measuring loneliness level considering negative effects of loneliness in human life, on taking necessary precaution for providing humans more healthy life and on solving current problems.

1.1 Measuring Loneliness Level

There are various measurement instruments that were developed to measure the loneliness level of individuals in the United States of America and Europe. The first studies on loneliness were conducted in the USA, Canada and Holland (Peplau & Perlman, 1982). UCLA loneliness scale (Russelli, Peplau, & Cutrona, 1980; Russell, Peplau, & Ferguson, 1987), which is one of the unidimensional scales used prevalently, was developed by applying the scale to university students. UCLA loneliness scale, which was developed to measure the loneliness level of the individuals, consisted of 20 items. In the scale, there are statements that specify the feeling and thoughts related to social relationships, and what is expected from the individuals is to check how often they experience the situation in that statement on a Likert-Type scale with four choices. For the development of the scale, Russell, Peplau and Ferguson (1978) scrutinized the measures obtained from this scale and the measures obtained from Beck Depression Inventory, and they got the correlation coefficient as $r = 0.67$. Then, after scale had been reviewed by Russell, Peplau and Cutrona (1980), the current form was constructed. Cronbach alpha coefficient related to aforementioned measures was calculated $\alpha = 0.94$ and the reliability coefficient that was calculated by using test-retest method were 0.73.

De Jong Gierveld loneliness scale (DJGLS), which was developed by De Jong Gierveld and Kamphuis (1985) so as to measure loneliness level and which consisted of two dimensions of loneliness, has been adapted in many countries (Gierveld & Tilburg, 2010). The adaptation of this scale for Polish university students was performed by Grygiel, Humenny, Rebisz, Switaj and Sikorska (2013). An 11-item scale was used in the original scale. As a consequence of the confirmatory factor analysis, it was found that Polish adaptation of the scale measured loneliness in two dimensions as social and emotional loneliness. In order to collect evidence for validity within the scope of criterion-related validity of the measures, the scores obtained using this scale and the scores gained using UCLA loneliness scale, Rosenberg self-esteem scale, Beck depression scale were scrutinized and the correlations between the 11-item scale and the other scales calculated as $r = 0.82$, $r = -0.56$ and $r = 0.46$, respectively. The adaptation studies of De Jong Gierveld loneliness scale for seven members of the United Nations, which were France, Germany, Holland, Russia, Bulgaria, Georgia and Japan were performed by Gierveld and Tilburg (2010). In these adaptation studies, a six-item scale, unlike the original form, was used. The three items out of the six items measure emotional loneliness while the other three items measure social loneliness.

The items chosen are the ones what had the highest factor loadings in the emotional and social subscales. The items were formed in Likert-Type scale with three choices. The ages of the participants ranged from 18 to 79. The confirmatory factor analysis was performed in order to collect evidence for the validity and reliability of the scale. As a result of the research, it was concluded that this scale were able to measure loneliness (having two subscales) in each country reliably and validly. Although there are various measurement instruments for measuring loneliness levels of the individuals aged between 18 and 79 years in different countries such as the USA, Japan and Canada, there are few scale adaptation studies for determining loneliness level of the individuals in Turkey. UCLA loneliness scale, which was adapted into Turkish by Demir (1989), has been widely used in Turkey. The four items of this scale were extracted after validity and reliability study. UCLA loneliness scale was used so as to determine the loneliness level of the individuals aged from 15 and above. Another measurement instrument is the Children's Loneliness Scale, which was adapted by Kaya (2005) for the children aged between 9 and 14 years. The reliability and validity of this adapted scale was examined and it was used in order to measure the loneliness of the students at elementary school in terms of different variables. However, the applicability of this scale for just a certain age group is a limitation of the scale. Another study conducted to measure loneliness is the validity and reliability study of the Turkish version of Loneliness at Work Scale (Doğan, T., Çetin, B. & Sungur M. Z., 2009). In this study, it was only focused on measuring loneliness at work. The participants of the research consisted of the employees who worked in the public and private sector and who aged between 18 and 52 years. The psychometric attributes of the adapted scale were scrutinized and the sufficient values were obtained. There is no scale adapted for measuring Turkish university students' loneliness level in Turkey. However, the adaptation study of UCLA loneliness scale was also made for Turkish university students. Besides, although loneliness is considered to have two dimensions in theory, this scale measures loneliness unidimensionally. In this study, it was aimed at investigating the psychometric attributes of DJGLS by adapting it for Turkish university students.

2. Method

2.1 Participants

The participants of the study consist of 613 students, 377 female and 236 male. The participants, who were volunteers for this research, had been chosen from different departments. Applications of the scale were made in 2014-2015 semester, at Gazi University, Faculty of Education and the School of Foreign Languages. Number and percentage of participants were given in terms of demographic variables such as sex, grade and sheltering conditions in Table 1. The ages of the students who participated in the study ranged between 18 and 25. Percentage of female students who participated in the study was 61.5% (n=377), and 38.5% (n=236) of them were male. The percentages of the participants in terms of their grade are as follows: 44% (n=269) at preparatory class, 6.7% (n=41) at first grade, 7.3% (n=45) second grade, 29.8% (n=183) third grade and 12.2% (n=183) fourth grade. In terms of sheltering, the percentages of the participants are in the following: 42.6% (n=261) at dormitory, 23% (n=141) at home with their friends, 30.2% (n=185) at home with their family, 4.29% (n=26) in other places.

2.2 Data Collection Tool

The data was obtained through De Jong Gierveld Loneliness Scale. The scale had been developed in order to measure the level of loneliness as social and emotional dimensions of individuals. De Jong Gierveld Loneliness Scale was developed by considering multidimensional structure of loneliness unlike UCLA Loneliness Scale, which is used widely. The multidimensional structure of loneliness, according to Weiss (1973), was built based on the results of the content analysis on the life stories of 114 lonely people and unstructured interviews with them. The scale measures loneliness in two dimensions as emotional and social loneliness. The stage of development of the scale began with 40 items. An expert group composed of 20 people from Department of Research Methods at the Free University of Amsterdam had decided that seven items of 40 items weren't appropriate so that these items were removed from the scale. Then, five items were removed from the scale for the reason that the items could be applied to only specific people. Therefore, the scale was formed with 28 items. None of those items includes word of "loneliness". According to evaluation of the experts, the scale were divided into five subscales: L1- severe deprivation, L2 –deprivation feelings connected with specific problem situations, L3 – missing companionship, L4 – a feeling of sociability and L5 – a feeling of having meaningful relationships. Items were in 5-point Likert type scale (1-Not true at all, 2-Hardly ever true, 3-True most of the time, 4-Always true). In the process of scale development carried out by Gierveld and Tilburg (2010), explanatory factor analysis was conducted to collect evidence for construct validity of the measurements.

It was seen that the loneliness was measured in unidimensional structure, however after the rotation procedure, it was observed that two factors extracted as emotional and social loneliness. The factor loadings ranged from 0.64 to 0.86. Positive and negative items measured different dimensions of the structure. To obtain evidence about the validity of the measurements, the scale was applied to married, single, divorced people. As a result of the study, it was decided that the scale was appropriate to be used to measure level of loneliness of individuals.

2.3 Process

Firstly, it was asked to Jenny De Jong Gierveld, who developed the loneliness scale, in order to adapt the scale for Turkish university students. After having gotten permission from the person who developed the scale, adaptation of the scale study began. Scale items, response categories and instructions were translated into Turkish by five English teachers who knew English and Turkish at a good level and who were experts of assessment and evaluation in education. An expert evaluation form had been prepared for language equivalency by pooling the different translations. Five experts who had doctorate degree at the assessment and evaluation in education and knew English and Turkish at a good level chose the most appropriate translation or suggested a new translation for each one. A translation form of the scale was organized by scrutinizing each expert evaluation form. The response categories, in contrast to original scale, are as follows: 1-Not true at all, 2-Hardly ever true, 3-True most of the time, 4-Always true. The category of "True sometimes" was eliminated from the response category as Turkish equivalence of this category does not provide any information about loneliness level of the individuals. After adding the instructions and demographic information part to the scale, the scale was applied to study group on a volunteer basis. The adaptation study of the scale began with 28 items used in the process of scale development. The reason for choosing these items was to choose 28 items that could yield more precise measurements instead of 11 items providing that analysis results were acceptable. The items that were supposed to measure the social loneliness dimension were positive statements (2, 3, 4, 6, 8, 9, 11, 12, 14, 15, 16, 17, 19, 20, 21, 22, 23, 26, 27) and the items that were supposed to measure the emotional loneliness dimension were positive statements (1, 5, 7, 10, 13, 18, 24, 25, 28). During the analysis, the positive items were reverse-coded. Thus, it could be concluded that people who took a high score from the loneliness scale had high level of loneliness and, conversely, that people who took a low score from the loneliness scale had low level of loneliness.

After entering the collected data into SPSS 22.0 software package, missing data was reviewed. There was no data filled by a certain pattern. Neglecting the measurement errors arising from missing data is acceptable when there is low amount of missing data or it is mostly below 5% (Groves, 2006). The average values were assigned instead of missing data because missing data was below 5% and there was no missing data pattern. As the purpose of the mentioned scale was to measure the level of loneliness and as it was possible that the loneliness level of the individuals could be at upper or lower part, outliers were neglected. In order to test whether Turkish version of De Jong Gierveld Loneliness Scale was suitable for the relevant theory, first, exploratory factor analysis was made, and then confirmatory factor analysis was conducted. Each latent variable must be defined with a scale to conduct the confirmatory factor analysis. During factor analysis, the factor loading of the first indicator of each factor was fixed at "1". Cronbach's Alpha reliability coefficient was calculated to obtain evidence for the reliability of the measurements. SPSS 22.0 software package was used for descriptive statistics, exploratory factor analysis and Cronbach's Alpha reliability coefficient, and LISREL 8.80 was used for confirmatory factor analysis.

3. Findings

3.1 Findings of Explanatory Factor Analysis

In order to determine whether the data used in the study was appropriate for explanatory factor analysis, Kaiser – Meyer – Olkin (KMO) coefficient and Bartlett Sphericity test were used. If Bartlett's test produces a significant test result, then the null hypothesis is rejected and it can be said that observed matrix is factorable (Pett, Lackey & Sullivan, 2003). The Kaiser-Meyer-Olkin Test of Sampling Adequacy (KMO) is a measure of the shared variance in the items (Beavers, Lounsbury, Richards, Huck, Skolits & Esquivel, 2013). Gaining a value for KMO greater than 0.60 implies that fundamental factors can be extracted by using corresponding data. In this study, it was found out that KMO coefficient was 0.95 and Bartlett Sphericity test result was significant (7609.633 with $p = 0.01$). Therefore, it was concluded that the sample used was adequate for explanatory factor analysis and the data was factorable. Without any rotation, principal component analysis was carried out for factor extraction of the scale with 28 items.

As a result, four-factor model, whose eigen values ranged between 1.01 and 10.44 and explained 53.53% of variability, was observed. However, when results were examined in detail, it was seen that there was only one item loaded to third factor and other items were loaded to first factor as well as items loaded to second and fourth factor had factor loadings less than 0.30. Since number of items loaded to one factor and factor loadings were not adequate, explanatory factor analysis was repeated by using Promax rotation technique. After rotation, the number of factor was stable and factors except first factor had less than three items to be loaded (DeCoster, 1998). Since these results were not satisfactory, analysis was repeated by fixing number of factor at two in the light of the theory. When the number of factor was fixed at two, second factor had less than three items. Therefore, in case there had been only one factor, the number of factor was fixed at one. However, variance explained by this factor was 37.28%, which was not a satisfactory ratio. Consequently, due to the fact that the scale with 28 items did not have a suitable factor structure described in the theory, it was decided to use the scale with 11 items for explanatory factor analysis.

As a result of explanatory factor analysis of the scale with 11 items, it was found that KMO coefficient was 0.91 and Barlett Sphericity test result was significant (2614.9323 with $p = 0.01$). According to these results, it was concluded that the data used in this study was adequate for explanatory factor analysis. According to the results of the analysis, it was found that two factors, whose eigen values were 1.28 (11.65%) and 4.98 (45.25%), were present and they accounted for 56.90% of the variability. Nevertheless, second factor had less than three items to be loaded. So, analysis was repeated by using Promax rotation technique. Finally, items were loaded to corresponding factors as described in the original form of the scale. While items numbered 6, 8, 12, 16, 23, and 27 were loaded to emotional loneliness factor, items numbered 10, 18, 24, 25 and 28 were loaded to social loneliness factor. Items and relevant factor loadings were presented in Table 2. When Table 2 was examined, factor loading of items ranged between $\lambda=0.52$ and $\lambda=0.88$. All factor loadings were greater than 0.30 so that it could be said that these items were good indicators of social and emotional loneliness factors.

3.2 Findings of Confirmatory Factor Analysis

After getting satisfactory findings in explanatory factor analysis, confirmatory factor analysis was conducted. While identifying the model to be tested, explanatory factor analysis results and factor structure of original scale were taken into consideration. Before choosing parameter estimation method, univariate and multivariate normality tests were done. For univariate normality, it was obtained $z = -6.49$ and $z = 10.46$ for skewness and kurtosis respectively. As a result, it was seen that univariate normality was not ensured. For multivariate normality, Relative Multivariate Kurtosis was found equal to 1.37, which was out of the range of 0 and 1 required for multivariate normality. Due to the fact that the data did not have a multivariate normal distribution, Robust Maximum Likelihood parameter estimation method, which is suitable when data does not have multivariate normal distribution, was used (Brown, 2006). Then, model was tested. Fit indices were obtained and their criterion were presented in Table 3. Considering the results given in Table 3, results were appropriate to criterion described by Schreiber, Nora, Stage, Barlow and King (2006). So, it can be concluded that calculated fit indices for the models showed a reasonably good fit. The model tested and its standardized results were presented in Figure 1. Looking at the results presented in Figure 1, factor loading of items ranged between $\lambda = 0.52$ and $\lambda = 0.82$ and unique variances ranged between $\varepsilon = 0.30$ and $\varepsilon = 0.73$. All factor loadings were greater than 0.30 and all unique variances were less than 0.90 (Bollen & Long, 1993). These findings implied that items loaded to corresponding factors were good indicators of it and could not explain a little in the factor. In addition to all, correlation between emotional and social loneliness factors was found to be $r = 0.73$, which showed that there was a strong relationship between those. When fit indices, factor loadings and unique variances were evaluated all together, it can be concluded that two factor model fitted the data, items used to measure aimed psychological construct were good indicators of it and variance which could not be explained by items was relatively small. These findings have been considered as an evidence for construct validity of the related measure.

3.3 Findings of Reliability

In order to collect evidence for reliability of the scale, Cronbach α Internal Consistency Coefficient was found to be 0.873. If it is greater than 0.70 (DeVellis, 2003), it can be said that the scale is reliable. So, it was concluded that De Jong Gierveld Loneliness Scale was a reliable scale to measure loneliness level of individuals.

4. Discussion

The aim of this study was to adapt De Jong Gierveld's (1985) Loneliness Scale, which examines one of the most common psychological problems, the loneliness, under two basic dimensions as social and emotional, to Turkish. To test the suitability of the underlying theory of this adapted scale, a study group including 613 university students whose ages were between 18 and 25 was used as a sample. In order to gather evidence for construct validity, the explanatory factor analysis and confirmatory factor analysis were applied. Finally, as for the reliability, the Cronbach alpha coefficient was calculated. The results are important in the sense that the performance of the 11-point scale was similar to the performance of the original by presenting two basic dimensions as social and emotional. It was observed that Turkish version of the scale measured loneliness levels of university students under social and emotional dimensions reliably. The adapted scale not only enables the use of De Jong Gierveld Loneliness Scale as a reliable and valid tool to determine loneliness level of people, but also provides effectiveness in terms of having 11 items in the scale. Therefore, the adapted scale can be considered as an alternative to UCLA loneliness scale which is used widely for the 15-69 age range in Turkey. UCLA loneliness scale can sometimes cause trouble for researchers since it consists of a great number of items. The adapted scale can solve this problem with its relatively low number of items.

In addition, Penning, Liu and Chou (2013) argue that De Jong Loneliness Scale produces more reliable results for middle aged people than UCLA scale does. UCLA loneliness scale, which is used widely in Turkey, was used so as to determine the loneliness level of the individuals aged from 15 and above. Loneliness has various indicators in different age levels. Therefore, different loneliness scales should be used for different age groups. Since emotional and social loneliness can manifest itself in all phases of human life, the adapted scale should also be used for measuring loneliness levels of students at different stages of education. Rather than using a general loneliness scale, a scale developed or adapted for a specific age group should be used. So, De Jong Gierveld Loneliness Scale adapted for Turkish students aged between 18-25 years will be helpful for measuring loneliness level of corresponding age group. In addition, measuring loneliness levels of students would be helpful to determine and solve problems experienced by students. Moreover, the relation of loneliness with several variables including gender, absenteeism, stress and anxiety should also be investigated. Accordingly, it will be easier to determine and solve the problems experienced by students. When the literature was examined, it was seen that De Jong Gierveld Loneliness Scale was not just limited to students in abroad and it was applied to adults, married couples and the old people. As a result of the analysis, it was figured out that the scale had evidence for validity and reliability. Therefore, similar studies should be conducted in Turkey to show the applicability of the scale for different age groups. Moreover, another suggestion would be to determine a cut-off score for the state of being alone or being not alone. The adapted scale can also be utilized with the same sample by selecting the new cut-off point as a criterion.

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Table 1: Number of Students According To Sex, Grade, Sheltering Conditions

	Sex		Grade					Sheltering			
	Female	Male	Prep.	1	2	3	4	Dormitory	Home	Family	Other
Number	377	236	269	41	45	183	75	261	141	185	26
Percent	61.5	38.5	44	6.7	7.3	29.8	12.2	42.6	23	30.2	4.2

Table 2: Items in the Scale with 11 Items and Their Factor Loadings

	Item	Factor Loading
Emotional Loneliness Factor	6. I wish I had a really close friend.	0.69
	8. It makes me sad that I have no company around me.	0.82
	12. Often, I feel rejected.	0.57
	16. I experience a sense of emptiness around me.	0.59
	23. I miss having people around me.	0.83
	27. I feel my circle of friends and acquaintances is too limited.	0.52
Social Loneliness Factor	10. I can rely on my friends whenever I need them.	0.84
	18. There are many people I can count on completely.	0.73
	24. There is always someone around that I can talk to my day to day problems.	0.77
	25. There are plenty of people that I can depend on if I'm in trouble.	0.88
	28. There are enough people that I feel close to.	0.76

Table 3: Fit Indices and Criterion and Results for the Model Tested

Fit Indices	Results	Criterion
Satorra-Bentler Chi Kare (X^2) / Degrees of freedom (df)	128.45 / 43=2.99	$2 \leq X^2/df \leq 3$
Root Mean Square Error of Approximation (RMSEA)	.057	< .06
Comperative Fit Index (CFI)	.98	$\geq .95$
Non Normed Fit Index (NNFI)	.98	$\geq .95$
Goodness of Fit (GFI)	.95	$\geq .95$
Adjusted Goodness of Fit (AGFI)	.92	$\geq .95$

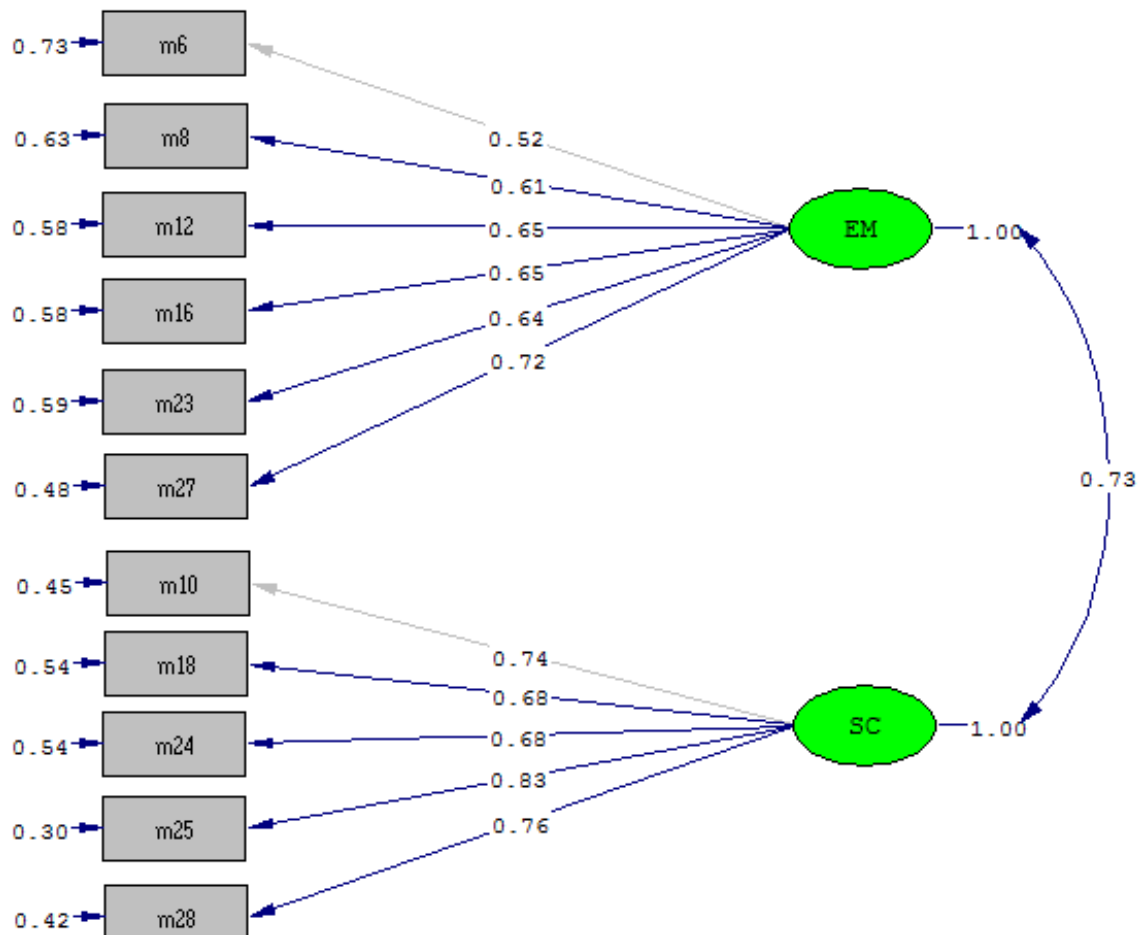


Figure 1: Standardized Factor Loadings and Unique Variances, Correlation between Factors