

Adaptation of RULS-6 loneliness scale (6-item short form) into Turkish: A validity and reliability study

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Abstract

This study includes the adaptation of the 6-item UCLA (Developing a Measure of Loneliness) loneliness scale developed into the Turkish language and the findings of its reliability and validity values. The study was conducted with the data obtained from the study group ($n = 327$), including university students. As a result of the analyses, it was determined that the scale showed a single-factor structure in accordance with its original structure. Furthermore, the criterion validity of the scale is also computed using the UCLA loneliness scale version 3. The reliability of the scale was computed by Cronbach's alpha coefficient technique and it was found to be .84. Findings have shown that the Turkish adaptation of the 6-item UCLA loneliness scale is reliable and valid and can be used in measuring loneliness in Turkey.

Keywords: Loneliness, scale adaptation, validity, reliability;

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1. Introduction

Social relationships are important for individuals of all ages. These social relationships create the need for all people to relate to and interact with others in life. Today, interpersonal relationships deteriorate for many reasons and a rapid increase is observed in the number of people who are deprived of intimacy (Yılmaz, Yılmaz, & Karaca, 2008). Loneliness is also an important problem that negatively affects the life of the individual and is increasing day by day (Kılınç & Sevim, 2005). Loneliness, which has become a part of our lives in one way or another, is seen as a difficult situation to define. There are various definitions of loneliness in the literature. Loneliness is a sad feeling that accompanies the perception that one's social needs are not met by the quantity or especially the quality of their social relationships (Hawkley & Cacioppo, 2010; Pinquart & Sorenson, 2001). Peplau and Perlman (1982) state that loneliness arises from the difference between individuals' desires and their real relationships. Younger (1995) states that loneliness is the feeling of being alone, despite longing to be with other people, and according to her, lonely people experience loneliness as aimlessness and boredom and this makes the person feel like he/she is purposeless and useless. Weiss (1973) states that loneliness creates a negative emotional environment in the individual to protect him from the dangers of separation, thus functions as a mechanism to increase intimacy. Loneliness is a psychological condition that disturbs the person who cannot reach the desired level of social relationship (Demirbaş & Haşit, 2016). The situation that these definitions express in common is that loneliness is seen in social relationships and it is a situation that psychologically affects people negatively.

Loneliness in our daily lives is being without a partner, friend, parents, etc., opening the house with a key every day, drinking tea alone, traveling alone, 'not here' on holidays and the wrong number on the phones. A solitary person lives alone and interacts with relatives and friends less than once a month. The lonely person is alone, but it does not have to be physical. In this respect, the individual may sometimes feel alone in crowds and a stranger among acquaintances. In other words, loneliness is not related to the number and frequency of social relationships (Yaşar, 2007). Loneliness may result from quantitative and qualitative problems in the social relationships of the individual (Kaya, 2005). Based on these situations, seeing loneliness in various ways and being affected by situations is an inevitable and sometimes positive aspect of human experience, but some harmful psychological and physiological symptoms of 'chronic' loneliness, which recent studies have shown, have shown that loneliness should be measured (Stoehr, 2017).

When the literature was examined, many scales related to loneliness were found. The UCLA loneliness scale developed by Russell, Peplau and Cutrona (1980) is at the forefront of the scales that measure the different symptoms and dimensions of loneliness. Demir (1989) carried out the translation of this scale into Turkish. When the psychometric test features of the scale on depressed and healthy individuals are examined, findings such as internal consistency (0.96) and test-re-test reliability (0.96) reveal important results (Demir, 1989). However, this version of the UCLA loneliness scale was criticised for expressing all items negatively. It causes systematic bias in answering the items (Russell, 1996). In addition, high correlations were found between concepts such as depression and self-esteem (Russell, 1996). Due to such problems, a revised version of the original scale was developed by Russell (1996) as the UCLA loneliness scale-version 3 (UCLA LS3). Internal consistency and test-re-test analysis of this scale, which has 20 items, 9 positive and 11 negatives, were found to be satisfactory (Russell, 1996). The Turkish translation of this scale was also adapted by Durak and Senol-Durak (2010) as the UCLA LS3. In the studies conducted by Durak and Senol-Durak (2010), besides the satisfactory validity and reliability studies of the scale, it was revealed that the UCLA LS3, with 20 items with a multidimensional factor, is a valid tool that can be applied to various age ranges and different demographic structures. In addition to the widespread use of these scales, the fact that they have 20 items is criticised for their length. The use of the scale becomes difficult, especially in elderly and depressed patients. Thus, some attempts have been made to shorten the scale. There are some studies on this in Turkey as well. There are scales translated into Turkish, such as the UCLA loneliness scale short form (ULS-8) by Doğan, Çötök, and Tekin (2011) and the UCLA loneliness short form (for adolescents) by Yıldız and Duy (2014). When we look at these and similar forms, it is seen that there are scales at the ranking level, which were created by factor analysis and deal with loneliness in different dimensions. Wongpakaran et al. (2020) developed the 6-point revised UCLA loneliness scale (RULS-6) formed with Rasch analysis. The RULS-6, on the other hand, enables us to obtain more general and one-dimensional information about loneliness by using Rasch analysis. In addition, the RULS-6 uses

Rasch analysis to remove the scale from the ranking level and become a scale at the interval level. This ensures that the values obtained from the scale are more reliable and more analysis can be made on it. In addition, the high correlation values of other developed scales with concepts such as depression and self-esteem bring deficiencies in the measurement of loneliness. RULS-6, on the other hand, eliminates these problems by examining loneliness in one dimension. In addition, it is seen that the short form of the UCLA scale in Turkey (Doğan et al., 2011; Yıldız & Duy, 2014) is the first version of the UCLA loneliness scale translated by Demir (1989). In the literature, Durak and Senol-Durak's (2010) translation of a short form for UCLA LS3 was observed. The aim of this study, using the Rasch analysis revised by Wongpakaran et al. (2020), was to carry out a validity and reliability study using RULS-6 adaptation with a sample of university students.

2. Method

2.1. Study group

In order to determine the psychometric properties of the scale, data obtained from 327 university students, aged between 18 and 28 years and selected by convenience sampling, were used. 227 (69.4%) participants were female and 110 (30.6%) were male. The average age of the participants was found to be 26.2 years. Confirmatory factor analysis (CFA) was applied with the data of 327 individuals obtained. For the criterion validity analysis, which was applied separately, the data of 40 people were used.

2.2. Data collection tools

The data of the study were collected with the RULS-6 and the UCLA LS3 using Rasch analysis. The RULS-6 scale adaptation study is the desired scale. UCLA V3 was also used for criterion validity.

2.2.1. RULS-6 using Rasch analysis

Revised by Wongpakaran et al. (2020) based on the UCLA LS3 developed by Russell (1996) to measure the loneliness levels of university students and chronic patients, RULS-6 consists of a single form with six items. The items have a 4-point rating as '1 = Never', '2 = Rarely', '3 = Sometimes' and '4 = Always', and a total score of 6–24 can be obtained. There are no negative items in the items and they all consist of positive items. It is understood that the person with a high score also has a high level of loneliness. The scale was studied with three groups: two university student groups and one clinical group. Rasch analysis was used in the analysis of the data and it was found that the scale consisted of a single factor. (1) Students' sample three familiarisations' total explained variance was determined to be 46.5%. The factor loadings of the scale items ranged from 0.59 to 0.68. The Cronbach alpha internal consistency coefficient of the scale was found to be 0.72. (2) In the student sample study, the total explained variance was found to be 53%. The factor loadings of the scale varied between 0.68 and 0.73. The Cronbach alpha internal consistency coefficient of the scale was found to be 0.82. (3) In the clinical sample study, the total explained variance was found to be 50.3%. The factor loadings of the scale items ranged from 0.65 to 0.78. The Cronbach alpha internal consistency coefficient of the scale was found to be 0.84 (Wongpakaran et al., 2020). The psychometric properties of the RULS-6 were created based on several desirable requirements, particularly unidimensionality and free working on items. For this reason, RULS-6 allowed the data obtained to be measured more clearly by using Rasch analysis to increase loneliness from previous ranking level scales to the interval level (Wongpakaran et al., 2020). It can be said that RULS-6 is a valid, reliable, sensitive and highly distinctive measurement tool in measuring loneliness by examining it among independent groups.

2.2.2. UCLA Loneliness Scale V3

It is a Likert-type scale consisting of 20 questions that measure the loneliness of an individual, developed by Russell et al. (1980), and validity and reliability in our country by Durak and Senol-Durak (2010). 10 statements (items 1, 4, 5, 6, 9, 10, 15, 16, 19 and 20) indicate positive statements showing satisfaction with social relationships and 10 statements (items 2, 3, 7, 8, 11, 12, 13, 14, 17 and 18) include negative expressions showing dissatisfaction with social relationships. The answer given to the item is evaluated by giving 1 point if it is 'never', 2 points if it is 'rarely', 3 points if it is 'sometimes' and 4 points if it is 'often'. The lowest score that can be obtained from the scale is 20 and the highest score is 80. An increase in the score obtained from the scale indicates that the individual experiences more intense loneliness. The Cronbach alpha value of this scale was found to be 0.90 (Durak & Senol-Durak, 2010).

2.3. Process

Using Rasch analysis for the revised 6-item scale UCLA's adaptation of study, permission was taken from Wongpakaran et al. (2020), who developed the scale first. The English form of the scale was translated into Turkish by three academicians and two English teachers who are fluent in English and Turkish. The forms of the scales translated into Turkish by the experts were transformed into a single form with a panel made by three experts who were fluent in Turkish and English. The Turkish form created was given to two language experts and translated back into English. After back translation, it was observed that the Turkish version of the scale was close to the original English version. Afterward, the final application form of the scale was created

After the necessary permissions were obtained after the stage of creating the form of the scale, the data collection stage was started. The forms created over the Internet were delivered to university students. Necessary explanations were made at the beginning of the application and the consent of the participants was obtained stating that they did not need to write their names in the study. The study took approximately 2 minutes for each participant.

For the validity of the scale, construct validity and CFA were performed. Apart from this, similar criterion validity values were analysed for validity. For the reliability study, the Cronbach alpha coefficient was examined. In addition, item analyses of the lower 27% and upper 27% groups, which were formed according to the total scores of the test, were analysed using the unrelated *t*-test. The data of the research were analysed with SPSS 26.0 and AMOS package programmes.

3. Findings

3.1. Validity studies

3.1.1. Confirmatory factor analysis (CFA)

CFA was applied to reveal whether the single-factor structure of the RULS-6 scale could be validated as a model. The model obtained by CFA is given in Figure 1, and various fit index values are also examined. Goodness of fit index (GFI), normed fit index (NFI), relative fit index (RFI), comparative fit index (CFI) and incremental fit index (IFI) values greater than 0.90 indicate that there is sufficient agreement, values approaching 0 are poor and values approaching 1 indicate perfect fit and root mean square error of approximation (RMSEA) It is stated that a value less than 0.05 indicates a good fit, a value below 0.10 indicates an acceptable goodness of fit, and a ratio of chi-square value to degrees of freedom below 5 indicates good fit (Çokluk, Şekercioğlu, & Büyüköztürk, 2010; Schumacker & Lomax, 2004; Şimşek, 2007).

When the fit indices for CFA were examined, it was seen that the ratio of chi-square value to degrees of freedom ($27.50/9 = 3.056$) had a sufficient level below 5. When the other fit indices were examined, it was found that $RMSEA = 0.07$, $GFI = 0.97$, $NFI = 0.96$, $RFI = 0.93$, $CFI = 0.97$ and $IFI = 0.97$. RFI of 0.90 and above is acceptable; GFI, CFI, NFI and IFI indices being higher than 0.95 show that they have perfect fit values. RMSEA being between 0.05 and 0.10 indicates an acceptable level of fit. When the goodness of fit indices obtained as a result of CFA are examined, it is seen that the model is compatible.

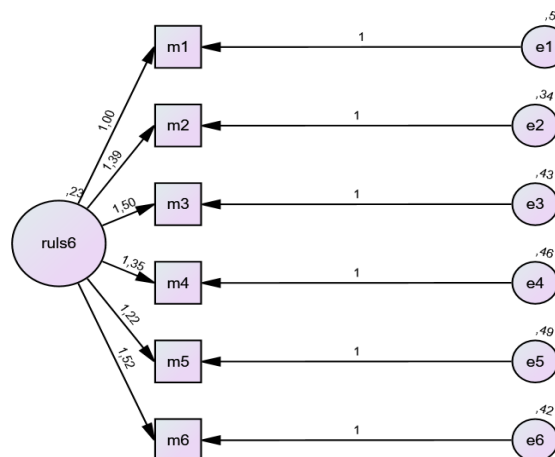


Figure 1. CFA model

3.1.2. Criterion validity

In order to determine the criterion validity of RULS-6, a similar scale, the UCLA LS3, developed by Russell (1996) and adapted to Turkish by Durak and Şenol-Durak (2010), was taken. The correlation levels of the scales were examined with the Pearson correlation test. As seen in Table 1, a positive significant correlation was found between RULS-6 and UCLA V3 at $p < 0.01$ significance level and 0.79 level.

Table 1. Correlation, mean, standard deviation and Cronbach alpha values of measurement tools

| <i>Measuring tools</i> | <i>RULS-6</i> | <i>UCLA V3</i> |
|------------------------|---------------|----------------|
| RULS-6 | - | 0.79 |
| UCLA V3 | 0.79 | - |
| Average | 15.58 | 3.51 |
| Standard deviation | 48.69 | 11.59 |
| Cronbach's alpha | 0.84 | 0.75 |

RULS-6 = 6-item revised UCLA loneliness scale using Rasch analysis, UCLA V3 = UCLA loneliness scale V3.

* statistically significant result $p < 0.01$.

3.2. Reliability

One of the most commonly used methods to determine the reliability (internal consistency) of the scales is the Cronbach alpha test. Cronbach's alpha coefficient is required to be greater than 0.70 (Gürbüz & Şahin, 2018). The reliability study of the RULS-6 scale was examined by testing Cronbach's alpha coefficient. The Cronbach alpha coefficient was found to be 0.84. As a result, these findings show that the internal consistency of the proposed scale is provided and the reliability of the scale is at an acceptably high level.

3.3. Item analysis

The item analyses of RULS-6 were examined by looking at the item–total correlations and the differences between the 27% upper-subgroup items. Item–total correlation explains the relationship between the scores obtained from the test items and the total score of the test. A positive and high item–total correlation indicates that the item exemplifies similar behaviours and the internal consistency of the test is high. It can be said that items with an item–total correlation of 0.30 and above distinguish individuals well (Büyüköztürk, 2010). The t -test results of the comparison of the item scores of the lower 27% and upper 27% groups with the RULS-6 item–total correlations are given in Table 2.

Table 2. Substance analysis results of RULS-6

| <i>Item No.</i> | <i>Item–total correlation</i> | <i>t</i> <i>Bottom 27%–Upper 27%</i> |
|-----------------|-------------------------------|---|
| M1 | 0.75 | 12.45* |
| M2 | 0.89 | 20.58* |
| M3 | 0.89 | 22.85* |
| M4 | 0.87 | 19.57* |
| M5 | 0.82 | 15.20* |
| M6 | 0.89 | 20.83* |

* $p < 0.01$.

When Table 2 is examined, the item–total correlation values of RULS-6 vary between 0.75 and 0.89 and it is well above the desired 0.30 value, and the items fulfil this criterion to a high degree. In addition, the top-down 27% item discrimination indexes of each item were examined and it was observed that t -values provided significance at $p < 0.01$ significance level and varied between 12.45 and 22.85. The fact that the item–total correlations are greater than 0.30 and the t -test results used for 27% sub-upper group item comparisons are significant for all items, indicating that the items in the scale have high reliability and are intended to measure the same behaviours (Büyüköztürk, 2010).

4. Discussion and Conclusion

This study aims to adapt the 6-item UCLA loneliness scale, which was obtained by using the Rasch analysis revised by Wongpakaran et al. (2020) into Turkish and to examine its psychometric properties. At this point, various validity and reliability analyses were applied. The findings obtained as a result of this adaptation study carried out in the study group consisting of university students showed that the scale had a level of validity and reliability to measure the level of loneliness.

For the validity of the scale, firstly, analyses were made for construct and criterion validity. CFA was conducted to determine whether the single-factor structure in its original form would be preserved in the study group consisting of Turkish university students. Accordingly, the obtained goodness-of-fit indices revealed that the single-factor structure of the scale was preserved in the sample consisting of Turkish university students. Similar criterion validity was applied for another validity analysis. For this purpose, correlation values between RULS-6 and UCLA LS3 were examined and highly significant positive correlations were found. The reliability of the scale was examined by calculating the internal consistency coefficient. The findings show that the scale has a high level of reliability.

In order to analyse the item analyses of RULS-6, item–total correlation and t -values were examined. It is seen that the item–total correlation values are highly positive and the t -values are significant. As a result of the item analysis, it shows that the discrimination power is high. The findings obtained as a result of the validity and reliability study support the results obtained in the original revised scale by Wongpakaran et al. (2020).

As a result, based on the findings obtained in the validity and reliability studies, it can be said that the scale is a valid and reliable measurement tool for measuring and evaluating loneliness in university students. It can be considered an advantage that it is an easy to use and scoring scale that is practical and can be applied in a short time. However, validity and reliability studies of the scale can be conducted with more specific and different sample groups in the future.

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