

Research Paper

Construction and Validation of a Scale of Research Anxiety for Students



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ABSTRACT

Objectives The aim of this study was to design and validate a scale of research anxiety for students at the Ferdowsi University of Mashhad.

Methods The correlation method was used in this study. The population consisted of MA students at the Ferdowsi University of Mashhad in the academic year 2014-15. The prepared scales were analyzed in two stages: preliminary and final stages. In the preliminary stage, the scale was implemented on 100 students selected via convenient sampling, and in the final stage, the tool was implemented on 400 students selected via quota sampling method based on gender and field of study. Data were analyzed using SPSS software.

Results The results showed that the factor analysis using varimax rotation supported only one factor, and 40 items were selected on each phrase for at least 0.3 loadings. The validity of the scale was obtained with the help of the judgment of experts, convergent-divergent validity, and factor analysis. Scale converging-diverging validity done of correlation with the Spielberger State-Trait anxiety (STAI) and Cooper Smith self-esteem. The results showed negative relation (- 63.0) between self-esteem and research anxiety and a strong positive correlation (0.650) between Spielberger State-Trait Anxiety and research anxiety. Scale reliability was 0.87 via Cronbach's alpha and 0.76 via re-test after seven days.

Conclusion The results showed that research anxiety scale has acceptable reliability and validity and can be used for a variety of applications.

Key words:

Research anxiety, Student, Validation

Extended Abstract**1. Introduction**

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nxiety refers to a condition where a person is extremely worried, stressed, and upset at the time of a terrible event [1, 2]. Anxiety research comprises individual factors affecting the performance of researchers.

The study of its structural aspects (i.e., components) and their interconnections could contribute to the organized knowledge in this area and promoting research level students. Cultural factors can dramatically affect in the research tools Given that there is a lack of useful tools in the field of research anxiety of students, this study aimed to identify the factors important for the anxiety research. It also aimed at designing a questionnaire as a construction tool to measure the factors among the students. In other words, the purpose of

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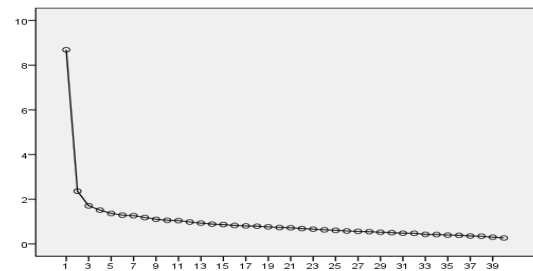
this study was to investigate the factor structure of research anxiety scale and its psychometric properties.

2. Method

In the current study, the correlational research method was used. The population comprised of all graduate students of the Ferdowsi University of Mashhad who were enrolled in the academic year of 2014-15, i.e., 1031 women and 843 men. The other inclusion criterion was not defending their dissertation at the time of this study. The prepared research anxiety scale was implemented in both the preliminary and final stages. In the preliminary stage, the tool was implemented on 100 students selected with convenient sampling. In the final stage, the tool was implemented on over 400 students selected with quota sampling based on gender and field of study. Data were analyzed by factor analysis using statistical software SPSS version 20. The validity of the scale was confirmed by arbitration specialists, convergent-divergent validity and factor analysis. The reliability of the scale was obtained using test-retest and Cronbach's alpha.

3. Results

A total of 11 factors could be extracted according to the number of special values higher than one and gravel graph (Figure 1). For better separation and extraction, Varimax rotation was used. According to accounting power less than 5%, only two factors were extracted that accounted for 27.63% of the total variance. Thus, about 21.72% of the variance is accounted for only by the first factor. The results also indicated that 34 out of 40 questions were focused on the first factor. The load factor of six questions focused on two factors. Thus, according to the original matrix factor and related weights, the questionnaire was considered in the form of one factor.



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Figure 1. Scree plot for the factors extracted

As seen in Table 1, Bartlett's test is significant; therefore, there is a possibility of conducting factor analysis. To check the validity of the test, factor analysis, professional judgment, and convergent-divergent validity were used. The convergence and divergence of research anxiety scale were investigated using Cooper-Smith Self-Esteem Scale and the Spielberger State-Trait Anxiety Inventory. Fifty-five subjects responded to the Cooper-Smith self-esteem questionnaire and the Spielberger State-Trait Anxiety Inventory. It was found that the correlation of Anxiety scale research with Spiel-Berger was equal to 0.65 and correlation with Self-Esteem Test was -0.63.

To study the questionnaire validity were used of factor analysis, convergent and divergent validity and judgment of experts. In the judgment of experts were included validity by 5 of Counseling center consultant. The reliability of the instrument through Cronbach's alpha was equal to 0.87, and its stability using the test-retest method on 22 subjects within one-week interval from the first pilot study was 0.76. Generally, reliability coefficient of research anxiety test was at the optimal level for the entire sample. The following table shows the calculation of Cronbach's alpha coefficient for the general research anxiety scale.

Table 1. KMO index and Bartlett's test of sphericity for Research Anxiety Scale

Bartlett Test			
Chi square	Degree of freedom	Level of significance	KMO Test
3627.62	780	0.001	0.88

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Table 2. Cronbach's alpha coefficient for general research anxiety scale

Number of items	Cronbach's alpha coefficient
40	0.93

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According to Table 2, questions have not the same variance and do not enjoy the same status. Cronbach's alpha value after removing each question also shows that removing the statement will not lead to significant increase in reliability and reliability for 40 items after removing the distorted questionnaire, is equal to 0.87.

4. Discussion and Conclusion

Given the high prevalence of research anxiety in the student population, it seems necessary to have a comprehensive scale to measure this disorder. Therefore, the findings are discussed based on research goals. The first objective was to examine the factor structure of research anxiety scale; the factor analysis showed that the items such as (When choosing the subject, I have the pleasant peace of mind), (I do not worry about choosing the appropriate subject for the research study), (For selecting a supervisor, I feel apprehension and doubt), (During talks with the supervisor, I am relaxed), (I think, I feel relief when writing a research project), (In preparing my research plan, I am very relieved), (If I could design my research well, I will feel confidence), (If I plan to defend my research, I will feel relaxed), (In the case of my statistical work, I have no fear and apprehension), (I think my sample is not effective), (I'm sure in preparing my research, I have a good feeling), (I am worried when conducting my statistical analysis work, I suffer from insomnia) loaded no factor after the rotation, and they were excluded as inappropriate items.

The second objective of the research was psychometric examination (validity, reliability, normality) of research anxiety scale. It was found that the questionnaire supports only one factor since 34 questions from 40 questions are focused on the first factor. Also, according to Klein (2001), the best situation in a test is that the test measures only one variable, and to ensure this, the test was conducted with many questions and the correlations between questions were factor analyzed. The questions that had an overall load on the factor were selected for the test. According to the results and theories about self-esteem [58-62], anxiety and stress may be associated with different forms of self-esteem. Therefore, in this research, the relationship of this variable with self-esteem was evaluated as an indicator of validity. The correlation coefficient suggests that the more is the research anxiety, the lower will be the self-esteem in students. Also according to studies in the field of anxiety [63-65] and the relationship of anxiety with each other [66], the Spielberger State-Trait Inventory has a significant positive correlation with research anxiety; this correlation is also confirmed in our study confirms.

To investigate the norm, the t and z equivalent scores of raw scores on the anxiety scale were investigated. By con-

verting the raw scores to percentile ranks, Z score and T scores, it was possible to interpret the test scores of research anxiety. Generally, anxiety refers a complex combination of negative emotional reactions such as anxiety, fear, and panic [3]. The results of this study can be used to identify students with research anxiety. Moreover, this study contributes to the literature since there is no separate subject of study for the diagnosis of anxiety in our country. Suggested that in future studies increasing sample size and done on students other universities. Until be more representative the demographics specifications sample of limitations this study Self-reporting of participants and reliance of the responses to the feelings of people at the moment of accountability.

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Conflict of Interest

The authors declared no conflicts of interest.