PSYCHOMETRIC PROPERTIES OF STERNBERG LOVE SCALE

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ABSTRACT

Introduction: The aim of study was to evaluate the psychometric indices Sternberg love scale on married men and women in Iranian society.

Methods: The study type is correlation (factor analysis). In this research factor analysis was used that is an exploratory and confirmatory technique to study the structure of a set of data, which has several pre-conception about exploring the questionnaire factors.

The sample size was 200 individuals which is randomly selected and completed Sternberg's triangular love scale from men and women who participated in the before marriage classes and family education classes in Mashhad in 2015. Data was analyzed using exploratory and confirmatory factor analysis.

Findings: The results of the factor analysis by using Varimax rotation method showed three love factors, and they were fitted by confirmatory factor analysis. Internal consistency reliability Alpha Cronbach coefficients including 45 items and three factors of intimacy, passion and commitment respectively are 0.86, 0.87 and 0.91 and love overall scale was satisfactory.

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Discussion: The results of the factor analysis are consistent with previous studies and with respect to the validity and reliability of Sternberg's love triangle that can be used in research and family domain.

**Keywords**: Love triangle; Sternberg; psychometric; reliability.

1. **INTRODUCTION**

Today, various debates about the interpersonal relationship psychology arise and each of the contemporary approaches tries to explain and describe the special offer discussions about interpersonal relationships. However, some concepts are ambiguous and still cannot be as a clear argument in the area of interpersonal relations, we can mention love, understanding, intimacy, attachment and belonging (Glaser 2007).

One of the most attractive and at the same time complete theories that arise in the area of love is love triangle theory and it can be firmly stated that love triangle theory, the most influential and the most complete theory of love psychology. This theory is based on extensive studies and systematic research and developed by R. J. Sternberg that in addition to the love component of a comprehensive approach offers a variety of love.

After multiple investigations, Sternberg stated three elements of love, intimacy, commitment and passion based on the interaction of the three primary components of love, even though the theory of Sternberg refers to the eight kinds of love as the love triangle theory approach but in some psychological resources related to love, his approach is mentioned as "the approach of love" (Doudman, 2012).

Sternberg was among those who tried to use psychometric principles through advanced statistical analysis techniques to achieve elements of love by identifying factors. He used confirmatory factor analysis and tried to investigate his valid theory in psychology of love and to consider the most completed contemporary theory as the theoretical basis of factor analysis. Today a systematic research was conducted to study Sternberg terms and a psychometric movement also has sought to provide a more complete tool for measurement and validation of the structure of love with Sternberg's approach. However, it is necessary to examine the factors affecting the formation of Sternberg's theory and after reviewing these factors, we can
provide a comprehensive picture of the love triangle. Sternberg sees love into three main components: intimacy (emotional component), passion (motivation component) and decision / commitment (cognitive component). These components are integrated with each other in different ways to create eight different types of love. He put these three components in three vertices of a triangle and states the nature of love and its relationship with sexuality and behavior by the intensity and weakness of the three components and their relationship with each other.

In Sternberg perspective the worst type of relationship is when intimacy, passion and commitment is weak and there is lack of love and the relationship is not stable. But if all three factors are available love is obvious and loving relationship is permanent and stable and failure in romance can never be seen. Finally, Sternberg approach to love has great diversity and different angles of it has revealed. Although love type cannot easily be regarded as stable but, according to authoritative research it could be considered that to somehow love remains constant and in most cases it does not change unless the parties seriously try to change it. It needs to be mentioned that the way to achieve this goal alone is a futile effort, and it required both parties (Beirami, 2013).

Sternberg's theory unlike most previous theories raises more than one or two types of love and helps us to understand love as a multi-dimensional phenomenon; the theory has a certain practical applications. First, by measuring three components of love, we specify the type of romantic relationships of each pair then, by analyzing the differences between types of love of each pair, if there is a desire to continue the relationship, we accurately show what areas are in need of reform (Sepah Mansour, 2012). Love triangle theory can describe the satisfaction of romantic relationships and serve as an application model in the areas of marital counseling, family therapy and marriage counseling. Sternberg's theory in the realm of practical tips to adapt the three elements of love in the couple's marital counseling can be emphasized and to the extent that this adaptation can help couple has more romantic relationships and understanding (Beirami, 2013).

Most research on interpersonal communication was conducted in Western countries with individualistic culture and little attention has been paid to Eastern countries and collectivist
cultures. Due to this fact, it is essential that the questionnaire should be normalized in our society; the reliability and validity should be analyzed so the questionnaire will be used in consultation.

2. METHODOLOGY
The study type is correlation (factor analysis). In this research factor analysis was used that is an exploratory and confirmatory technique to study the structure of a set of data, which has several pre-conception about exploring the questionnaire factors.

The sample size was 200 individuals (100 male and 100 female) which are selected by stratified sampling in counseling centers of Mashhad in 2015. The way of choosing was that counseling 4 centers were selected from number of centers in Mashhad, from each one 50 men and 50 women were interviewed and completed questionnaires. Research tool included a questionnaire of Sternberg's love triangle; the test consists of 45 questions that based on objective measures for each of the items is scored from 1 to 9 in order. In a way that the first 15 sentences distinguishes intimacy, the second 15 sentences distinguishes passion and the last 15 sentences distinguishes commitment, To analyze the data, the numbers that were placed in front of each group of 15 sentence should be added together to determine the level of sample people in three elements of love. Ghomrani and Sadat JafarTabatabyi (2006) reported the reliability of Sternberg's love triangle questionnaire by using Cronbach's alpha as 0.92. Also they reported validity using the correlation with the total score for the three components of intimacy, passion, and commitment to, respectively as 0.66, 0.92 and 0.77/0. Factor analysis was used to analyze the data.

3. FINDINGS

<table>
<thead>
<tr>
<th>Table 1. Descriptive indicators of love scale and subscales (intimacy, passion and commitment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators</td>
</tr>
<tr>
<td>Number</td>
</tr>
<tr>
<td>Mean</td>
</tr>
</tbody>
</table>
Given the mean score of subscale in tests of love, women and men tendency toward three variables is fairly at a same level. Although the mean scores of intimacy variable are smaller than other variables and the mean scores of passion variable are less than other variables. Based on the above data, it can be stated that more men and women like intimacy; an intimacy has content to learners' needs and are less likely toward passion. Also according to the amount of skewed and stretched between -2 to +2, thus there is a normal distribution of scores of these variables.

In order to evaluate the adequacy of sampling and hypothesis of no enough correlation between the variables from sufficient criterion of Kaiser-Meyer-Elkin (KMO) sampling adequacy and Bartlett's test of globosity was used. The results are presented in table (2-4):

<table>
<thead>
<tr>
<th></th>
<th>KMO</th>
<th>Bartlett's test</th>
<th>Significant Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard error</td>
<td>0/03</td>
<td>0/03</td>
<td>0/04</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0/7</td>
<td>0/58</td>
<td>0/75</td>
</tr>
<tr>
<td>Variance</td>
<td>0/49</td>
<td>0/33</td>
<td>0/56</td>
</tr>
<tr>
<td>Skewness</td>
<td>410-0.</td>
<td>-0.92</td>
<td>-0.576</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>183-0.</td>
<td>0.221</td>
<td>0.402</td>
</tr>
</tbody>
</table>

According to the table above, sufficient sampling was 0.857 that show the data are suitable for principal components analysis. Similarly, Bartlett's test of globosity was achieved 5522.094 that are significant at 0.000 levels and shows there is enough correlation for conducting between variables, and the null hypothesis of not having enough correlation between the variables was rejected.
Results of exploratory factor analysis with oblique rotation has identified 3 factors that the intimacy with 15 questions, passion with 15 questions and commitment with 15 questions. Tabachenik and Fidel (2001) believed that, in practice, a strong solution must explain at least 50% of the variance. Therefore first three components of love scale explained around 44.11 percent of variance of love. Special value for Important and meaningful factors of first to third, respectively are 4.549, 4.034, 3.59 and collectively is 12.173. The amount of explained variance of factors of first to third, respectively are 28.782, 9.438, 5.958 and collectively is 44.175. This result on questionnaire saturation of 3 factors, implies a very important factor that has a larger share of the total variance of questionnaire, and three more detailed factors.

Diagram of confirmatory factor analysis is as follows:

<table>
<thead>
<tr>
<th>Scales</th>
<th>Before rotation</th>
<th></th>
<th>After rotation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>eigenvalue</td>
<td>% of variance</td>
<td>% Cumulative</td>
<td>eigenvalue</td>
</tr>
<tr>
<td>Passion</td>
<td>4.246</td>
<td>9.434</td>
<td>38.216</td>
<td>4.034</td>
</tr>
<tr>
<td>Commitment</td>
<td>2.681</td>
<td>5.958</td>
<td>44.175</td>
<td>3.590</td>
</tr>
</tbody>
</table>
Table 4. Summary of indicators of love scale three-factor model

<table>
<thead>
<tr>
<th>Model</th>
<th>CFI</th>
<th>AGFI</th>
<th>GFI</th>
<th>RMR</th>
<th>RMSEA</th>
<th>df</th>
<th>$x^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured model</td>
<td>0/91</td>
<td>0/85</td>
<td>0/93</td>
<td>0/07</td>
<td>0/08</td>
<td>521</td>
<td>1522/079</td>
</tr>
</tbody>
</table>

Confirmatory factor analysis was conducted by AMOS-21 has shown that the model is supposed to be fitted enjoyable. Because the $x^2$ amount at 000 level 0 <P was not significant. K2 Index of degrees of freedom is smaller than 3. This means that there is compliance and fitting between hypothesized model and measurement model (The $x^2$ amount should not be meaningful). Also Goodness of fit index (GFI) and comparative fit index (CFI) should be

Table 5. The reliability of the love scale and its subscales with Cronbach's alpha method

<table>
<thead>
<tr>
<th>Scale Index</th>
<th>Commitment</th>
<th>Passion</th>
<th>Intimacy</th>
<th>Total test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach's alpha</td>
<td>0/911</td>
<td>0/875</td>
<td>0/867</td>
<td>0/935</td>
</tr>
<tr>
<td>Question numbers</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>45</td>
</tr>
</tbody>
</table>

As it can be seen in the table above, the reliability of the love scale and its subscales with Cronbach's alpha was calculated and commitment subscale has the highest level of reliability and intimacy has the lowest reliability. However, the whole love scale and its subscale have high reliability. Due to the calculated amount of Cronbach's alpha was used to test love was 0.935.

4. DISCUSSION AND CONCLUSION
Love is an interesting subject for many people. But there was no appropriate psychological
research about it especially in the last decades. Consequently research related to love and love relationship can be a solution to many problems.

Given the importance of love subject this study analyzed some psychometric properties of the questionnaire that Sternberg's Triangular Love (1988) designed and built Amon Iranian men and women. With all the limitations of questionnaire studies, empirical reports about the scale based on the theory of love triangle, generally due to internal and external validity of the theory of triangular was encouraging. In past time it seemed that study of love essentially is contradicted with concept of quantity. The primary clinical theories were non-quantitative and in general, many people felt that love and determination are incompatible with each other.

According to the findings of the study, all questions of scales of intimacy, passion and commitment in are loaded in their respective dimensions. Just questions of number 21 and 22 of passion show relatively strong factor. Although these two questions with commitment scale also have value factor. The rest of the factors are favorable. Kumeri and Li described coefficients of 0.70 excellent, 0.63 very good, 0.55 good and 0.32 are trivial. As a result, a 34 factors structure was obtained for this area (with the defined variables in the table above for each factor) that confirmed the structure of this questionnaire and approved the above analyzes, and the validity of the questionnaire. Therefore the hypothesis is confirmed by 99 percent of selection.

Also, according Tabaknick (2007) the root mean square error of approximation (RMSEA) should be less than 0.1 (smaller than 0.05 is good and 0.08 is appropriate). Because the value of RMSEA is equal to 0.08, it reflects the model is fitted. Also good fit index (GFI) and comparative fit index (CFI) should be bigger than 0.9 which is happened. In sum, we conclude that the supposed model is fitted enjoyably. This means that the underlying structure using class perceptions is confirmed.

When Sternberg's theory was raised for the first time, clear data were presented to support the theory, but different aspects of the theory were not measured or tested by a tool. The data presented in this article include test tool is based on the theory seems to be generally supportive to the theory. In addition, the data gathered by Aaron Beck (1994) provides more support for the theory in terms of implicit theories of love, although the commitment role in
this implicit theories comparing to other two components of the Lypkous, 1994; Russell, 1988, is less clear. Since the early work of Robin (1970) about the theory and measurement of love, several theories have been proposed in this context (Sternberg and Barnes, 1985), few of these theories that are given directly to verify these theories.

In this study, Cronbach's alpha coefficients were calculated for estimating the reliability of Sternberg love. Cronbach's alpha coefficients for operating results indicate that the tool also has an acceptable internal consistency and reliability (Cronbach's alpha) of all subscales is also acceptable (Intimacy: 0.86, passion: 0.87, commitment: 0.91, total: 0.93). According to these findings, it was concluded Sternberg's Triangular Love Scale in Iranian sample has high reliability and internal consistency and it is acceptable.

The results of current study were consistent with studies of Karami and Alayi (2009), Yousefi and Kiani (2012) and Kordmirza (2014) that love triangle scale are valid and reliable. These findings are also consistent with studies of Wan et al (2000), Loss Wel (1979), Handrik (1988) and it proves the validity of a tool of triangular love between the couples that this tool is not a one-dimensional structures and it measures multiple structures simultaneously.

Therefore, because this questionnaire has a substantially reliability and validity of triangular love Sternberg; it can be used in counseling centers.

5. REFERENCES


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