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Scale on Stress among Parents having only Daughters: Developing a Reliable Measure

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ABSTRACT

Objective: To develop a reliable scale to measure stress among parents with only daughters.
Study Design: Cross-sectional study.
Place and Duration of Study: Department of Psychology, University of Gujrat, Gujrat Pakistan, from May to Jul 2019.
Methodology: The study was conducted on parents who have only daughters. A pool of 59 items was created through brainstorming sessions and an intensive literature review. Afterwards, 42 items were retained through meticulous evaluation and assessment of experts. Subsequently, a scale was administered to 242 respondents who were selected through a purposive sampling technique. All the items were retained because of their high correlation with item total (r≥0.5). Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) proceeded for structure exploration and confirmation. Furthermore, the reliability of the scale was established.
Results: EFA led to five factors encompassing 36 items. Moreover, CFA was carried out, and the model fit summary showed some indices in good ranges (RFI=0.923, NFI=0.940, GFI=0.928) while some in excellent ranges (CFI=0.970, IFI= 0.971, TLI=0.962) after the deletion of 22 items with significance *p*-value (0.001). The reliability of the scale was 0.93, while the reliability of the subscale ranges from 0.81 to 0.88.
Conclusion: A reliable scale to measure Stress among parents having only daughters was successfully developed with 14 items casing four subscales.

Keywords: Confirmatory Factor Analysis, Exploratory Factor Analysis, Scale, Stress.

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INTRODUCTION

In South Asia, women are dependent on men culturally, socially and economically.[1,2] Son has social and economic preferences, while daughters seem an economic liability due to the dowry system.[3,4] Therefore, parents prefer sons over daughters, and gender discrimination starts right from birth because boys are considered dominant and more empowered than girls. Many events or factors cause stress in parents having only daughters. Sons are considered guardians, expected to support their parents in older age and are the symbol of strength for the family.[5]

Sekher *et al.* indicated that a double loss accompanies daughters. First, daughters leave their parents after marriage, and second, new families accrue the benefits from investments made during their upbringing.[6]

There were some formerly developed scales to measure the stress level among humans in a different context, such as the standard stress scale,[7,8] Self-Reported Stress Scale,[9] and Depression Anxiety Stress Scale.[10] However, all of these measured overall life stress without highlighting specific factors that can cause stress. Therefore, this study aimed to develop an indigenous scale to measure stress levels specifically among parents with only daughters, with special emphasis on culture. In addition, this study was carried out to develop a scale to measure the stress level in Urdu, which would be appropriate in Pakistani settings.

METHODOLOGY

The study was carried out at the Department of Psychology, University of Gujrat, Gujrat Pakistan, from May to Jul 2019 after approval from the Institutional Ethical Committee (letter no. psy/uog/20/2598). The sample was collected from the general population through purposive sampling. The sample size was determined using the item to the variable ratio (1:5).[11]

Inclusion Criteria: Parents having only female children were included in the study.

Exclusion Criteria: Parents having no child, parents having male children were excluded from the study.

In Step-I item pool was generated in the Urdu language. Fifty-nine items were generated, grounded on empirical data 12 without considering a particular model. Items were created through extensive brainstorming and an in-depth study of the literature. During Step-2, items were meticulously assessed by

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subject experts who understand the "stress" construct. 11 items were modified and 17 were abandoned; finally 42 items were shortlisted. The Step-3 sample of 242 parents was collected from districts Gujrat and Gujranwala.

A 42-item scale was tried out on 242 parents. No items got cast off after the correlation of each item with the total scale scores. During Step-4, 42 items were gone through EFA. Before going for EFA, data were checked for suitability and normality to the analysis.

Kaiser Meyer-Olkin and Bartlet's tests were used to determining how adequate the data is for factor analysis.[13] The value of KMO was 0.965, while Bartlett's Test of Sphericity was found to be significant (p<0.001). Both values indicate the suitability of data for EFA.

EFA explores the underlying structure of a relatively larger set of variables.[14] EFA resulted in 36 items with a factor loading of 0.5 and above, congregating in five factors. Furthermore, CFA endorsed the

Table-I: Item-total Correlation of 42 Items Scale on Stress (n=242)

Item Number		Pearson Correlation Co-efficient (r) and *p*-value
1	Pearson Correlation Co-efficient	0.757
	p-value	<0.01
2	Pearson Correlation Co-efficient	0.796
	p-value	<0.01
3	Pearson Correlation Co-efficient	0.787
	p-value	<0.01
4	Pearson Correlation Co-efficient	0.776
	p-value	<0.01
5	Pearson Correlation Co-efficient	0.767
	p-value	<0.01
6	Pearson Correlation Co-efficient	0.676
	p-value	<0.01
7	Pearson Correlation Co-efficient	0.719
	p-value	<0.01
8	Pearson Correlation Co-efficient	0.673
	p-value	<0.01
9	Pearson Correlation Co-efficient	0.603
	p-value	<0.01
10	Pearson Correlation Co-efficient	0.720
	p-value	<0.01
11	Pearson Correlation Co-efficient	0.736
	p-value	<0.01
12	Pearson Correlation Co-efficient	0.773
	p-value	<0.01
13	Pearson Correlation Co-efficient	0.665
	p-value	<0.01
14	Pearson Correlation Co-efficient	0.555
	p-value	<0.01
15	Pearson Correlation Co-efficient	0.741
	p-value	<0.01
16	Pearson Correlation Co-efficient	0.791
	p-value	<0.01
17	Pearson Correlation Co-efficient	0.661
	p-value	<0.01
18	Pearson Correlation Co-efficient	0.775
	p-value	<0.01
19	Pearson Correlation Co-efficient	0.765
	p-value	<0.01
20	Pearson Correlation Co-efficient	0.605
	p-value	<0.01
21	Pearson Correlation Co-efficient	0.523
	p-value	<0.01
22	Pearson Correlation Co-efficient	0.707
	p-value	<0.01

Item Number		Pearson Correlation Co-efficient (r) and *p*-value
22	Pearson Correlation Co-efficient	0.707
	p-value	<0.01
23	Pearson Correlation Co-efficient	0.756
	p-value	<0.01
24	Pearson Correlation Co-efficient	0.690
	p-value	<0.01
25	Pearson Correlation Co-efficient	0.773
	p-value	<0.01
26	Pearson Correlation Co-efficient	0.717
	p-value	<0.01
27	Pearson Correlation Co-efficient	0.658
	p-value	<0.01
28	Pearson Correlation Co-efficient	0.637
	p-value	<0.01
29	Pearson Correlation Co-efficient	0.725
	p-value	<0.01
30	Pearson Correlation Co-efficient	0.750
	p-value	<0.01
31	Pearson Correlation Co-efficient	0.735
	p-value	<0.01
32	Pearson Correlation Co-efficient	0.715
	p-value	<0.01
33	Pearson Correlation Co-efficient	0.754
	p-value	<0.01
34	Pearson Correlation Co-efficient	0.674
	p-value	<0.01
35	Pearson Correlation Co-efficient	0.757
	p-value	<0.01
36	Pearson Correlation Co-efficient	0.712
	p-value	<0.01
37	Pearson Correlation Co-efficient	0.697
	p-value	<0.01
38	Pearson Correlation Co-efficient	0.762
	p-value	<0.01
39	Pearson Correlation Co-efficient	0.698
	p-value	<0.01
40	Pearson Correlation Co-efficient	0.779
	p-value	<0.01
41	Pearson Correlation Co-efficient	0.768
	p-value	<0.01
42	Pearson Correlation Co-efficient	0.622
	p-value	<0.01

structure, which was obtained through EFA. After deleting 22 items, the model fit summary certified the structure resulted in 14 items with four subscales: the stress of failure, mental stress, social stress and economic stress.

The respondents were accessed in their homes. Then, they were clarified about the purpose of the study and their voluntary basis of participation. If they found interested in participating in the research, then consent was taken from them, and they were further briefed about how to fill out the questionnaire. Afterwards, participants were given a copy of the scale and asked to read it carefully and discuss any difficulty if they found it. Subsequently, they were instructed to pick up a suitable response to their state of mind and requested not to leave any statement unanswered. Moreover, they were ensured of the confidentiality of their responses and ethical considerations.

Data from the current study were analyzed by using SPSS-21 and AMOS-21 for windows.

RESULTS

Two hundred forty-two parents with only female children participated in the study. Results of item-total correlation have been depicted in Table-I, which ranged from 0.55 to 0.79. Items with r<0.5 were retained, and no items were deleted during the item-total correlation. EFA resulted in 36 items comprising five factors. Later on, confirmatory factor analysis was implied, which deleted 22 items and a complete factor. Finally, a four-factor solution was devised with all values of model fit indices within the acceptable range. Four factors were named as the stress of failure: mental, social, and economical. 36 items Factor Loading on scale of stress after varimax rotation are shown in the Table-II. Reliabilities of the whole scale was 0.93, while for subscales, it was**:** Stress of failure 0.81; Mental Stress 0.86; Social Stress 0.83 and Economic Stress 0.88 (p<0.001). Summary of Model Fit of 14 item Scale on Stress among Parents having only Daughters is shown in Table-III. The factor structure of scale on stress among parents is shown in the Figure.

DISCUSSION

A current study developed an indigenous scale to measure stress among parents with only daughters. Firstly, an item pool of 59 items was generated. Later on, 42 were selected after expert evaluation. Further, no items were deleted during a session of item-total correlation, and later, exploratory factor analysis reduced the number of items to 36. Bartlett's test and Kaiser Meyer-Olkin measure were implied to check the appropriateness of data for factor analysis. The value of KMO's was 0.965 while Bartlett's test value was 0.000, which is also significant within the acceptable range. Aforesaid revealed the suitability of data for factor analysis, and the value of KMO 0.6 or above is considered acceptable. Similarly, values of Bartlett's test below 0.05 are considered acceptable.[15]

Table-II: Thirsty-six Items Factor Loading on Scale of Stress After Varimax Rotation (n= 242)

Sr. no	Item no	F1	F2	F3	F4	F5
1	12	0.619	-	-	-	-
2	19	0.636	-	-	-	-
3	22	0.720	-	-	-	-
4	24	0.737	-	-	-	-
5	25	0.548	-	-	-	-
6	26	0.722	-	-	-	-
7	27	0.593	-	-	-	-
8	30	0.635	-	-	-	-
9	40	0.572	-	-	-	-
10	3	-	0.539	-	-	-
11	4	-	0.569	-	-	-
12	5	-	0.636	-	-	-
13	6	-	0.707	-	-	-
14	7	-	0.745	-	-	-
15	8	-	0.772	-	-	-
16	9	-	0.524	-	-	-
17	13	-	0.646	-	-	-
18	14	-	0.665	-	-	-
19	18	-	0.500	-	-	-
20	20	-	0.653	-	-	-
21	11	-	-	0.533	-	-
22	35	-	-	0.635	-	-
23	36	-	-	0.789	-	-
24	37	-	-	0.827	-	-
25	38	-	-	0.642	-	-
26	39	-	-	0.642	-	-
27	41	-	-	0.519	-	-
28	15	-	-	-	0.547	-
29	16	-	-	-	0.524	-
30	17	-	-	-	0.728	-
31	21	-	-	-	0.648	-
32	23	-	-	-	0.623	-
33	28	-	-	-	0.756	-
34	31	-	-	-	-	0.677
35	32	-	-	-	-	0.675
36	33	-	-	-	-	0.585

Afterwards, the normality of data was checked through kurtosis and skewness. The value of kurtosis and skewness was -0.0172 and 0.789, respectively, which fall under acceptable ranges as the value of kurtosis and skewness -2 to +2 is considered acceptable.[16]

Table-III- Summary of Model Fit indices of 14 item Scale on Stress among Parents having only Daughters (n= 242)

p-value	Chi-Square	CMIN /DF	CFI	IFI	TLI	RFI	NFI	DFI
0.000	134.380	1.893	0.970	0.971	0.962	0.923	0.940	0.928

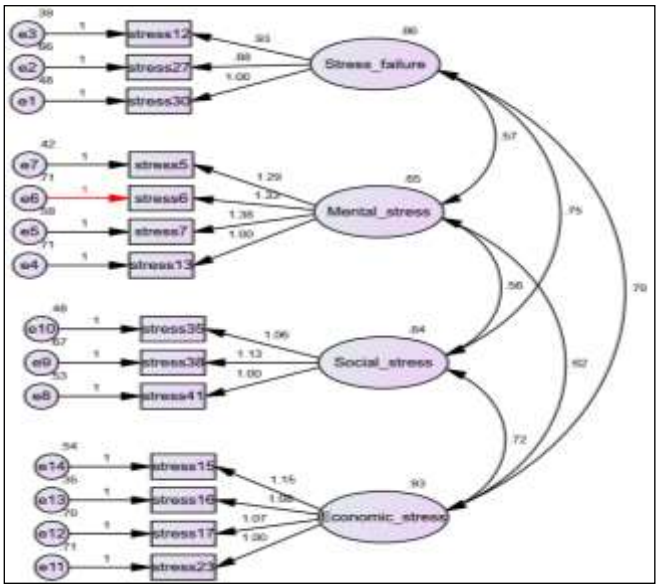

Figure: Factor structure of Scale on Stress among Parents having only Daughters

EFA led into five factors consisting of 36 items with a factor loading above and equal to 0.5. Later, CFA endorsed the structure, which was attained during EFA after the omission of 22 items. Thus, 14 items were finally retained with four subscales labelled: the stress of failure, mental stress, social stress and economic stress. The subscale of social stress and stress of failure comprised three items, while the subscale of mental stress and economic stress comprised four items. Methodologists have suggested that at least three to five items representing each common factor be encountered in study.[17]

The model fit summary of CFA revealed excellent model fit with the value of Comparative fit index of 0.970 and values of IFI and TLI are 0.971 and 0.962, respectively, with a significant value of 0.0001 which indicated good fit. NFI, RFI and GFI values are 0.940, 0.923 and 0.928, respectively, which showed satisfactory fit. Values above 0.90 indicate a satisfactory model fit, while 0.95 or above is more appreciated.[18]

The scale on stress comprised four factors containing 14 items with a reliability of 0.93. Reliability of the subscale of mental stress and stress of failure is 0.86 and 0.81, respectively. Furthermore, the subscale social and economic stress reliability is 0.83 and 0.88, respectively. Values of reliability of newly developed scales on stress were within statistically significant ranges as a value of alpha reliability 0.70 or above was considered acceptable. 14-item scale to measure stress among parents having only daughters was successfully developed, which can be used by professionals and researchers in Pakistan to gauge stress in the population, as mentioned earlier.

LIMITATIONS OF STUDY

The developed scale could only gauge the stress of parents having an only female child. Moreover, the scale developed in indigenous culture must be implied in another culture; its suitability must be checked first.

CONCLUSION

A reliable scale measuring stress among parents with only daughters was successfully developed with 14 items casing four subscales.

Conflict of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

SR & SF: Study design, drafting the manuscript, data interpretation, critical review, approval of the final version to be published.

MA & US: Concept, data acquisition, data analysis, critical review, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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