



# Construction and Standardization of Mental Stress Scale for the Students of Secondary Schools

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Guide

## 1. Introduction

Students in secondary education face a variety of stressful pressures related to academic demands. Previous research suggests that academic-related stress reduces academic achievement, reduces motivation, and increases the risk of dropping out of school. Long-term effects, which reduce the likelihood of sustainable employment, cost governments billions of rupees each year. In such conditions, the educators must aware about the stress level among secondary schools' students and try to decrease it. In present study, the researcher constructed and standardized a Mental Stress Inventory for the secondary schools' students.

## 2. Objectives of the Study

1. To construct a Mental Stress Inventory for secondary schools' students of Gujarat state.
2. To find out different types of reliability of constructed Mental Stress Inventory.
3. To find out different types of validity of constructed Mental Stress Inventory.

## 3. Construction of Items

In present study, the researcher constructed a Mental Stress Inventory for secondary schools' students. The researcher constructed different items showing mental stress among secondary schools' students. The researcher met secondary schools' students and tried to aware of their mental stress they felt. The researcher also took help of school teachers and principals for this purpose. This way, the researcher collected a bunch of items which demonstrate the mental stress among secondary schools' students. These items were categorized in different factors and thus primary Mental Stress Scale was prepared.

## 4. Experts' Opinions

The researcher constructed 102 items at primary level. Each item has five responses: 1) Always, 2) Almost, 3) Sometime, 4) Rarely and 5) Never. This scale was sent to different experts like faculties of B.Ed. and M.Ed. colleges or Ph.D. guides. According to suggestions obtained from the experts, some items were left which some items were amended by the researcher. After experts' suggestions, the researcher left 27 items from the tool. Finally, there were 75 items remained in Mental Stress Scale. This scale was used for preprimary piloting.

## 5. Preprimary Piloting

For preprimary piloting, the researcher selected 20 students of standard 9 and 20 students of standard 10 from Ahmedabad city. The students were given Mental Stress Scale constructed by the researcher. The students were provided 1 hour and 30 minutes to complete this tool. The researcher noted that during the task, some items were tough to be understood by the students. Later, these items were reconstructed by the researcher, so that in final implementation students would able to understand all the items. After this modification, the Mental Stress Scale was used for primary piloting.

## 6. Primary Piloting

The main aim of primary piloting was to perform item analysis of each item of Mental Stress Scale. For primary piloting 370 students of secondary schools were selected as a sample from Ahmedabad

city. The students were given the Mental Stress Scale having 75 items in it. Each item has five responses: 1) Always, 2) Almost, 3) Sometimes, 4) Rarely and 5) Never. These responses were coded with 4, 3, 2, 1 and 0 respectively. That means, if students checked the first response, then they scored four mark for that item, for second response three marks and so on. After the completion of Mental Stress Scale, responses were checked and scored by the researcher. The researcher arranged scores of all students in decreasing order and for each item a t-test between mean scores of upper 27% (100) students and lower 27% (100) students. The non-significant items were left from final tool.

### 7. Item Analysis

From item analysis, it found that for  $df=368$  table t-values are 1.97 and 2.59 at 0.05 level and 0.01 level respectively. The items having calculated t-values less than 1.97 were rejected while items having calculated t-values greater than 1.97 were not rejected. In above table 15 items: 1, 4, 8, 15, 22, 39, 52, 57, 58, 59, 65, 69, 70, 72, 74 have t-value less than 1.97 which were rejected while remaining items were remained in the tool. Thus, final tool has 60 items. These items are distributed in different factors. The factor wise number of items are as below table.

**Table 1: Factor wise number of items**

No.	Item	Total items
1	School related mental stress	12
2	Exam related mental stress	7
3	Home and family related mental stress	9
4	Friend circle related mental stress	8
5	Community related mental stress	6
6	Physical and psychological problems related mental stress	7
7	Economy and career related mental stress	5
8	Personal and imaginary mental stress	6
<b>Total</b>		<b>60</b>

### 8. Final Tool

In final tool, there were 60 items in it. Each item has 5 responses: 1) Always, 2) Almost, 3) Sometimes, 4) Rarely and 5) Never. The responses wise scores are mentioned in below table.

**Table 2: Scores of responses**

No.	Response	Score
1	Always	4
2	Almost	3
3	Sometimes	2
4	Rarely	1
5	Never	0

Thus, maximum scores a student can obtain is 240 which shows the highest mental stress while overall zero score shows the absence of mental stress.

### 9. Reliability of Tool

In present study, the researcher found two different types of reliability:

#### 1. Test-retest reliability

The researcher used test-retest method to find our reliability of Mental Stress Scale. In this method, the researcher selected a sample of 100 students from Ahmedabad district. The subjects were given Mental

Stress Scale twice at an interval of fifteen days. The obtained scores of both tests were classified and then found correlation coefficient between scores of both tests.

**Table 3: Classification of scores of test and retest**

Scores	Scores of Test						Total
	Class	0-39	40-79	80-119	120-159	160-199	
Scores of Retest	0-39				2		2
	40-79		1	13	8	1	23
	80-119		13	23	7	3	46
	120-159	2	8	7		4	21
	160-199		1	3	4		8
<b>Total</b>		2	23	46	21	8	<b>100</b>

The frequency distribution obtained by the classified scores are mentioned in above table. The researcher found correlation coefficient using Karl Pearson formula between scores of both the tests. The value of correlation coefficient was found 0.79. The value of correlation coefficient revealed that the Mental Stress Scale have a good reliability.

## 2.Split Half reliability

In this method, the Mental Stress Scale was divided in two different forms. The form 1 consist only odd numbered items i.e. 1, 3, 5, ..., etc. while the form 2 consist only even numbered items i.e. 2, 4, 6, ..., etc. Both forms were given to the 100 students simultaneously. The researcher classified the scores of both the test and correlation coefficient was found between the scores of both forms.

**Table 4: Classification of scores of splitted form 1 and form 2**

Scores	Form 1						Total
	Class	0-19	20-39	40-59	60-79	80-99	
Form 2	0-19				2		2
	20-39		3	11	10	2	26
	40-59		11	19	7	3	40
	60-79	2	10	7	6	1	26
	80-99		2	3	1		6
<b>Total</b>		2	26	40	26	6	<b>100</b>

The researcher found correlation coefficient using three different formulas as below.

- 1.The value of correlation coefficient was found 0.81 using Spearman Brown formula.
- 2.The value of correlation coefficient was found 0.85 using Rulon's formula.
- 3.The value of correlation coefficient was found 0.72 using Flanagan's formula.

Thus, using split half method, it was revealed that the Mental Stress Scale have a good split half reliability.

## 10. Validity of Tool

In present study, the following types of validity were found by the researcher:

### 1.Face validity

Face validity is what a test is appeared to measure. If a test is appeared to measure for what it is made, the face validity of this test is high.

The Mental Stress Scale made by the researcher was sent to different experts who were educators or Ph.D. supervisors. The researcher amended the Mental Stress Scale as per the suggestions given by the experts. Thus, it is said that the Mental Stress Scale possess a high face validity.

## 2.Content validity

The content validity refers how accurately the items of a scale capable to measure the traits for what it is made for. The researcher constructed 102 items in Mental Stress Scale at initial stage. This scale was given to the experts of educators and Ph.D. supervisors. The experts suggested to reconstruct or remove the items. The researcher reconstructed the items as per suggestions obtained from the experts. Thus, it is said that the Mental Stress Scale has good content validity.

## 3.Factorial validity

The Mental Stress Scale constructed by the researcher is divided in eight different factors. The inter factors' correlation coefficient show the factorial validity of Mental Stress Scale.

**Table 5: Internal Correlation between Factors**

Factor	1	2	3	4	5	6	7	8	Whole Scale
<b>1</b>	1.0	0.43	0.51	0.57	0.49	0.61	0.39	0.45	<b>0.56</b>
<b>2</b>	0.43	1.0	0.62	0.53	0.43	0.44	0.67	0.52	<b>0.59</b>
<b>3</b>	0.51	0.62	1.0	0.50	0.48	0.53	0.47	0.37	<b>0.52</b>
<b>4</b>	0.57	0.53	0.50	1.0	0.58	0.61	0.51	0.59	<b>0.48</b>
<b>5</b>	0.49	0.43	0.48	0.58	1.0	0.54	0.53	0.60	<b>0.59</b>
<b>6</b>	0.61	0.44	0.53	0.61	0.54	1.0	0.55	0.46	<b>0.47</b>
<b>7</b>	0.39	0.67	0.47	0.51	0.53	0.55	1.0	0.52	<b>0.64</b>
<b>8</b>	0.45	0.52	0.37	0.59	0.60	0.46	0.52	1.0	<b>0.57</b>
<b>Whole Scale</b>	<b>0.56</b>	<b>0.59</b>	<b>0.52</b>	<b>0.48</b>	<b>0.59</b>	<b>0.47</b>	<b>0.64</b>	<b>0.57</b>	<b>1.0</b>

Above table shows the correlation coefficient of internal factors from 0.37 to 0.67. These values show a good factorial validity.

Correlation coefficient of factor one with other factors are 0.43, 0.51, 0.57, 0.49, 0.61, 0.39 and 0.45 respectively. Correlation coefficient of factor two with other factors are 0.43, 0.62, 0.53, 0.43, 0.44, 0.67 and 0.52 respectively. Correlation coefficient of factor three with other factors are 0.51, 0.62, 0.50, 0.48, 0.53, 0.47 and 0.37 respectively. Correlation coefficient of factor four with other factors are 0.57, 0.53, 0.50, 0.58, 0.61, 0.51 and 0.59 respectively. Correlation coefficient of factor five with other factors are 0.49, 0.43, 0.48, 0.58, 0.54, 0.53 and 0.60 respectively. Correlation coefficient of factor six with other factors are 0.61, 0.44, 0.53, 0.61, 0.54, 0.55 and 0.46 respectively. Correlation coefficient of factor seven with other factors are 0.39, 0.67, 0.47, 0.51, 0.53, 0.55 and 0.52 respectively. And correlation coefficient of factor eight with other factors are 0.45, 0.52, 0.37, 0.59, 0.60, 0.46 and 0.52. The correlation coefficient of whole test with other factors are 0.56, 0.59, 0.52, 0.48, 0.59, 0.47, 0.64 and 0.57 respectively.

## 11. Conclusion

Thus, in present study, the main objective of researcher was to construct and standardize a Mental Stress Scale for the secondary schools' students. The researcher constructed a Mental Stress Scale with the help of experts and standardize it. The researcher performed t-test for item analysis. After item analysis 60 items were remaining in the tools. Thus, in final tool, there were 60 items. The researcher found reliability and validity using different methods.

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