

An Evaluation of Psychometric Properties of the Stress Assessment Scale (SAS) In Hindi Language

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Abstract: To establishing the psychometric properties of the Stress assessment scale (Hindi Version in the Indian Context). The stress assessment scale was administered of the adult population (N=200, Age group 30-60 years) of Raipur and Rajnandgaon district of Chhattisgarh, India. The psychometric properties of the scale were established by computing exploratory factor analysis, reliability (Cronbach's Alpha) and concurrent validity. The result of the inter-correlation in the stress scale on Hindi language and English language is found to be (.90). Reliability of the stress scale (Hindi version) was Cronbach's Alpha is 0.82. Exploratory factor analysis was done and 41 items were significant loading on twelve factors. The psychometric properties of the Stress scale (Hindi version) confirm that it is a reliable and valid measure of stressful life event among adult with age range of 30-60 years.

Keyword- Stress assessment, reliability, validity

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I. INTRODUCTION

Stress is a negative emotional experience; stress accompanied by predictable biochemical, physiological, cognitive, and behavioral change that is directed toward altering the stressful event or accommodating to its affects (Baum, 1990). The term has been used in different ways by different theorists. Stress as a stimulus event that presents difficult demands (a divorce, for instance), while others have viewed stress as the response of physiological arousal elicited by a troublesome event (Cooper & Dewe, 2004).

The emerging consensus among contemporary research that is stress is neither a stimulus nor a response but a special stimulus-response transaction in which one feels threatened (McEwen, 2000). Stress under any circumstances that threaten or are perceived to threaten one's well-being and thereby tax one's coping abilities (Waiten & Lloyd, 2007).

Stress as the circumstance in which transaction lead a person to perceive a discrepancy between the physical or physiological demands of a situation and the resource of his or her biological, psychological, or social system (Lazarus & Folkman, 1984; Lovallo, 2005). The condition of stress has two components: physical involving direct materials or bodily challenge, and psychological involving individual perceived circumstance in their lives (Lovallo, 2005).

These components can be examined in three ways: One approach focus on the environmental stress is seen as a stimulus, as have been a demanding job or experience severe pain from arthritis or a death in the family member. Physically or psychologically challenging events or circumstances are called stressors. The second approach treats stress as a response, focusing on people's reaction to a stressor. The third approach describes stress as a process that includes stressors and strains, an important dimension of person and environment (Daugall & Baum, 2005). Stress is not just a stimulus or a response, but rather a process in which the person is an active agent can influence the impact of a stressor through behavior, cognition and emotional strategies (Lazarus, 1999; Lazarus & Folkman, 1984). People's manage it assume that the amount of stress a person experience increases with stressor frequency, intensity and duration (Sarafino & Ewing, 1999). The stronger stress produced greater physiological strain (Steptoe, Cropley & Joke, 2000). Chronic stress makes people more susceptible to catching cold when exposed to infection than occasional stress (Cohen et al, 1998). Several other aspects of jobs can increase workers stress (Cottington & House, 1987; Mackay & Cox, 1978; Quick et al, 1997). Overloaded people are more stressed than the people with fewer tasks to perform (Cohen, 1978; Cohen & Williamson, 1988).

Objective-

The main objective of the current study is establishing psychometric properties of the stress assessment scale (SAS) in Hindi Version for the Indian Context.

Method-

Participants –

The Stress scale (Hindi version) was administered on the adult population (N=200, 100 people suffering from diabetes type-2 and 100 people were non-diabetic, Age group 30-60 years) of Raipur and Rajnandgaon district of Chhattisgarh, India. The stress assessment scale Hindi version is translated and developed by Janghel and Shrivastava (2012).

Structure of scale-

Social readjustment scale originally developed by Holmes&Rahe consists of 43 items based on stress perception for different social life events. The Stress Assessment Scale (SAS) in the Indian context is an adaptation and translation of SRSS in the Indian context. The items of the original scale translated in Hindi for the use of assessment stress after translation of the items, experts' opinion were sought. The scale was administered to the adult population. The psychometric property of the Stress Assessment Scale (SAS) was evaluated.

Procedure-

The screening pattern was considered on basis of perception of stress on 10-100 rating scale. The respondents were asked to rate the items related to stress as per their perception of stress on 10-100 rating point.

Data analysis-

The psychometric properties of the scale were established by computing reliability (Cronbach's Alpha), exploratory factor analysis (construct validity), and concurrent validity.

II. RESULT AND DISCUSSION-

Exploratory Factor Analysis (Construct validity) of Stress Assessment Scale-

The factor analysis was determined by the construct validity of the scale (Sing, 1992).

The psychometric properties of the stress scale (Hindi version) were analyzed by Exploratory Factor analysis, reliability (Cronbach's Alpha) with the help of SPSS 16 version.

Obtained scores of the subjects were analyzed employing the principal component method of factor analysis. Only fifteen factors were extracted as the aim of the analysis was to obtain loading of items in fifteen but three factors eigenvalue is less than 1.000 because three factors were removed in Kaiser Criterion (Kaiser, 1960). Varimax rotation was done to clarify the loading on these factors. Obtained factor analysis represents in given tables-

Table shown in the loading of items on the fifteen factors

Component	fact.1	fact.2	fact.3	fact.4	fact.5	fact.6	fact.7	fact.8	fact.9	fact.10	fact.11	fact.12
13	.694		.395									
32	.671						-.357					.344
31	.666								.344			
40	.638											
26	.587											
5	.565		-.519		-.339							
14	.549							.317	-.326			
41	.532							-.510				
28	.514	.406				-.470						
42	.511		.411									
1	.469	-.469										
12	.465						-.505					
6	.457		-.481		-.377							
4	.456	-.428							.303	.375		
33	.440					.396				-.324		
39	.435				-.509							
8	.412			-.303		.353						
29	.405	.444		.447								
30	.404				.427						.378	
24	.378				-.621							

21	.374	-.509	.327	.355								
-.314												
3	.364	-.525	-.329									
9	.359	.508			.528							
16	.334		.423		.334					-.395		
2	.333	-.517			.500							
19	.327		.662									
38	.695										-.339	
37	.553				-.383					.367		
27	.478							.604				
-.320												
11	.464		-.372									
15	.364	-.411	.347									
-.309												
18	.324				.606			.425				
23		.541	-.550									
22		.478	.340	.306						.381	-.301	
7		-.431	-.418	-.322							.313	
20		-.400										
35		.332	.452	-.366								
34			.572									
43			.498									
36			.544									
10								.456	.587			
Eigen v	12.339	5.465	5.553	4.366	4.532	3.245	2.224	1.887	1.975	1.460	1.098	0.958
1.027	0.948	0.000										

*Eigenvalue less than 1.000 are not considered on factors (Kieser, 1960).

*Values less than .30 are omitted.

A close perusal of the above factor matrix revealed that 26 items had significant high loading on factor one. 12 items had significant high loading on factor two. 13 items had significant high loading on factor three. 10 items had significant high loading on factor four. 10 items had significant high loading on factor five. 8 items had significant high loading on factor six. 5 items had significant high loading on factor seven. 4 items had significant high loading on factor eight. 5 items had significant high loading on factor nine. 4 items had significant high loading on factor ten. 3 items had significant high loading on factor eleven. 3 items had significant high loading on factor thirteen. 2 items had significant high loading on factor fourteen. 4 items had significant high loading on factor fifteen.

It was observed that eigenvalue of the twelve factors was more than the value of one. There were 41 items which had significant loadings on any of the twelve factors while rest of the two items 17 and 25 had insignificant loading on any of the twelve factors. A second-round principal component factor analysis was again done taking only 42 items. Again varimax rotation was done.

A close perusal of the above factor matrix reveal that item No.13 had high significant on factor one than factor two. Item no.32 had high significant on factor one than factor seven and factor twelve. Item no.31 had high significant on factor one than factor nine. Item no. 26 had high significant loading on factor one than factor fifteen. Item no. 5 had high significant loading on factor one than factor three and factor five. Item no. 14 had high significant loading on factor one than factor eight and factor nine. Item no.41 had high significant on factor one than factor eight. Item no. 28 had high significant loading on factor one than factor two and factor six. Item no.42 had high significant loading on factor one than factor three. Item no. 12 had high significant loading on factor seven than factor one and factor fourteenth. Item no.6 had high significant loading on factor three than factor one and factor five. Item no.4 had high significant loading on factor one than factor two, factor nine and factor ten. Item no.33 had high significant loading on factor one than factor six, factor ten and factor fifteenth. Item no.39 had high significant loading on factor five than factor one. Item no.8 had high significant loading on factor one than factor four and factor six. Item no.29 had high significant loading on factor four than factor one and factor two. Item no. 30 had high significant loading on factor five than factor one and factor eleven. Item no. 24 had high significant loading on factor five than factor one. Item no. 21 had high significant loading on factor three than factor one, factor four, factor six and factor fifteen. Item no.3 had high significant loading on factor two than factor one and factor seven. Item no.9 had high significant loading on factor seven than factor one and factor three. Item no.16 had high significant loading on factor four than factor one, factor seven and factor ten. Item no.2 had high significant on factor two than factor one and factor seven. Item no.19 had high

significant loading on factor five than factor one. Item no.38 had high significant loading on factor two than factor six and factor twelve. Item no.37 had high significant loading on factor two than factor six and factor ten. Item no.27 had high significant loading on factor eight than factor two and factor fourteen. Item no.11 had high significant loading on factor two than factor four. Item no.15 had high significant loading on factor three than factor two, factor five and factor fifteen. Item no.18 had high significant loading on factor six than factor two and factor nine. Item no.23 had high significant loading on factor four than factor three. Item no.22 had high significant loading on factor three than factor five, factor six, factor eleven and factor twelve. Item no.7 had high significant loading on factor three than factor four, factor six and factor thirteen. Item no.35 had high significant loading on factor four than factor three and factor six. Item no.10 had high significant loading on factor nine than factor eight.

Considering all the items and the nature of their loading on the twelve factors, it was logical to include 7 items in factor one, i.e., family related stress, 5 items in the factor two i.e., job related stress, 3 items in the factor three i.e., marriage related stress, 1 items in the factor four i.e., pre-retirement related stress, 4 items in the factor five i.e., health related factor, 2 items in the factor six i.e., legal law related stress, 2 items in the factor seven i.e., readjustment in business, 2 items in the factor eight, i.e., economical related stress, 2 items in the factor Nine, i.e., loan related stress, 3 items in the factor ten, i.e., residential related stress, 7 items in the factor eleven, i.e., personal habit related stress, 3 items in the factor twelve, i.e., child school related stress.

Table shows that the twelve extracted factor and their eigenvalue

S.N.	Factors Name	Eigenvalue
1	Family Related Stress,	12.339
2	Job-Related Stress,	5.465
3	Marriage Related Stress,	5.553
4	Pre-Retirement Related Stress,	4.366
5	Health-Related Factor,	4.532
6	Legal Law Related Stress,	3.245
7	Readjustment In Business,	2.224
8	Economical Related Stress,	1.887
9	Loan Related Stress,	1.975
10	Residential Related Stress,	1.460
11	Personal Habit Related Stress,	1.098
12	Child School Related Stress.	1.027

*Eigenvalue less than 1.000 are not considered on factors (Kieser, 1960).

Concurrent validity of the StressAssessment Scale-

The Concurrent validity is a criterion-related validity for scale, the concurrent validity is the degree to which the scores on a test are related to the scores on another, already established test administered at the same time or some other valid criterion available at the same time (Gay, 1980).

Table shows the concurrent validity of the SAS

Correlation	Stress scale Hindi	Stress scale English
Stress scale Hindi	1.00	.90
Stress scale English		1.00

The table reveals that the correlation between the translated stress assessment scale Hindi and original stress scale on English, both scale is highly positively correlated and correlation is significant ($r=.90$, $p<.01$). It means that the stress scale of the Hindi version concurrent validity is significant.

Reliability-

The reliability of the stress assessment scale in adapted Hindi language on Indian context, the internal consistency of Cronbach's Alpha coefficient (α) is 0.82.

III. CONCLUSION-

The psychometric properties of the Stress assessment scale (Hindi version) confirm that it is reliable and valid measures of stressful life event among the adult population with age range of 30-60 years.

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