

## Stress and Cognitive Functions of Working Women in India

Dr. Yogita Sharma<sup>1\*</sup>, Dr. Baldev Singh Sandhu<sup>2</sup>

### ABSTRACT

This study assessed the effects of life stress on cognitive functions in working women. In the present scenario role segregated and segmental identity of women has put them in a situation where females have to perform multiple and adapt to diverse kind of psychological environments. They are always under pressure to rearrange their traditional roles of wife, mother and home maker in order to accommodate their non traditional roles as earner. These pressures tend to predispose them to life stresses, sometimes leading to reduced psychological well being. High stress leads to cognitive dysfunctions as more attention is paid to negative aspects of life. Scores of cognitive functions viz. problem solving, focused attention, concentration & recall in low stressed women were significantly higher than these scores in high stress women. **Conclusion:** Cognitive functions were disrupted in case of high stress women and sharp in case of low stress women

**Keywords:** Life Stress, Cognitive Functions, Problem Solving, Attention, Working Women

The role of women in maintenance and advancement of society has always been fundamental and proactive. Culturally determined and socially conditioned perceptions about women along with dominant position occupied by men pushed women to subservient place. The dynamism of modern working women encompasses equal opportunity in jobs. The ongoing Information Technology revolution and globalization has opened up a new range of opportunities for the educated woman. Contemporary personality research has provided extensive evidence of value neutral sex differences in personality. This knowledge paved way for analytical investigation of some gender referenced psychological processes which not only constitute the personality of women but play dynamic role in adaptation in personal, interpersonal and social spheres of life (Sandhu, B.S, Sharma Y, 2015). Researchers have revealed that females represent their experiences differently than males, such as females representing experiences in relatively interpersonal, subjective and immediate ways while responding to a range of tasks. On the other hand, males represent experiences of self, others, space and time in individualistic, objective and distance ways.

<sup>1</sup> Project Technical Officer, Div of Socio-behavioral and Health System research, Indian Council of Medical Research, New Delhi, India

<sup>2</sup> Professor, Dept. of Psychology, Punjabi University, Patiala, Punjab, India

\*Responding Author

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The job of women tends to intrude into their socially attributed primary responsibilities relating to home. They are always under pressure to rearrange their traditional roles of wife, mother and home maker in order to accommodate their nontraditional roles of earner. These pressures tend to predispose women to some kind of cognitive overload and life stresses, sometimes leading to reduced psychological wellbeing (B Sandhu & Y Sharma 2016).

Negative effects of stress on mental health, coping, job performance, thinking and problem solving in general have been studied at length by researcher (Bogg & Cooper, 1995; Brown, 1984; Cartwright & Cooper, 1997; Levi, 1971). High stress tend to distort the cognition in that, greater attention is paid to negative aspects of life, inability to concentrate due to constant worry and anxiety, problems in retrieval from memory, reduced responsiveness to incidental data and narrows spans of attention (Sandhu, B.S, Sharma Y, 2015).

### *Hypothesis*

- High Life Stress would impair Cognitive Functions of women.

## **METHODOLOGY**

### *Study Sample*

Present study was conducted on a sample of 318 subjects (married and working women their age ranging between 30 to 45 years). Sample was taken from MTNL office, Delhi, National University for Educational Planning and Administration (NUEPA), National Council of Educational Research and Training (NCERT), Oriental Bank of Commerce, Sarvodaya kanya vidhyalaya no 3, Sarvodaya kanya vidhyalaya no 1, Passport office, Axis Bank, Shyam lal College, Dayal Singh College, Shubhanchal Working Women Hostel, Indra Niketan (Working women hostel), Tata Consultancy Service (TCS), Videocon office and Tech. Mahindra. The sampling could be called incidental as only those subjects in the age group of 30 to 45 were taken who were available and who had been in the job for at least 5 years or more. All subjects were assured of the confidentiality of their results.

### *Tools*

The Problem Solving Inventory (Heppner, 1988), has 35 item instrumental consisting of three sub-scales derived from factor analysis: Problem solving confidence, Approach avoidance style and personal control. In addition to the three scale scores, a total PSI score is used as a single general index of problem solving appraisal. The first factor was labeled problems solving confidence and is defined as self assurance while engaging in problem solving activities. Low score on this scale indicate that individuals believe and trust in their own problem solving abilities. The second factor was labeled approach avoidance style and is defined as a general tendency of individuals to approach or avoid problem solving activities. The third factor was labeled personal control and indicates the extent to which individuals believe that they are in control of their emotions and manners while solving problems.

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Problem Solving Inventory scores can be used to identify not only how individuals appraise their problem solving process, but also to predict cognitive, affective and behavioural variables useful in assessing coping style. Recall test is the most common method of measuring memory function. Twenty engrams were constructed. Each subject was shown the list and five minutes were given to memorize. Responses of the subjects were taken in five trials, each trial after memorizing the list for five minutes. In between each trial two minutes rest was given. Numbers of correct responses in each trial were counted and their percentage calculated for each subject. This test was used to draw inferences about one aspect of cognitive functions of women.

The Stroop neuropsychological screening test (Trenery, Crosson, Deboe, Leber, 1989) consists of form c stimulus sheets, form c-w stimulus sheet consists of 112 color names (Red, Green, Blue and Tan) arranged in 4 columns of 28 names. The names are printed in one of four different colors of ink (red, green, blue, tan) but no names is printed in its matching color (e.g; the name red is never printed in red ink). The form c-w stimulus sheets are used in the administration of the color and color-word task respectively. Two tasks were involved in the administration of the SNST (Stroop Neuropsychological Screening Test)

The measures used for this study is Presumptive Stressful Life Events Scale by (Singh G, Kaur D, Kaur H, 1984). It consists of 51 life events which were further classified in (a) whether they were personal or impersonal (not dependent on the individual's action). (b) Whether they were (i) desirable (ii) undesirable (iii) ambiguous.

### *Statistical Analyses*

Data obtained for present study pertaining to variables of self regulation, and cognitive functions was statistically analyzed and Means, Standard Deviations, t-test and Pearson's product moment correlation were applied to test the hypotheses

## **RESULTS & DISCUSSION**

The mean and standard deviation for variable of Recall 1<sup>st</sup> trial (R\_1<sup>st</sup>) are 18.47 & 13.35; for Recall 2<sup>nd</sup> trial (R\_2<sup>nd</sup>) 21.16 & 12.30; for Recall 3<sup>rd</sup> Trial (R\_3<sup>rd</sup>) 26.79 & 12.95; for Recall 4<sup>th</sup> trial (R\_4<sup>th</sup>) 32.36 & 15.01 and Recall 5<sup>th</sup> Trial (R\_5<sup>th</sup>) 38.52 & 17.54 respectively. For the variable of problem solving, the means and SD's for Problem solving confidence (CON) are 29.10 and 7.83, for Approach Avoidance Style (AA) 45.48 & 8.51, for Personal Control (PC) 16.39 & 4.52, and for Problem solving Total 90.97 & 17.16 respectively.

For the variable of Life Stress, the means and SD's for Stress past one year (S\_one year) are 3.34 & 2.34, for Stress life time (S\_LT) 12.54 & 4.74; for Stress total (S\_total) 15.88 & 5.35; for Stress personal (S\_per) 8.65 & 5.33; Stress Impersonal 7.47 & 2.81; Stress Desirable 4.32 & 2.10; Stress Undesirable 6.36 & 2.76; and for Stress Ambiguous are 5.20 & 2.23 respectively.

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For testing the differences in cognitive functions in terms of stress, two groups of subjects i.e women with high life stress scores ( $n = 111$ ) and women with low life stress scores ( $n = 140$ ) were taken. Criteria of selection for high and low stress score was  $M \pm 1/2 Sd$  used. Following this way life stress scores of 18.55 and above was taken as high and score of 13.21 and below was taken as low stress. 140 subjects with low stress and 111 subjects with high life stress were taken. Their scores on variables representing cognitive functions namely, Problem solving, Stroop test, and Thought Occurrence and Recall were analyzed. The means, standard deviation, and t-ratio are shown in table 2. t-ratio for composite index of problem solving has been found to be 8.70, which is significant at .01 level, t-ratio for scores of stroop color-word test is 7.71 which is significant at .01 level, t-ratio for thought occurrence score has been 2.05 significant at .05 level. Obtained t-ratio for recall task score has been 15.80 which is significant at .01 level.

It is pertinent to mention that in case of variables of problem solving, stroop color-word, and thought occurrence higher scores are indicative of low performance with respect to that low performance with respect to that variable. In this sense, high mean scores of problem solving i.e. 100.77 is high stress group are indicative of poor capacity of problem solving in high stress group as compare to problem solving score of 83.22 is low stress subjects. Similarly mean score of stroop color word test, which measures the level of cognitive interference revealed that in high stress group's cognitive interference (mean = 104.42) is significant more than subjects in low stress group (mean = 94.00). In case of thought occurrence scores which measure the capacity for concentration, higher scores are indicative of more cognitive disruption and low concentration. Mean scores of this variable in high stress group (82.68) than low stress group (79.28) indicate the interfering effect of stress on concentration as well.

In case of performance on recall task mean scores in high stress group (16.68) are markedly lower than mean score in low stress group (36.02) indicating that in low stress group performance in recall task is significantly superior. In totality, this analysis clearly revealed the significant differences in cognitive performance in high and low stress subjects, problem solving capacity, focused attention (stroop), capacity for concentration and recall functions better in case of low stress subjects. This analysis lend support to hypothesis that high life stress impair cognitive functions in women

In the context of relationship between life stress and cognitive functions again the obtained correlation coefficient give a clear picture of negative association between these.

The range of correlation between life stress & different indices of cognitive performance range between .43 to -.58 for the total group, .28 to -.46 for Gr. I and .31 to -.24 for Gr. II (values of  $r$  for problem solving capacity & cognitive interference being read as -ve due to their reverse scoring system). Research has found that perceived ineffective problem-solving appraisal was associated with increased worrying (Davey, 1994; Davey et al, 1992) or more beliefs about consequences of worry (Davey, Tallis, & Capuzzo, 1996). These findings lend

support to the hypotheses which state that high Life Stress would impair Cognitive Functions in women.

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**Table 1 - Means and Standard Deviation of cognitive functions and life stress**

Sr. No	Variables	Mean	Std. Deviation
1	CES	162.4	34.62
2	CON	29.1	7.83
3	AA	45.48	8.51
4	PC	16.39	4.52
5	Prsl_Total	90.97	17.16
6	SC_W	98.78	11.25
7	Tho_Q	80.94	13.36
8	R_1 <sup>st</sup>	18.47	10.28
9	R_2 <sup>nd</sup>	21.16	12.3
10	R_3 <sup>rd</sup>	26.79	12.95
11	R_4 <sup>th</sup>	32.36	15.01
12	R_5 <sup>th</sup>	38.52	17.54
13	S_one Year	3.34	2.34
14	S_LT	12.54	4.75
15	S_Total	15.88	5.35
16	S_Per	8.65	5.33
17	S_Imper	7.47	2.82
18	S_Des	4.32	2.11
19	S_Undes	6.36	2.76
20	S_Amb	5.2	2.24

**Table 2 - Comparison of high and low stressed women on Cognitive functioning**

Variables	Stress Level				t-ratios
	Low(n=140)		High(n=111)		
	Means	SD	Means	SD	
Total PrSI	83.22	16.70	100.77	14.78	8.70**
SC_W	94.00	11.74	104.42	9.07	7.71**
Tho_Q	79.28	11.79	82.68	14.50	2.05*
Recall	36.02	11.96	16.68	5.32	15.80**

\*\*Significant at .01 level \*Significant at .05 level

**Table 3 - Showing Pearson's Product Moment Correlations**

	CON	AA	PC	Total PrSI	SC_W	Tho_Q	R_1	R_2	R_3	R_4	R_5	Ist Yr	Life time	Stress Total	Per	Im	Des	Und	Amb
CON	1																		
AA	.68	1																	
PC	.29	.37	1																
Total PrSI	.87	.91	.58	1															
SC_W	.84	.88	.58	.97	1														
Tho_Q	.10	.06	.22	.13	.14	1													
R_1	-.30	-.37	-.31	-.41	-.37	-.05	1												
R_2	-.33	-.39	-.31	-.43	-.39	-.12	.83	1											

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	CON	AA	PC	Total PrSI	SC_W	Tho_Q	R_1	R_2	R_3	R_4	R_5	Ist Yr	Life time	Stress Total	Per	Im	Des	Und	Amb
<b>R_3</b>	-.36	-.39	-.31	-.44	-.40	-.11	.85	.91	1										
<b>R_4</b>	-.36	-.42	-.34	-.46	-.43	-.12	.81	.88	.91	1									
<b>R_5</b>	-.45	-.49	-.40	-.55	-.52	-.19	.79	.84	.89	.93	1								
<b>Ist Yr</b>	.20	.29	.21	.29	.25	.13	-.39	-.47	-.46	-.46	-.43	1							
<b>Life time</b>	.24	.30	.33	.34	.32	.06	-.41	-.37	-.38	-.41	-.44	.03	1						
<b>Stress Total</b>	.06	.00	.01	.03	.05	-.07	-.07	-.10	-.08	-.10	-.09	-.02	.06	1					
<b>Per</b>	.21	.19	.19	.24	.23	.05	-.26	-.26	-.25	-.28	-.29	.24	.46	.01	1				
<b>Im</b>	.25	.34	.34	.37	.35	.10	-.49	-.52	-.51	-.52	-.53	.38	.80	.02	.36	1			
<b>Des</b>	.28	.38	.31	.40	.36	.05	-.34	-.37	-.37	-.38	-.40	.46	.65	.01	.41	.68	1		
<b>Und</b>	.20	.24	.32	.29	.27	.06	-.44	-.45	-.44	-.45	-.45	.33	.72	.07	.39	.71	.43	1	
<b>Amb</b>	.21	.28	.25	.30	.28	.14	-.41	-.38	-.41	-.45	-.45	.27	.65	.02	.36	.59	.39	.26	1

### Abbreviations

Prsl_CON	Problem Solving Confidence	R_5	Recall V trial
Prsl_AA	Approach Avoidance Style	Ist Yr	Past one year stress
Prsl_PC	Personal Control	Life time	Life Time Stress
Total PrSI	Total Problem Solving	Stress Total	Total Stress
SC_W	Stroop color-word test	Per	Personal Stress
Tho_Q	Thought Occurrence Questionnaire	Im	Impersonal Stress
R_1	Recall I trial	Des	Desirable Stress
R_2	Recall II trial	Und	Undesirable Stress
R_3	Recall III trial	Amb	Ambiguous Stress
R_4	Recall IV trial		

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