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# Coping resources among railway employees

**[1] Shaik Jan Saida, [2] Dr. B Govinda Reddy**
[1] Research Scholar, Department of Psychology, Bharathiar University, Coimbatore, Tamil Nadu, India
[2] Professor (Retd.), Directorate of Distance Education, S.V. University, Tirupati, Andhra Pradesh, India

**Abstract**
An attempt is made in the present investigation to assess the coping resources among railway employees. 480 employees both male and female with short job tenure and long job tenure, above supervisory and below supervisory level working in operations, commercial, mechanical and electrical departments constituted the sample of the present study. Job tenure, job level and nature of work are the independent variables. Coping resources is dependent variable. Coping resources of the sample was assessed by "Personal Resources Questionnaire" developed by Samuel H. Osipow and Arnold R. Spokane (1987). It provides measures on four coping resources i.e., recreation, self-care, social support and rational / cognitive coping resources. A 2x2x4 factorial design was employed. It was hypothesized that there would be significant difference between above supervisors and below supervisors, short job tenure and long job tenure and working in operations, commercial, mechanical and electrical departments. The obtained data are quantitatively analyzed by using Analysis of Variance (ANOVA). It was found that job level would significantly influence the social support coping resources, job tenure would significantly influence social support and rational / cognitive coping resources and nature of work would significantly influence recreation, self-care, social support and rational / cognitive coping resources.

**Keywords:** ANOVA, work environment, noise

## 1. Introduction

"Workplace stress" is the harmful physical and emotional responses that can happen when there is a conflict between job demands on the employee and the amount of control an employee has over meeting these demands. In general, the combination of high demands in a job and a low amount of control over the situation can lead to stress. Stress in the workplace can have many origins or come from one single event. It can impact on both employees and employers alike (Aranđelovic, 2006) [3].

Work-related stress among railway workers was related to important occupational stressors (whole-body vibration, awkward body posture, prolonged duties, and work environment, noise, and workers behaviours) and non-occupational stressors (improper rest, sleep disturbances) (Ostan, Poljsak and Axelsson, 2011) [13]. These stressors substantially reduce work satisfaction and productivity, causing job absenteeism, irregular food habits, muscle aches, fatigability, easy irritability, anger, frustration and anxiety (Yahaya *et al*. 2010; Sujoso, 2010) [17, 16].

The health and safety status of railway workers are determined by the nature of assignments, duration of their exposure to hazardous environments, early recognition of alert signs and proactive health seeking behavior. Almost all railways employees, except a very limited managerial / administrative cadre, are exposed to health hazards on a daily basis. Broadly, they are exposed to five categories of environmental stressors: a) mechanical injuries and accidents; b) noise and vibration; c) diesel exhaust; d) electric and magnetic fields; e) other hazards **(**Gyanaranjan Pradhan *et al*. 2015) [8].

According to Cox (1985) [7], coping is a form of problem-solving behaviour, whereas stress is the result of failed problem solving. Coping involves cognitive and behavioural strategies, and represents either an adjustment to the situation or an adjustment of the situation. Coping is successful if the source of the problem has been dealt with or because the experience of stress has been directly reduced. Whether successful or not, there is a feedback mechanism which alters the person's initial perception of the work environment and other aspects of the process. Attempts at mastering a problem situation or dealing with the experience of it are termed "coping". Osipow and Davis (1988) [12] investigated the effect of coping resources on stress-strain relationships. They found that all coping resources were effective in reducing the global strain (Cooper & Bright, 2001; Cox, 1985) [6, 7].

Coping resources are highly predictive of psychological wellness (Hobfoll, 2002) [9] and act as buffers for disorders such as anxiety and depression (Bisschop, Kriegsman, Beekman, & Deeg, 2004; McCarthy, Fouladi, Juncker, & Matheny, 2006) [4, 10]. They also predict low levels of worker burnout (Brill, 1984; McCarthy, Lambert, O'Donnell, & Melendres, 2009) [5, 11]. Coping resources refer to factors upon which individuals can draw in the face of stressful events and are present before stressors occur (Pearlin & Schooler, 1978) [5]. Coping styles, on the other hand, refer to recognizable patterns of behavior used to combat stressors. Typical coping resources include social support, confidence, religion or spirituality, stress monitoring and tension reduction abilities, a sense of mastery, physical health, and an ability to engage in problem-solving and structuring.

**Review of Literature**

Pandey (1997) [14] conducted a study to determine the relationship between personal demographics and organizational role stress. The study was conducted on 61 personnel of Indian railways aged between 28-58 years. The analysis showed a positive but no significant relationship of age and education with all dimensions of role stress. Experience was positively and significantly correlated all dimensions of role stresses except role overload, resource inadequacy and role isolation.

Aminabhavi and Kamble (2004) [2] conducted a study titled "A study of work motivation and stress coping behaviour of technical personnel at a Railway workshop" with a sample of 30 technical personnel (engineers) working in the Railway carriage repair workshop at Hubli, Karnataka State. The aim of the study was to investigate the relationship between work motivation and stress coping behaviour of the sample respondents. The work motivation questionnaire developed by A.G. Agarval (1988) and 'How you cope with the stress you experience?' developed by Cooper, Sloan and William (1988) were administered among the group. The results showed that overall work motivation score of Railway technical personnel significantly correlated with their overall stress coping behaviour.

Abhay Pratap Singh (2016) investigated the role of coping in work stress of police employees. A 3 × 2 factorial design with three levels of job hierarchy (officers, sub-inspectors, and constables) and two levels of job tenure [short job tenure (0–10 year) and long job tenure (above 10 year)] was used in present study. A total of 240 police personnel from Gorakhpur Zone (India) participated as respondents. Objective Work Stress Scale, Feeling of Work Stress Scale (Cooper 1983), and Coping Scale (Carver *et al*. 1989) were used to determine the level of work stress and coping of the police employees. ANOVA results revealed that the level of work stress varied across different groups of police personnel. More specifically, objective work stress was found greater in sub-inspectors than constables and officers while constables reported more feeling of work stress than sub-inspectors and officers, respectively. Furthermore, the different groups of police personnel differed on various forms of coping response, in which officers used more active- and adaptive-related coping strategies than sub-inspectors and constables, respectively. Contrary to this, constables used more maladaptive coping strategies than sub-inspectors and officers. Correlation results evinced that active- and adaptive-related coping responses have an inverse link with work stress, whereas maladaptive coping responses have a positive relationship with work stress.

**Need of the study**

Many researchers have conducted research on the occupational stress in the area of pilots, nurses, accountants, teachers, university staff and managers, information technology professionals etc. But lack of consideration on investigating the occupational stress among Railway employees is observed. Few researchers have touched Railways (for example Engine Pilots). There is little theoretical or empirical research carried out on the effects of occupational stress among Railway employees, a professional who is in charge of reception and dispatch of trains, ensuring safety running of trains as well the lives of Railway Customers. The main reason for researchers are not exploring the feasibility of stress undergone by the Railway Department is that generally, it is not being considered while discussing about probable stressors. The harmful effects of occupational stress are known as the key problems for either employees or organization concerned. For employees, stress regularly contributes to the burnout, risk of accidents and illness like hyper tension, coronary heart disease and severe depression. This also leads to poor quality of performance, lower job satisfaction, high turnover and increased work absence or lack of concentration on the job (Mani, Sritharan and Gayatri, 2014).

People when under stress try to overcome by resorting into various means. They may use coping resources / strategies or adopt coping styles. Employees in order to work effectively may have to overcome call it "occupational stress" or "personal strain" by using appropriate coping resources / strategies or styles. There are number of coping resources such as Recreation, Self-care, Social Support and Rational / Cognitive coping.

**Objectives**

1. To examine whether job level has any significant impact on coping resources among railway employees.
2. To study whether job tenure has any significant impact on coping resources among railway employees.
3. To study whether nature of work has any significant impact on coping resources among railway employees.
4. To study whether there is any significant interaction among job tenure, job level and nature of work with regard to coping resources among railway employees.

In order to realize the objectives the following hypotheses are formulated:

**Hypotheses**

1. There would be significant difference between above supervisory and below supervisory employees in their coping resources.
2. There would be significant difference between employees with short job tenure and long job tenure in their coping resources.
3. There would be significant difference between employees working in operations, commercial, mechanical and electrical departments in their coping resources.
4. There would be significant interaction among job level, job tenure and nature of work with regard to coping resources.

**Population**

About 3000 Employees working in different departments in the Secunderabad Division constituted the population of the Study.

**Sample**

From the 3000 Employees, 480 are selected resorting to systematic sampling technique in such a way that they fit into a 2 x 2 x 4 factorial design. The researcher has resorted to 20% over sampling in order to avoid any loss of subjects during the course of study.

**Table 1:** Distribution of the sample

| Department | Short Job Tenure | | Long Job Tenure | | Total |
|---|---|---|---|---|---|
| | Above Supervisors | Below Supervisors | Above Supervisors | Below Supervisors | |
| Operating | 30 | 30 | 30 | 30 | 120 |
| Commercial | 30 | 30 | 30 | 30 | 120 |
| Mechanical | 30 | 30 | 30 | 30 | 120 |
| Electrical | 30 | 30 | 30 | 30 | 120 |
| Total | 120 | 120 | 120 | 120 | 480 |

**Variables**

- **Independent Variables**
- Job Tenure (Short Job tenure and Long Job Tenure. Employees with less than ten years of service are categorized as short job tenure employees and those with more than ten years of service is categorized as long job tenure employees).
- Job Level (employees up to supervisor level and above Supervisor Level)
- Nature of Work (Operating, Commercial, Mechanical and Electrical)

Employees working in four different departments such as Mechanical, Operational, commercial and electrical departments are considered.

- Dependent Variables
- Coping Resources

**Tool**

**Coping Resources Questionnaire:** To measure the coping resources of employees, "Personal Resources Questionnaire" one of the third domain of the "Occupational Stress Inventory" developed by Samuel H. Osipow and Arnold R. Spokane (1987) was administered.

The questionnaire consists of total 40 statements divided into 4 scales namely Recreation, Self-care, Social Support and Rational / Cognitive Coping. Each of the 4 scales consists of 10 statements with a 5 point scale i.e.,

1. Rarely or never true
2. Occasionally true
3. Often true
4. Usually true and
5. True most of the time

The minimum and maximum possible score on each of the 4 scales ranges from 10 to 50. The higher the value of the score on each of the r scales, the more the preference for that particular coping. The reliability of the questionnaire was found to be 0.73.

**Description of the four scales**

**Recreation (RE):** Measures the extent to which the individual makes use of an derives pleasure and relaxation from regular recreational activities.

**Self-Care (SC):** Measures the extent to which the individual regularly engages in personal activities which reduce or alleviate chronic stress.

**Social Support (SS):** Measures the extent to which the individual feels support and help from those around him/her.

**Rational/Cognitive Coping (RC):** Measures the extent to which the individual possesses and uses cognitive skills in the face of work-related stresses.

**Procedure**

The researcher approached the General Managers and Divisional Senior Managers of the four departments for permission to contact the sample. The researcher explained to them the significance of the study and obtained formal permission from them to collect data from the employees. The researcher met the sample individually explained to them, why the study is being conducted and explained them as how to fill in questionnaire. Sufficient time was given to them. After a gap of 15 days the filled in questionnaires are collected from the employees. There are about 3000 employees working in four departments in Secunderabad Division namely Operating, Commercial, Mechanical and Electrical Departments with two levels of job tenure, two levels of supervision working in four departments.

**Research Design**

As there are three independent variables job tenure, job level and nature of work, job tenure is divided into two ways, job level is divided into two ways and nature of work is divided into four ways, a 2x2x4 factorial design is employed.

**Statistical Analysis**

The obtained data from the sample are subjected to Descriptive Statistics such as Means, SDs and Inferential Statistics such as ANOVA (Analysis of Variance) and 't' tests wherever necessary.

**Results and Discussion**

An observation of table-2 clearly shows that above supervisory level employees with long job tenure working in mechanical department obtained a highest mean of 32.400 in recreation coping resource, indicating that this group frequently use recreation coping resource more frequently compare to other groups. Below supervisory employees with long job tenure working in electrical department obtained a highest mean of 37.530, indicating that their use of self-care coping resource more frequently compare to other groups. Below supervisory employees with long job tenure and working in commercial department have obtained a high mean of 40.970 indicating that their use of social support coping more frequently. Below supervisory employees with long job tenure and working in electrical department have obtained a highest mean of 40.130 indicating that their use of rational / cognitive coping more frequently than the other groups.

There are mean differences among the groups with regard to coping resources However, in order to find out there are any significant differences among the groups, the data are further subjected to Analysis of Variance (ANOVA) and the results are presented in table-3.

**Table 2:** Means and SDs of Scores on Coping Resources

| Job Level | Job Tenure | Nature of Work | Recreation | Self-care | Social Support | Rational / Cognitive |
|---|---|---|---|---|---|---|
| Above Supervisors | Short Job Tenure | Operations | 27.300<br>7.502 | 31.030<br>7.103 | 34.100<br>7.425 | 31.930<br>6.863 |
| | | Commercial | 28.470<br>4.688 | 29.970<br>4.499 | 29.030<br>4.367 | 29.500<br>3.989 |
| | | Mechanical | 27.600<br>4.048 | 29.700<br>5.260 | 30.270<br>5.159 | 30.570<br>5.083 |
| | | Electrical | 28.530<br>3.812 | 30.630<br>6.360 | 28.600<br>6.755 | 31.170<br>6.341 |
| | Long Job Tenure | Operations | 31.130<br>7.045 | 32.500<br>8.827 | 35.670<br>7.915 | 35.470<br>7.842 |
| | | Commercial | 25.250<br>5.975 | 27.670<br>5.653 | 34.270<br>6.247 | 29.470<br>6.404 |
| | | Mechanical | 27.830<br>6.909 | 28770<br>8.791 | 34.770<br>9.145 | 35.600<br>7.708 |
| | | Electrical | 25.400<br>4.375 | 35.800<br>8.794 | 30.130<br>11.230 | 33.530<br>5.393 |
| Below Supervisors | Short Job Tenure | Operations | 27.100<br>6.493 | 28.930<br>6.480 | 32.030<br>6.333 | 33.210<br>7.143 |
| | | Commercial | 25.630<br>3.439 | 28.500<br>4.075 | 34.160<br>3.701 | 29.130<br>3.530 |
| | | Mechanical | 29.000<br>8.288 | 31.130<br>7.807 | 35.200<br>7.160 | 33.300<br>8.547 |
| | | Electrical | 27.770<br>4.183 | 30.800<br>6.905 | 29.100<br>6.707 | 31.500<br>4.041 |
| | Long Job Tenure | Operations | 24.830<br>8.702 | 26.830<br>11.928 | 30.700<br>9.735 | 28.470<br>12.108 |
| | | Commercial | 22.930<br>3.778 | 30.170<br>6.757 | 40.970<br>7.199 | 28.330<br>7.004 |
| | | Mechanical | 32.400<br>7.523 | 32.200<br>6.071 | 34.500<br>5.900 | 35.170<br>6.142 |
| | | Electrical | 27.470<br>6.917 | 37.530<br>7.491 | 36.700<br>13.714 | 40.130<br>9.104 |

## Grand Means

**Table 3**

| Groups | Recreation | Self-care | Social Support | Rational / Cognitive Coping |
|---|---|---|---|---|
| Above Supervisors | 27.689 | 30.759 | 32.105 | 32.155 |
| Below Supervisors | 27.066 | 30.761 | 34.170 | 32.405 |
| Short Job Tenure | 27.600 | 30.086 | 31.561 | 31.289 |
| Long Job Tenure | 27.155 | 31.434 | 34.714 | 33.271 |
| Operations | 27.590 | 29.823 | 33.125 | 32.270 |
| Commercial | 25.570 | 28.953 | 34.608 | 29.108 |
| Mechanical | 29.208 | 30.450 | 33.685 | 33.660 |
| Electrical | 27.293 | 33.690 | 31.133 | 34.083 |

**Table 4:** Summary of ANOVA of Scores on Coping Resources

| Source of Variation | Recreation | Self-care | Social Support | Rational / Cognitive Coping |
|---|---|---|---|---|
| Job Level | 1.326@ | 0.000@ | 8.473** | 0.207@ |
| Job Tenure | 0.582@ | 4.084@ | 17.466** | 9.172** |
| Nature of Work | 7.611** | 9.324** | 4.271** | 12.338** |
| Job Tenure x Job Level | 0.038@ | 0.554@ | 0.033@ | 1.493@ |
| Job Tenure x Nature of Work | 3.439** | 5.330** | 2.976* | 5.643** |
| Job Level x Nature of work | 7.232** | 4.166** | 7.788** | 4.228** |
| Job Tenure x Job Level x Nature of Work | 3.759** | 1.455@ | 2.806* | 5.779** |

@- Not Significant ** - Significant at 0.01 level * - Significant at 0.05 level

The first hypothesis predicted that significant differences between above supervisory and below supervisory employees with regard to coping resources. The "F" value of 8.47 for social support is significant at 0.01 level, indicating that there

would be significant difference exist between above supervisory and below supervisory employees with regard to social support coping resources. Below supervisory employees use social support coping resources more frequently compared to above supervisory employees. Thus the hypothesis-1 "*there would be significant difference between above supervisory and below supervisory employees in their coping resources*" is partially accepted in social support dimension only.

The second hypothesis states that there would be significant difference between employees with short job tenure and long job tenure with regard to coping resources. The "F" values of 17.466 for social support and 9.172 for rational / cognitive coping resources are significant at 0.01 level, indicating that job tenure of the employees would significantly influence the coping resources of employees. Employees with long job tenure use social support and rational / cognitive coping resources more frequently compared to short job tenure. Thus the hypothesis -2 "*there would be significant difference between employees with short job tenure and long job tenure in their coping resources*" is partially accepted in social support and rational / cognitive coping resources dimensions only.

The third hypothesis states that nature of work would significantly influence the coping resources among employees. The "F" values of 7.611 for recreation, 9.324 for self-care, 4.271 for social support and 12.338 for rational / cognitive coping resource all are significant at 0.01 level, indicating that nature of work would significantly influence coping resources among employees. Employees working in mechanical departments use recreation coping resources more frequently compared to employees working in operations, commercial and electrical. Employees working in electrical department use self-care and rational / cognitive coping resources more frequently compared to employees working in operations, commercial and mechanical departments. Employees working in commercial department use social support coping resource more frequently compared to employees working in operations, mechanical and electrical departments. Thus the hypothesis -3 "*there would be significant difference between employees working in operations, commercial, mechanical and electrical departments in their coping resources*" is accepted as warranted by the results.

The fourth hypothesis states that there would be significant interaction among job level, job tenure and nature of work with regard to coping resources used by employees. There is significant first order interaction effect between job tenure and nature of work and job level and nature of work with regard to recreation, self-care, social support and rational / cognitive coping resources. There is significant second order interaction effect among job tenure, job level and nature of work with regard to recreation, social support and rational / cognitive coping resources dimensions only. Thus the hypothesis – 4 "*there would be significant interaction among job level, job tenure and nature of work with regard to coping resources*" is partially accepted.

## Conclusions

1. Below supervisory employees use social support coping resources more frequently in order to cope with stress.
2. Employees with long job tenure use social support and rational / cognitive coping resources more frequently compare to employees with short job tenure.
3. Employees working in mechanical departments use recreation coping resources more frequently compare to employees working in operations, commercial and electrical departments.
4. Employees working in electrical department use self-care and rational / cognitive coping resources more frequently compared to employees working in operations, commercial and mechanical departments.
5. Employees working in commercial department use social support coping resource more frequently compared to employees working in operations, mechanical and electrical departments.

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