

Case Study on Job Stress and Adapting Strategy of Construction Workers

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Abstract: This study aimed to explore the relationship between job stress and adapting strategy of the construction workers of Hushan reservoir dam project in Yulin, Taiwan. The results showed that there is an association between salary and job stress, indicating the employees with higher salary had felt lower job stress, and employees who have worked for shorter amounts of time were found to feel job stress more than those who have been employed longer. Moreover, male employees showed more job stress than did the females. Educational level is showed as another factor influencing their adapting strategy. The results showed that the more positive thinking the employers have, the more job stress they would relieve. This study also obtained the following results: (1) Experience has significant differences in job stress rating, the less experience rating the higher the job stress. (2) There is a significant difference between the level of education with the cool, optimistic and straight type of thinking mode. (3) Different education levels have different levels of rating when faced with job stress. In general, the participants with bachelor's degree have higher job stress rating than the others. (4) The participants with optimistic type of thinking have lower job stress than the others. (5) The relationship between job stress and adapting strategy showed a negative correlation. The workers with positive thinking mode are able to adapt to job stress.

1 INTRODUCTION

Moderate job stress might improve the work quality, but excessive job stress will be a major harming factor for the physical and mental health of worker and work quality.

In the face of job stress, the workers concerned should develop a set of adapting strategy that meet the individual's needs according to their own circumstances.

Therefore, the present study investigated the job stress and adapting strategies of Hushan reservoir construction workers in Yulin, Taiwan. Simultaneously, the study investigated the job stress and the physical and mental health status of workers. Furthermore, this research aims to provide assistance to workers that self adapt and provide reference for the management policy of businesses.

2 LITERATURE REVIEW

The literature review focuses on definition, theoretical model, affecting factor, and adapting

strategy of job stress of workers.

2.1 Definition of Job Stress

Stress was originally a physics and engineering term used to describe a body's resistance to external forces (Chen 1981). Those are the responses of the individual to the restoration of normal conditions in the face of irritation (Yu, 2009).

Wu (1999) pointed out that when faced with job stress, workers can help themselves by at least changing the situation that causes job stress, such as self evaluation and analysis, time management, proper exercise, muscle relaxation training, seeking social support, and establishing a positive outlook on life.

2.2 Source of Job Stress

Wu (1999) point out that the source of job stress can basically be classified into three aspects: individual, organizational, and social environment. (1) The individual factor includes age, physiological, psychological, family, and financial condition. (2)

The organizational factor includes organization structure, interpersonal relationships, organization leadership, working environment, role requirements, and growth stage of the organization. (3) The social environment factor includes economics, politics, technical-related, organizational hierarchy, and social expectation.

Wu (1986) pointed out that between degree of stimulation and job stress has a concave curve relationship. Too high or too low pressure stimulation produces higher levels of job stress. Wu (1986) also identifies the source of job stress: work connotation, role in the organization, career development, structure and climate of the organization, human relations, as well as extra-organizational factors.

Individuals have different ways of responding to job stress, such as increased job stress resistance, gaining external support, and reducing job stress injuries. However, job stress might arise from the organization or even the social environment. Thus, organizations and social systems should also have their corresponding amendments.

2.3 Theoretical Model of Job Stress

Many researchers had proposed the theoretical models of job stress. (1) Stimulus-response model: Emphasize the impact of social and external environmental changes on individuals. It's about job stress as an environmental stimulus. The theoretical stimulus-oriented theory is similar to the Hooke's elasticity law. Selye (1956) considered those responses of changes of the workers' body is done to adapt to stressful situations. Selye (1956) also pointed out the reactions elicited under different stress stimuli have a common property. (2) Interactive model: Also known as cognitive theory of stress (Shi, 1990). This model regards the job stress as the interactive result of participants' response to environmental stimulus, considered the job stress as a mediating variable (Ivancevich and Matteson, 1980).

2.4 Affecting Factor of Job Stress

The influence of job stress on individuals includes psychological and physiological aspects (Huang, 1999). Excessive job stress can easily cause anxiety, depression, or anxiety in terms of psychological aspects of workers. In the physiological level, excessive job stress can cause cardiovascular disease, diseases of the digestive system or other organs, and reduce immunity. Serious cases can even lead to

death. When the job stress is too high to be effectively relieved, personal emotions may be affected and individuals' personal health may be seriously injured (Pan, 1995).

Background factors related to job stress are mainly divided into parts (Lu & Gao, 1999). They are personal, work, and professional factors. The description is as follows: (1) Personal factor includes age and gender. (2) Work factor includes job position and work experience. (3) Professional factor includes reputation, prospects, and particularity. The effects of job stress can vary due to those individual conditions.

2.5 Adapting Strategy of Job Stress

Wu (1999) pointed out that when faced with job stress, workers can at least change the situation, such as self evaluation and analysis, time management, proper exercise, muscle relaxation training, seeking social support, and establishing positive life values. This might help the workers increase resistance to job stress, gain external support, and reduce stress injuries.

Folkman and Lazarus (1980) also pointed out the individuals' perceptions and feelings of job stress often differences. Therefore, when job stress comes, workers will first produce different assessment methods based on their own perceptions of stressors. According to different assessment results, individuals decide the mode of response that should be adopted. In response to job stress, the individual's response is rational and deliberate.

Folkman and Lazarus (1980) also illustrates the process of assessment of worker response when they recognize the job stress. The first stage, primary appraisal, refers to the process by which workers judge whether an event will cause a threat. The second stage is the secondary appraisal, which means that the workers evaluate once again what kind of effective experience they have, the resources available, and the measures they need to take. Reappraisal, the third stage, is a feedback process. It has two forms. (1) When a perceivable and environmentally favourable message arises, it causes a change in the previous judgment. This is called a realistic consideration. (2) When the workers feel that the general trend has gone, they will again assess the threatening event as non-threatening in order to reduce negative emotions. This is called self-defence. The fourth stage is response mode, which is divided into three types. (1) The problem focuses on the law, such as the formulation of plans. (2) Emotional focus methods, such as self-isolation.

(3) The third type is the combination of the two methods of responding to the job stress, such as discussing with others or seeking social support, etc.

3 RESEARCH FRAMEWORK

The research framework of the present study mainly includes demographic variables, job stress (peer relations, workload, job autonomy, and job feedback), and adapting strategies. Adapting strategy refers to the individual's thinking mode (TM) when individuals face job stress. The adapting strategy includes seeking support, self resolving, and emotional adjustment.

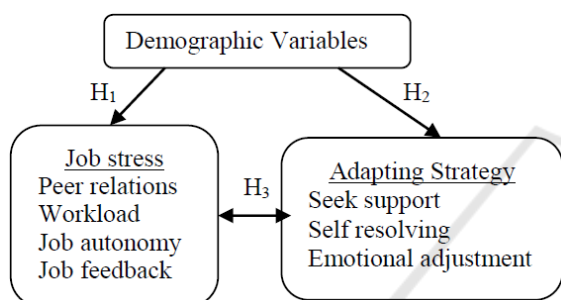


Figure 1: Research framework.

3.1 Research Hypothesis

The research framework of the present study conducted three hypotheses as follows:

- H₁: Workers with different demographic variables have significantly different responses in job stress.
- H₂: Workers with different demographic variables have significantly different adapting strategies.
- H₃: There is a significant relationship between job stress and adapting strategies of workers.

3.2 Participants and Tool

The participants of the present study are the construction workers of the Hushan reservoir dam project in Yulin, Taiwan. The present study used a questionnaire survey method.

3.3 Questionnaire Design

The questionnaire includes three parts: demographic variables, job stress, and adapting strategy.

The job stress section is mainly based on Lu (1997) who surveyed four large state-owned enterprises at Kaohsiung city in 1994. Job stress is referred to as peer relations, workload, job autonomy, and job feedback.

The adapting strategy is mainly based on the relevant literature of Lin et al., (1996). Adapting strategy is referred to as the individual's TM when individuals face job stress. This strategy mainly includes support seeking, self resolving, and emotional adjusting.

The rating used the Likert 5-point score. The scales are divided into 5, 4, 3, 2, and 1 point. They represent the following: strongly agree, agree, no difference, disagree, and strongly disagree, respectively. 75 questionnaires were delivered, and 60 were recovered. The recovery rate was 80%.

4 RESULTS

4.1 Demographic Variables

Table 1 shows the demographic variables. Demographic variables include gender, age, department, education, marital, experiences, and monthly salary.

Table 1: Demographic variables of participants.

Var.	Items	#	%
Gender	Male	40	66.7
	Female	20	33.3
Age	19-25	31	51.7
	26-35	18	30.0
	36-45	9	15.0
	46-55	2	3.3
	56-65	0	0.0
Department	Management	2	3.3
	Personnel	4	6.7
	Ministry of works	16	26.7
	Engineering	29	48.3
	Accounting	2	3.3
Education	Design	7	11.7
	Below high school (BHS)	46	76.7
	Bachelor	14	23.3
	Graduate school (GS)	0	0.0
Marriage	Married	31	51.7
	Not married	29	48.3
Experience	Less than 5 years	20	33.3
	6-10 years	14	23.3
	11-15 years	11	18.3
	More than 16 years	15	25.0
Salary	Less than 30K	14	23.3
	31-50K	30	50.0
	51-70K	14	23.3
	More than 71K	2	3.3

4.2 Job Stress

Table 2 shows the results of job stress. The mean (M) rating scores ranged between 2.48 and 3.83, and the standard deviation (SD) was also shown. The results indicated that the participants regard their job stress were not high.

Item 4, when you are angry at work, will you sit down and tell myself “I’m tired of living”? The mean rating score was only 2.48 and less than 3.0, which indicated that most construction workers cherish their life and do not give up on themselves.

Item 11, do you feel that you can overcome the current or future possible problems? The mean rating score was 3.83 and was higher than 3.0, which indicated that most construction workers, in the face of problems, will find a way to overcome problems.

Table 2: The M and SD of job stress.

Item	Question	M	SD
1	Are you always worried about what you have done during the past 3 months?	2.75	0.97
2	In each working day, sometimes there is no obvious reason but you feel uneasy and upset?	2.80	1.12
3	When job stress accumulated, do you have enough energy to act?	3.23	1.02
4	When you are angry at work, will you sit down and tell yourself “I’m tired of living”?	2.48	1.11
5	Do you doubt your ability and judgment, which lowers your confidence?	2.67	1.07
6	If your colleagues and friends are alienated from you, do you worry about what you did to annoy them?	3.27	0.97
7	If you have made a mistake, will you panic, as if things have become impossible?	2.78	0.94
8	Have you recently discovered and dealt with problems at work or at the home?	3.57	0.75
9	In work and daily life, do you often have some difficulties or concerns?	3.30	0.99
10	With the time past, do you feel sad or depressed?	2.62	1.08
11	Do you feel that you can overcome the current or future possible problems?	3.83	0.72
12	Do you feel exhausted when you work?	3.40	1.07

4.3 Adapting Strategy

Table 3 shows the results of adapting strategy. The mean rating scores ranged from 3.53 to 4.10, and all are higher than 3.0. The results indicated that the participants with all types of TM have low job stress.

Table 3: The M and SD of TM.

Types of TM	M	SD
Active type	3.82	0.62
Cool type	3.72	0.65
Optimistic type	3.77	0.60
Belief type	3.53	0.61
Straight type	3.88	0.60
Courage type	3.96	0.47
Target-oriented type	3.70	0.62
Rational type	3.68	0.63
Project type	4.10	0.49

5 ANALYSIS

5.1 Analysis of Thinking Mode

The analysis of TM with gender and marriage in job stress were analyzed by student *t* tests. Other demographic variables such as age, department, education, experiences, and monthly salary in job stress were analyzed by one-way analysis of variance (ANOVA).

Table 4 shows that the cool type of TM will have different response depending on gender and the straight type of TM will have different response depending on marital in job stress.

Table 4: *t*-test of gender and marital vs. significant TM.

Variable	M	SD	<i>t</i> -value	<i>p</i> -value
Gender				
TM	Cool type			
Male	3.86	0.54	2.40/	0.03***
Female	3.45	0.76		
Marital				
TM	Straight type			
Married	3.72	0.42	4.16	0.04***
Not married	4.03	0.71		

The age, department, and monthly salary all not have different response depending types of TM.

Table 5: *F*-test of education vs. significant TM.

Education	M	SD	<i>F</i> -value	<i>p</i> -value	Group
TM	Cool type				
BHS	3.33	0.72	3.57	0.02	2>3>1
Bachelor	3.86	0.55			
GS	3.42	0.74			
TM	Optimistic type				
BHS	3.67	1.10	4.44	0.01	2>1>3
Bachelor	3.90	0.50			
GS	3.39	0.53			
TM	Straight type				
BHS	4.20	0.83	7.46	0.001	1>2>3
Bachelor	4.00	0.50			
GS	3.39	0.56			

Table 5 shows that education was the only

significant factor that have different responses depending on type of TM in job stress. The participants with bachelor degree has higher rating score in job stress than GS and BHS on cool type; the participants with bachelor degree has higher rating score in job stress than BHS and GS on optimistic type; and the participants with BHS degree has higher rating score in job stress than bachelor and GS on straight type.

5.2 Analysis of Job Stress

Table 6 shows the mean and SD of job stress with demographic variables.

Table 6: The job stress with demographic variables.

Var.	Items	M	SD
Gender	Male	2.98	0.53
	Female	2.82	0.54
Age	19-25	3.41	0.32
	26-35	2.91	0.52
	36-45	2.96	0.51
	46-55	2.62	0.63
	56-65	3.16	0.24
Department	Management	3.00	0.40
	Personnel	2.91	0.32
	Ministry of works	2.66	0.60
	Engineering	3.06	0.53
	Accounting	2.50	0.24
	Design	3.04	0.45
Education	BHS	2.66	0.24
	Bachelor	2.99	0.51
	GS	2.81	0.66
Marriage	Married	3.04	0.45
	Not married	2.80	0.59
Experience	Less than 5 years	3.18	0.41
	6-10 years	2.97	0.57
	11-15 years	2.60	0.44
	More than 16 years	2.77	0.57
Salary	Less than 30K	3.02	0.51
	31-50K	2.92	0.55
	51-70K	2.83	0.58
	More than 71K	3.00	0.47

Among the demographic variables, only experience reached statistical significant level. The participants with 11-15 working experience rating has the lowest job stress, followed by more than 16 years, 6-10 years, and less than 5 years.

The demographic variables did not reach statistically significant level. However, male participants rate higher in terms of job stress than female participants; youth participants have the highest job stress compared to others; engineering department have the highest job stress compared to others; participants with bachelor degree have the highest job stress compared to others; participants

with less than 30K salary have the highest job stress compared to others.

6 CONCLUSION

Table 7 shows the results of the hypotheses.

Table 7: Summary of hypotheses.

Hypothesis	Variable dimension	Result
H1: Participants with different demographic variables have significant differences in their job stress rating.		
H1-1	Gender	Not supported
H1-2	Age	Not supported
H1-3	Department	Not supported
H1-4	Education	Not supported
H1-5	Marriage	Not supported
H1-6	Experiences	Supported
H1-7	Salary	Not supported
H2: Participants with different demographic variables have significant differences in adapting strategy when under stress.		
H2-1	Gender	Supported
H2-2	Age	Not supported
H2-3	Department	Not supported
H2-4	Education	Supported
H2-5	Marriage	Supported
H2-6	Experiences	Not supported
H2-7	Salary	Not supported
H3: There are significant negative correlations between thinking modes and job stress of participants.		
H3-1	Active type	Supported
H3-2	Cool type	Supported
H3-3	Optimistic type	Supported
H3-4	Belief type	Supported
H3-5	Straight type	Supported
H3-6	Courage type	Supported
H3-7	Target-oriented type	Supported
H3-8	Rational type	Supported
H3-9	Project type	Supported

Table 7 indicated that only H1-5 was significant among hypothesis H1 that participants with different demographic variables have significant differences in their job stress rating. Participants with 11-15 years of work experience had lowest job stress rating. The other demographic variables did not significantly affect job stress rating.

For hypothesis H2, only H2-4 and H2-5 reach statistical significance. Participants with bachelor degree and are married rate higher in adapting score. This result also indicated that the participants with bachelor degree and a marriage are more tolerant higher working stress.

For hypothesis H3, correction analysis indicated that the TM were all negatively correlated with rating of job stress. This result indicates that the participants with more active type of TM have lower

job stress. The others types of TM all had the same results. Therefore, this hypothesis was supported.

7 RESEARCH LIMITATIONS

There are many kinds of construction projects, such as railroad, highway, bridge, skyscraper, airport, and reservoir dam ... etc. The present study was just conducted on the workers of Hushan reservoir dam project in Yulin. Therefore, the research results might apply only to big construction projects in Taiwan.

Further, the sources of job stress and thinking modes of employees among industries are different. Therefore, it is recommended that further research can investigate different industries to develop relevant scales related to job stress.

8 PRACTICAL IMPLICATION

In personnel suitability in work configuration, result showed that the work configuration is currently the biggest source of job stress for employees. Therefore, it is suggested that relevant units or contracting units can rationally configure the manpower structure according to the amount of business volume. In particular, the allocation of personnel quotas in the engineering department will reduce the workload of related personnel.

The company should assist employees in balancing work and family. Results showed that the sources of job stress for employees are ranked second in the "work and family" conflict. Therefore, it is recommended that companies or related organizations can understand and properly handle employees' "work and family relations" and give them time or spiritual incentives. When employee morale is motivated, they indirectly affect the effectiveness of the work, and at the same time, productivity will increase.

Finally, regularly held lectures on stress relief and job stress therapy should be held. Long working hours, lack of sports, and lack of rest often resulted in the body and mind to be prone to anxiety and panic. It is suggested that related enterprises may hold job stress seminars with professional agencies and regular job stress management courses.

REFERENCES

- Folkman, S. & Lazarus R. S., 1980, An analysis of coping behavior in a middle-aged community sample, *Journal of Health and Social Behavior*, 21, 219-239.
- Huang, P. I., 1999, How to help students adapt to stress, *Enthusiasts and Ferries*, Tainan Normal University. (in Chinese)
- Ivancevich, J. M. & Matteson, M.T., 1980, *Stress and Work a managerial Perspective*, New York : Scott, Foresman.
- Lin, C.-W., 1996, Study on the national primary school organization climate, teachers' job stress and their responses, Master Thesis of National Pingtung Normal College.
- Lu, L., 1997, Job stress: a dialogue between theory and research, *Chinese Journal of Mental Health*, 10(4), 19-51. (in Chinese)
- Lu, L. and Gao, S.-F., 1999, Ethnic differences in managing job stress: personal background, work and career factors, *Chinese Journal of Mental Health*, 12(2), 23-66. (in Chinese)
- Pan, Z.-D., 1995, *Stress Management*, Psychological Publishing Co. Ltd. (in Chinese)
- Selye, H., 1956, *The stress of life*, New York, John Wiley & Sons.
- Shi, S.-F., 1990, A study of the relationship between University Teachers' Job Stress, responsiveness and Job Burnout, Master Thesis of National Changhua Normal University. (in Chinese)
- Wu, J.-X., 1999, The formation of job stress and the discussion of the way of response--a three-pronged approach to individuals, organizations and social environment, *Friends of Labor*, 585, 18-21. (in Chinese)
- Wu, F.-X., 1986, Study on work pressure and management in organizations, *Oriental Magazine*, 19(4), 35-43. (in Chinese)
- Yu, S.-F., 2009, A study on the relevance of teachers' personality traits and job stress in national middle school teachers in Ponhu county, Master Thesis of National Tainan University. (in Chinese)