



Prediction of Cognitive Failure at Work Based on Job Stress and Workload with the Mediating Role of Organizational Climate in Physical Education Staff

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Abstract

Background: Among important issues in physical education organizations, one could refer to paying attention to organizational health and identifying traumatic factors, including cognitive failure. Organizational failure could stem from organizational behavior. This study aims to examine the association between job stress and workload with cognitive failure with the mediating role of organizational climate among physical education staff in Ardabil province.

Materials and Methods: In this descriptive correlational study, the statistical community consisted of the physical education staff of Ardabil province in 2019, from whom 200 employees were selected by random sampling. The research tools included cognitive failure questionnaires about organizational climate, job stress, and workload. The data were analyzed by Pearson's correlation and path analysis using SPSS, and AMOS software.

Results: The results showed that the variables of job stress and workload had a significant positive association with cognitive failure. In addition, the research model had a good fit, and the indirect impact of these variables was confirmed by the mediating role of organizational climate ($P < 0.01$).

Conclusion: we concluded cognitive failure at work, based on job stress and workload with the mediating role of organizational climate, could be predictable in the physical education staff of Ardabil province.

Keywords: Workload, Physical Education and Training, Occupational Stress, Social Behavior, Job Stress.

Introduction

Survival and sustainability of organizations depend on their employee performance. In any departments, the role of employees is recognized in all key areas of activities [1]. Among the major issues in organizations, especially physical education organizations, one could refer to the precision, concentration, responsiveness, and dynamics of staff in performing their tasks. Physical education organizations, due to having various vertical and horizontal levels in the

organizational chart, have high complexity, multiple procedures, and diverse audience requirements, which make them be subject to high pressure on the organizational environment [2]. Poor management of sports and other related organizations as well as inadequacy of their approach to organizational structure and environmental change could lead to organizational failure to achieve core goals [3]. Accordingly, it is important to investigate factors leading to staff failure in physical education organizations. Job failure has many forms, with one of which being

cognitive failure. In fact, human errors stem from failures occurring in information processing [4]. Research primarily examined human errors using the term cognitive failure [5]. Failure in practice is divided into two categories, according to research. The first category is related to the planning stage that involves planning errors, and the second category is related to failure at the implementation stage, which includes cognitive failure [6]. Cognitive failure at work involves a mistake occurred when performing a task that a normal person can perform flawlessly [7]. In general, cognitive failure involves serious failures in one's abilities and knowledge, which include 1) slipping into inattention and failing to understand, 2) slipping one's memory and failing to retrieve information, and 3) slipping into an action or doing an unwanted action [6].

Job stress is among the factors likely to affect cognitive failure among physical education staff. In addition, stress is an integral part of today's life. When it occurs in the workplace and affects work-related factors, it is referred to as job stress [8, 9]. Occupational stress is present in all occupations, but it is more prevalent in occupations that directly deal with humans [10]. It is an individual's response to external and environmental stimuli [11]. Job stress is a detrimental emotional and physical response produced when job requirements do not match capabilities, resources, or needs of employees. Research has shown that job stress is associated with cognitive failure [12, 13, 14, 15, 16, 17]

Workload is another factor that is likely to affect cognitive failure among physical education staff. In some EU and developed countries, 40 to 60% of employees experience considerable fatigue caused by overwork [18, 19]. In general, overtime and long working hours are the two important causative factors of work fatigue, which affect the amount of work an individual or a group of people could do in a given period [20]. Weinger, Reddy, and Slagle (2004) consider workload as a multidimensional and complex structure influenced by external needs of the task, environment, and organizational factors, as well as psychological, cognitive, and administrative abilities [21]. According to Barackai, fatigue reduces memory, impairs the thinking process, and leads to irritability [20]. Research indicates a relationship between workload and job stress [22]. The relationship between workload and cognitive failure has been confirmed by some other studies as well [23, 12, 24].

Factors likely to play a mediating role between stress and job burden with cognitive failure at work are of an organizational nature. Sheikhi,

Pourzanjani, and Tayyal (2016) argue that organizational climate often acts as a mediator variable between organizational performance and employee behavior [25]. Organization climate includes a set of characteristics that distinguish one organization from another [26]. Vanajan, Bolkman, and Hanks (2019) regard organizational climate as a variable that gives a complete picture of the organizational environment [27]. Dojbeck-Haxson, Barton, Obel, and Laridson (2008) in a study showed that organizational climate could lead to staff failure if it did not adapt to organizational management [28]. In their research on organizational climate and job stress, Wang, Ngen, and Lu (2018) concluded that there would be an inverse relationship between these two variables [29].

Generally, the literature review indicates a relationship between the present research variables. Research shows that heavy workload could lead to job loss and cognitive errors [30], and that job stress could cause cognitive impairment [31]. Vong et al (2018) considered organizational climate and occupational stress significantly related to each other and reported that organizational climate could lead to job stress or provide conditions for an individual to keep a job [29]. In their research, Ramos and Yonda (2016) concluded that job stress could negatively affect employee performance and organizational climate in an educational context [32]. However, no research has so far examined the variables of job stress, workload, organizational climate, and cognitive failure at work concurrently among physical education staff. In fact, reviewing such cases could greatly improve organizational performance and provide managers as well as planners with necessary information on interventions aimed at improving organizational performance. Against this background, the present study aims to investigate the relationship between job stress and workload with job failure, with the mediating role of organizational climate among physical education staff of Ardabil province.

Materials and Methods

The statistical population of the present descriptive correlational study included all physical education staff in Ardabil province within the age range of 20 to 50. Due to the inaccessibility of the exact list of the people in the community, it was not possible to estimate the exact size of the sample. Given that at least 25 to 30 people were added to the correlation analysis for each variable, and considering the probability of sample dropout from the total population, 200 people were selected by

random sampling. The inclusion criteria of the research were the full satisfaction of the subjects, being able to read and write, and having no history of mental disorders. To conduct the research, the research questionnaires were distributed among the physical education staff of Ardebil province. After collecting the questionnaires, they were analyzed. In the meantime, the staff were briefed on the purpose of the research and ensured about ethical considerations as well as confidentiality of questionnaire information to answer the questions in the following research tools.

Cognitive Failure at Work Questionnaire: This scale was introduced by Bradent et al (1982), which contains 25 words on a five-point Likert scale, with the scores ranging from 25 to 125 [5]. This questionnaire consisted of four subscales, including failure in memory, nominal memory, attention, and motor actions. Eliari et al performed confirmatory factor analysis to determine homogeneity of the questions of this questionnaire in terms of the content and underlying dimensions. The reliability coefficient of this test was assessed by calculating Cronbach's alpha for the factors, which determined to be 0/78. In addition, the reliability coefficient in the present study was determined to be 0/75.

Job Stress Questionnaire: This questionnaire was developed by Steinmetz (1997) to measure job stress [33]. The scale had 36 items and measured the three dimensions of work, co-worker, and supervisor stress. The respondents expressed their opinions on a three-point scale ranging from 0 for completely correct to 1 for completely false. The scores ranged from 0 to 72. Vazifeh and Javid (2016) reported the internal reliability of this tool using the Cronbach's alpha coefficient of 0.76 [34]. The reliability coefficient in the present study was 0/80.

Workload Questionnaire: This questionnaire consisted of 25 questions that were asked by Mazloomian et al (2013) in Iran. The scores ranged from 25 to 100. In the research of Mazloomian et al (2013), exploratory factor analysis was performed with the principal components model and direct euphemism rotation on the data. In addition, confirmatory factor analysis was performed to determine homogeneity of the questions in terms of the content and underlying dimensions. The reliability of this test was assessed by calculating Cronbach's alpha for the factors. The reliability coefficient was 0/75 in the present study.

Organizational Climate Questionnaire: This questionnaire, developed and validated by Halpin and Craft (1963), consisted of 35 items with the dimensions of 1) supportive, 2) grammatical, 3) delimitative, 4) cooperative, 5) intimate, and 6) pretending to work. For calculation purposes, dimensions (supportive, cooperative, and intimate) of the open atmosphere as well as dimensions (grammatical, delimitative, and pretentious) of the closed atmosphere were calculated, and then the sum of these two atmospheres (open and closed) was considered as organizational climate. The questionnaire was scored based on the Likert scale with the options of very high, high, medium, low, and very low. In addition, the scores ranged from 35 to 245. Rahimi, Ahmadi, and Barzegar (2013) reported the reliability coefficient of this questionnaire using Cronbach's alpha at 0.86 [35]. The reliability coefficient in the present study was 0/75.

Results

Results of the correlation matrix among the research variables are presented in Table 1 as follows:

Table 1. Correlation matrix among research variables

Variables	M	DS	1	2	3	4
Workload	51.94	14.46	1			
Job stress	22.44	5.10	**0.61	1		
Organizational climate	98.21	14.00	** -0.31	** -0.30	1	
Failure at work	45.31	11.28	**0.72	**0.60	* -0.36	1

According to Table 1, the correlation between workload, job stress, and organizational climate with cognitive failure at work was significant (P <0.01). Therefore, it would be possible to examine

the model. Firstly, the model's fit indices were calculated, with the results of which shown in Table 2.

Table 2. Model's fit indices

RMSEA	CFI	AGFI	GFI	P	X ² /df	Indexes
0.05	0.99	0.96	0.99	0.005	1.58	

According to Table 2, the values of GFI, AGFI, and CFI, in the present study, are 0.99, 0.96, and 0.99, respectively, indicating that the model fits the data appropriately. In addition, the root mean square

error of the approximation error (RMSEA) was 0.05 in the present study, which could be a good fit of the model.

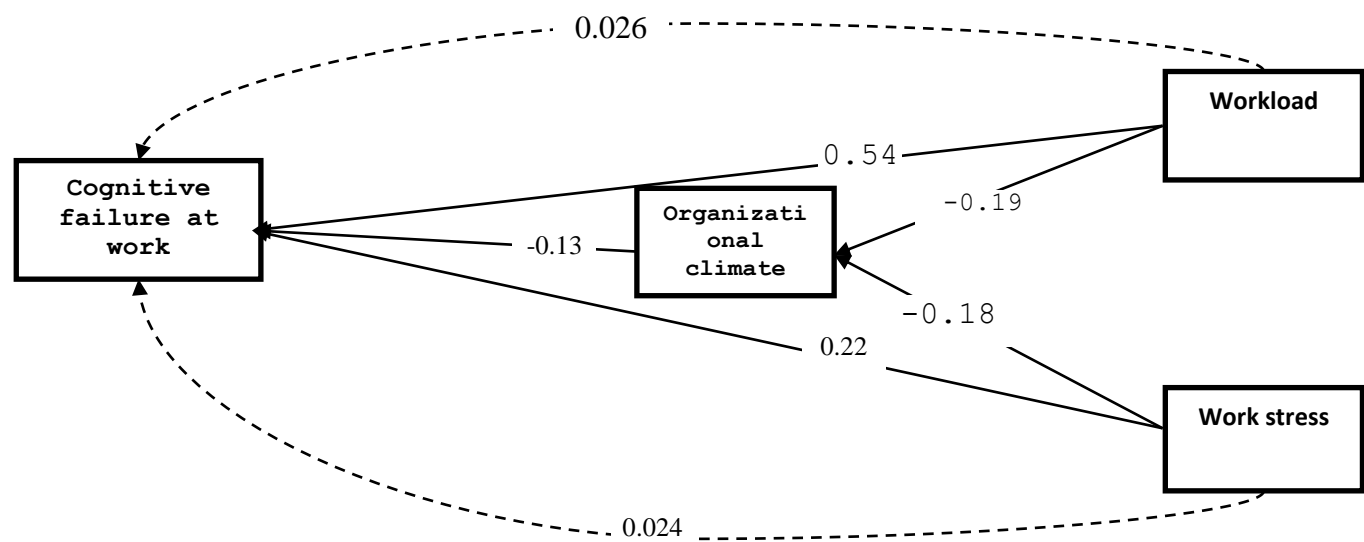


Fig. 1. Standard coefficients of the research conceptual model

To answer the research question, 'Does organizational climate mediate the relationship between job stress and workload with cognitive failure?' the results show that both variables have

an indirect effect on cognitive failure through the mediating role of organizational climate. The results of the present research are presented in Fig. 1 and Table 3 in detail.

Table 3. Estimation of direct paths in the model

Path	Estimated amount	Standard amount	S. E	C.R	P
Workload to organizational climate	-0.65	-0.19	0.30	-2.13	0.03
Job stress to organizational climate	-0.50	-0.18	0.22	-2.28	0.02
Workload to failure at work	0.48	0.54	0.05	9.17	0.00
Job stress to failure at work	0.27	0.22	0.07	3.77	0.00
Organizational climate to failure at work	-0.046	-0.13	0.01	-2.75	0.006

As the results in Fig. 1 and Table 3 show, job stress and workload have a positive effect on cognitive failure. However, these variables have a negative effect on organizational climate. Similarly, organizational climate has a negative effect on

cognitive failure (P <0.01). To investigate the mediating role of organizational climate between job stress and workload with cognitive failure, Bootstrap command was used, with the results presented in Table 4.

Table 4. Estimation of indirect paths in the model using Bootstrap command

Predictive variable	Mediator variable	Criteria	Estimated amount	Upper limit	Lower limit	Sig
Workload	Organizational climate	Failure at work	0.026	0.056	0.002	0.02
Job stress	Organizational climate	Failure at work	0.024	0.064	0.006	0.05

As Table 4 shows, organizational climate has mediated and reduced the effect of job stress and workload on cognitive failure. In addition, the mediating role of this variable has been confirmed. According to Tables 3 and 4, the direct effects of

job stress, workload, and organizational climate have been significant at the 0.01 level. In addition, the indirect effect of the variables of job stress and workload through the mediating variables has been significant on organizational climate.

Discussion

This study aimed to examine the relationship between job stress and workload with cognitive failure through the mediating role of organizational climate among physical education staff in Ardabil province. According to the results of this study, job stress and workload have a significant positive relationship with cognitive failure, indicating that cognitive failure increases with an increase in job stress and workload. This finding is consistent with some other studies [31, 30, 24]. It could be argued that occupational stress is a negative psychological factor in employees with a strong influence on them [22]. Occupational stress could create persistent psychological stress for individuals, thereby making them unable to perform their duties and fail to do their job as well as overwork [1]. Although workload is a multi-dimensional mental concept, it represents the level of resources needed for meeting both qualitative and quantitative performance criteria that could be varied based on the needs and demands of a task, external support, and past experiences [36]. Accordingly, if workload exceeds the specified level, it will reduce employee performance, thereby affecting the efficiency of the whole system. In addition, long-term workload leads to cognitive failure.

The results also showed that job stress and work load could affect organizational climate. This finding is consistent with the studies of Wong et al (2018), Oh, Na, and Moon (2018), Ramos and Yonda (2016), as well as Tucker and Sheroff (2016) [29, 37, 38, 39]. To explain this finding, one could say that upon entering an organization, employees expect to experience a favorable and supportive organizational climate that meets their needs. A healthy organizational climate could have a dramatic impact on employees. In addition, employees positively motivate the organization [40]. Job stress and workload could negatively affect employee performance, thereby turning organizational climate into an undesirable atmosphere. In fact, occupational stress and workload make it impossible to establish friendly and humane relationships in the workplace, thereby creating a closed, intimidating, distrustful, fearful, and hateful environment.

The results of the present study also showed that job stress and work load mediated by organizational climate could lead to cognitive failure. Rompoo, Wahio, and Eternal (2018) showed that occupational stress and organizational climate could influence job satisfaction and perception among employees [38]. In general, research indicates the direct and

positive role of stress and workload with cognitive failure at work [41]. In addition, a negative relationship exists between job stress, workload, and cognitive failure at work with organizational climate [42]. According to the results of this study, a positive organizational climate could lead to a decrease in the direct effects of workload and work stress on cognitive failure at work. As already mentioned, organizational climate includes positive supportive, cooperative, and intimate dimensions that ultimately reduce stress and workload. Therefore, given the central role of climate and environmental factors in an organization as well as the role of this component in reducing workload, stress, and work failure, one could assume that the mediating role of organizational climate in the relationship between work stress and workload with cognitive failure would be meaningful. In fact, stressors and workload exert negative effects on job performance and cause people to be less motivated in the work environment. Given that the main source of organizational climate is the perception of individuals of tangible and intangible aspects of the organization, and considering that humans are unique creatures who differ in personal traits, their perceptions of organizational climate differ. Therefore, factors such as stress and workload could affect employee perception of organizational climate, thereby making it seem unfavorable. This, in the long run, could reduce employee performance and lead to cognitive failure. Since the study population included the physical education staff of Ardabil province, the results of this study could not be generalized to other organizations. Thus, it is recommended that this study be repeated with other communities in different cities. Also, the limitations of using the questionnaire are other limitations of this research. Given the effectiveness of cognitive failure in job failure and considering the results of this study, it is suggested that interventions be made in order to reduce job stress and workload among physical education staff in Ardabil province. Besides, further studies are suggested to be done on the causes of cognitive failure in employees so as to determine the methods of alleviating or overcoming this problem.

Conclusion

The results of this study showed that cognitive failure at work could be predictable based on job stress and workload with the mediating role of organizational climate in the physical education staff of Ardabil province. The findings of this research could be used in designing valuable

interventions for improving organizational performance.

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Conflict of interest: None declared.

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