

# The role of social support in suppressing the effect of job stress on personality traits

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## Abstract

**Objective:** the present study aimed at studying the relationship between job stress and personality traits and also if the effect of job stress on personality traits was moderated by family support.

**Method:** The populations consisted of offshore personnel working in Iranian Offshore Oil Company (IOOC) in Kharg Island. 234 participants using convenience sampling answered three questionnaires (job stress, very brief NEO-form, and perceived social support of family-scale). Four main hypotheses using structural equation analysis were examined.

**Result:** The findings showed a predictive effect between the personality traits and job stress except for openness to experience such that stress had an increasing effect on neuroticism and a decreasing effect on extraversion, agreeability, and conscientiousness. Family support, on the other hand, as a moderator can decrease the effects of job stress on personality traits except for openness to experience, extraversion, and agreeability such that it can decrease neuroticism and increase conscientiousness.

**Conclusion:** the results generally revealed the effects of job stress on personality traits and showed that family support, as a buffer, can reduce the effects of job stress on personality traits. The results were discussed based on the existing models on personality changes.

**Keywords:** Job stress, personality traits, stress suppression, social support, occupational health psychology

## Introduction

Occupational stressors are risk factors for a wide range of mental disorders, including psychological distress, anxiety, depression, tension, and thinking about or performing suicide (LaMontagne, Keegel, Louie, & Ostry, 2010; LaMontagne & Milner, 2016). In some studies, associations have been found between occupational stressors and a variety of health-related behaviors, such as smoking, alcohol consumption, physical inactivity, unhealthy eating habits and over weight (Siegrist & Rodell, 2006; LaMontagne, 2012), and physical

health impairment in relation to offshore work, e.g. musculoskeletal and gastrointestinal complaints (Mette, Velasco Garrido, Harth, Preisser & Mache, 2018).

Offshore oil industry occupations are considered as one of the most stressful jobs. Due to the difficult working environment, oil production in the sea is widely recognized as stressful work (Parks, 1998; Sutherland & Cooper, 1989; Sutherland & Flin, 1989), and hence, offshore workers experience higher job stress than the onshore workers (Rafieian et al., 2018). Difficult sea situation, periodic isolation from family and the society (offshore oil industry workers usually work for a certain period of time, for example two weeks, and go home for the same period of time), living and working in enclosed areas, dangers of traveling with helicopter and ship, wavy sea, monotonous life, working

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environment, special requirements, and limitations on working in the sea (Wong, Chen, Yu, Lin & Cooper, 2002) cause such jobs to affect the health of workers, families, and their lifestyles (Cooper & Sutherland, 1987; Chen, Yu & Wong, 2005). Such a lifestyle and working environment can affect the worker's different aspects of life and personality.

The effects of the job on personality have recently been the researchers' interest. For example, Spetch, Egloff and Schmucke (2011) found that entering the labor market for the first time was accompanied by a significant increase in conscientiousness. Also, the association of different aspects of job with changes in personality have been investigated; for example, high earnings and professional achievement can predict reduction in neuroticism (Suetin, Costa, Miech & Eaton, 2009), high job control and a safe work environment has relationship with ambition (Li, Donnellan, & Conger, 2014), and job promotion is related to openness to experience (Nieß & Zacher, 2015). Job stress has also recently been considered as one of the sources for change in personality (Shields, Toussaint & Slavich, 2016; Kheirkhah, Shayegan, Haghani, & Jafar Jalal, 2018). Wu (2017) showed that job stress, especially time pressure, leads to increase in neuroticism and decrease in extraversion and conscientiousness. However, job control has buffering effects on the relationship between job stress and time pressure. However, no study has been done on the effects of offshore job on the personality features of offshore oil industry workers. Then, the purpose of this study is to fill this research gap.

The socio-genomic model explained the relationship between environment and personality changes. According to this model (Roberts & Jackson, 2008; Roberts, 2018), environment and genes are responsible for changes in personality features. Genes affect traits both directly and through epigenetic systems. But the environment influences personality through fluctuating states and epigenetic systems. For example, different

environments evoke different states, and the states activate different features and vice versa. However, there is a reciprocal relationship between fluctuating states and personalities and between fluctuating states and the environment. But there is a one-way relationship between personalities and the environment so that people with different features select or be selected by various environments due to their personalities.

On the other hand, it is suggested that social support, either in the form of family support or coworker and supervisor support, can weaken the relationship between stressor and personal well-being through reducing the stress perception (Viswesvaran, Sanchez, & Fisher, 1999; Kossek, Pichler, Bodner & Hammer, 2011; Chen, Wong & Yu, 2008). Family plays an important role in offshore oil workers, in making a sense of calmness and satisfaction. Offshore oil workers often express their concerns and worries about their families' well-being when they are at work. Researchers found a special pattern of distress, anxiety, and behavioral changes among wives whose husbands have offshore job, which is called "intermittent husband syndrome" (Parks, Carnell & Farmer, 2005). This syndrome is described as triple symptoms of anxiety, depression, and sexual problems that result from separation and limited contacts of the couples, and may lead to marital mistrust and conflicts, increasing divorce in these types of families (Angrist & Johnson, 2000; Sutherland & Cooper, 1996). Further, most tensions in the family happen in reunion and detachment times (Shen & Dicker, 2008). Thus, it is expected that conflicts and disputes worsen and result in a reduction in the emotional involvement and family support in the families of offshore oil workers. According to the studies, offshore oil workers have problems in most family functions, especially in emotional attachment, emotional relationship and problem-solving (Choghadaki, Aqabakhshi, & Ghobeiti, 2010; Anooshe, 2008; Askari & Mousavi,

2010). In this sense, it can be hypothesized that the emotional, instrumental, or informational support of the family can enhance the emotional attachment and relationship between the family members and play a protective role against stressors. According to the previous findings, the present study tested four hypotheses:

- 1- Job stress affects personality traits so that it increases neuroticism and reduces extraversion and conscientiousness.
- 2- Social support has a negative relationship with job stress.
- 3- Social support has a decreasing effect on neuroticism and an increasing effect on extraversion, conscientiousness, and agreeability.
- 4- Social support mediates the effects of job stress on personality traits.

### Methods

The present study is cross-sectional. The dependent variables included five personality traits and social support and predictive variable was job stress.

#### Participants and procedure

The present study was conducted, in terms of geographical area, in Khark Island, which is one of the six operational areas of the Iranian Offshore Oil Company in the Persian Gulf. The statistical population of the study consisted of 1200 workers. The sample size was calculated based on the number of items of questionnaires (at least 5 participants for each observed variable) and consisted of 340 individuals working in Khark Island, who were all male. After the implementation of questionnaires and data collection, the sample size reduced to 234 based on the fully completed questionnaires. Due to organizational and time constraints and implementation problems, sampling was done based on convenience sampling method. The study was conducted simultaneously with the annual examinations of industrial medicine. Participants who were referred for psychological assessment also completed the research questionnaires

in the consultation room in the presence of one of the researchers.

#### Ethical Statement

Before asking each participant to complete the questionnaires, they were informed about the objectives of the study and were assured that their information will remain confidential and anonymous. It was explained that if any participant for any reason was unwilling to continue, they could stop taking part in the study at any time.

#### Instruments

*Perceived Social Support- Procidano and Heller's family and friends scale (1983)*. This questionnaire contains two parts of family and friends' scales and measures the support (emotional and information) provided by one's family and friends. This is a self-report scale and measures one's perception of meeting his needs of support, information and feedback by family. This scale has 20 items, of which 8 items on family support were used in this study. Cronbach's alpha coefficient was reported as 0.90 for this scale (Safari Nia & Hazaraei, 2009). In the present study, the reliability coefficient of the perceived family support scale was 0.83 using Cronbach's alpha.

*Offshore oil Job Stress Questionnaire*. Using the studies done by Cooper and Sutherland (1989, 1996), and Wong, Chen, Yu, Lin and Cooper (2002), and based on the information of the interviews on job stress by 53 offshore workers, 50 questions for offshore oil job stress were designed. The questions were administered to 421 staff. Ten factors were identified by the factor analysis (extraction method: main components, eigenvalue 1, and rotation method: Equimax). Factors 1 to 10 were named as follows: supervisor's support, work pressure, concern about family, low job enrichment, living conditions, work physical conditions, coworker's support, job role, safety, and discrimination. Cronbach alpha method was used to calculate the

reliability of the questionnaire. It was 0.93 for the whole questionnaire. The values of reliabilities for the subscales are as follows: supervisor's support (0.93), work pressure (0.87), concern about family (0.87), low job enrichment (0.80), living conditions (0.72), job role (0.76), coworker's support (0.76), work physical conditions (0.77), safety (0.52), and discrimination (0.61). As it is seen, the reliability of the whole questionnaire is good. The reliability of the subscales of the questionnaire was good except for the subscales of discrimination and safety.

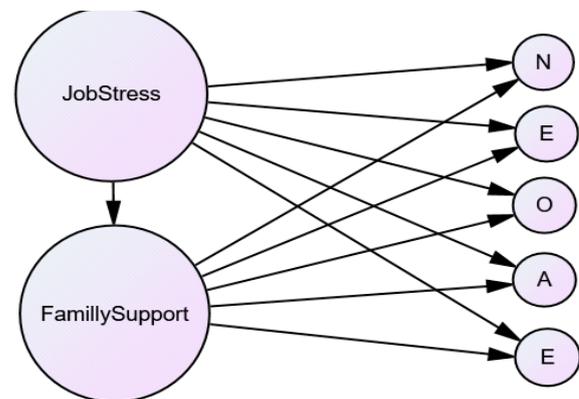
*Big Five Personality Questionnaire (BF10).* The scale was developed by Rammstedt and John (2007). It was validated in Iran by Mohammad Zadeh and Najafi (2010) on 317 students of Payame Noor University. The results of factor analysis using principal components method confirmed five factors: openness, agreeability, conscientiousness, extraversion, and neuroticism. The concurrent validity was assessed by the correlation of the two short and long forms of the scale and the result showed that there is correlation between the two scales (0.80). The reliability coefficient of the whole scale using test-retest method was 0.88 and for the subscales of openness, agreeability, conscientiousness, extraversion, and neuroticism were 0.82, 0.80, 0.78, 0.83, and 0.79, respectively. The scale was implemented again for the subjects of the study to assess the structure validity and reliability. The results of the factor analysis showed that the scale can assess five dimensions of personality. Using Cronbach's alpha, the reliability for each of the subscales of extraversion, neuroticism, agreeability, conscientiousness, and openness to experience was obtained as 0.64, 0.63, 0.57, 0.52, and 0.53, respectively.

## Results

Table 1 represents the demographic information of the subjects. The age mean of the subjects shows that they were mostly young with higher education. Most of them have worked for more than ten years in the offshore oil industry and were married.

The conceptual model of the present study is shown in Figure 1. This study aimed at investigating the effect of 10 variables of job stress on 5 personality features. It also examined the role of social support as a mediator variable in moderating the effects of stress on personality traits. The indicators of the latent variable of job stress include the sum of the scores of 10 subscales of job stress, which together constitute job stress. The indicators of personality traits and family support include the items of each of the latent variables (2 items for each of the five traits, and 8 items for family support). The model shows that job stress affects directly and indirectly (through the moderating variable of family support) on five personality traits.

By running the full model, the fit indices show



**Figure 1.** Conceptual model (adapted from Roberts & Jackson, 2008; Roberts, 2018; and Hart, & Cooper, 2001).

**Table 1.** Demographic information of sample population (n = 234)

	Mean (Year)	SD	Minimum (Year)	Maximum (Year)	marital status	
Age	37.48	6.36	27	58	Married	Single
Education	16.24	1.79	12	18	197(84.5%)	36 (15.5%)
Length of employment	11.38	6.33	1	35		

that the model is acceptable ( $ML-\chi^2 = 512/024$ ,  $DF=321$   $p=0/000$ ;  $CFI=0/87$ ;  $TLI=0/85$ ;  $GFI=0/87$ ;  $AGFI=0/83$ ;  $RMSEA=0/05$ ), indicating that both job stress and social support have relationship with personality traits in interaction with each other.

To test the hypothesis 1, all variables of job stress and five personality traits were first included in the model (Figure 2). The results showed that the model fit well with data ( $ML-\chi^2 = 295$ ,  $DF=154$   $p=0/000$ ;  $CFI=0/85$ ;  $TLI=0/82$ ;  $GFI=0/89$ ;  $AGFI=0/85$ ;  $RMSEA=0/063$ ). Job stress has significant relationship with neuroticism ( $\beta=0.57$ ,  $P=0.000$ ), extraversion ( $\beta=-0.24$ ,  $P=0.024$ ), conscientiousness ( $\beta=-0.27$ ,  $P=0.002$ ), and agreeability ( $\beta=-0.44$ ,  $P=0.009$ ), and no significant relationship with

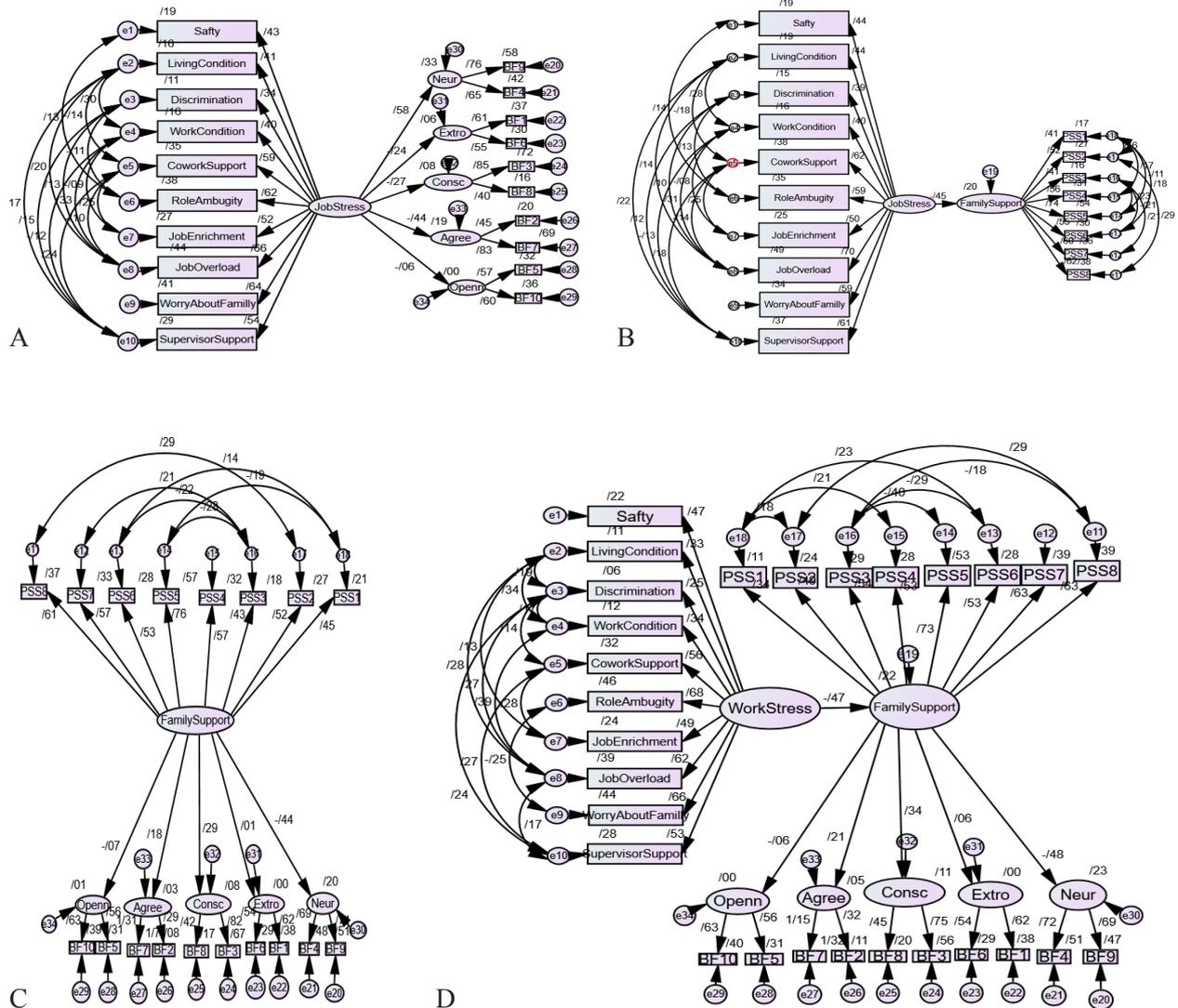
openness to experience ( $\beta=-0.06$ ,  $P=0.540$ ). Job stress, in fact, increases neuroticism and decreases extraversion, conscientiousness, and agreeability.

To test the hypothesis 2, another model containing job stress and social support was tested. The fit indices of the model show that this model also fits well with data ( $ML-\chi^2 = 154/657$ ,  $DF=114$   $p=0/007$ ;  $CFI=0/96$ ;  $TLI=0/94$ ;  $GFI=0/93$ ;  $AGFI=0/90$ ;  $RMSEA=0/039$ ). Social support has negative relationship with job stress ( $\beta=-0.45$ ,  $P=0.000$ ).

Another model was run to test hypothesis 3. The social support variable with its 8 indicators (PSS1 to PSS8), as the predictor and the criterion variables (five personality traits and their indicators), were included in the model. The fit indices showed that the model is acceptable ( $ML-\chi^2 = 273/094$ ,

**Table 2:** Results of structural equation using JS= Job Stress, FS= Social support, as predictor of N= Neuroticism, E= Extroversion, C= Consciousness, A= Agreeability

	b	SE	B	R <sup>2</sup>	P
Model 1					
JS →N	0.1	0.024	0.57	0.33	0.000
JS →E	-0.51	0.023	-0.24	0.05	0.024
JS →C	-0.66	0.022	-0.27	0.07	0.002
JS →A	-0.55	0.021	-0.44	0.19	0.009
JS →O	-0.12	0.019	-0.06	0.004	0.540
Model 2					
JS →FS	-0.036	0.01	-0.45	0.20	0.000
Model 3					
FS →N	-0.93	0.27	-0.44	0.20	0.000
FS →C	0.7	0.24	0.29	0.08	0.004
FS →E	0.03	0.22	0.01	0.00	0.895
FS →A	0.14	0.20	0.18	0.03	0.489
FS →O	-0.14	0.19	-0.07	0.00	0.479
Model 4					
JS →FS	-0.06	0.013	-0.47	0.22	0.000
FS →N	-0.084	0.20	-0.48	0.23	0.000
FS →O	-0.08	0.15	-0.05	0.00	0.57
FS →A	0.16	0.16	0.21	0.05	0.32
FS →E	0.10	0.18	0.06	0.00	0.55
FS →C	0.60	0.18	0.33	0.11	0.000



**Figure 1:** Structural equation model (A) relationship between Job stress and Big Five personality Traits. (B) relationship between Job stress and Social support, (C) relationship between Family support and Big Five personality trait, the (D) relationship between job stress, social support and Big Five personality traits

DF=125 p=0/000; CFI=0/84; TLI=0/80; GFI= 0/89; AGFI= 0/85 RMSEA=0/06). The results indicated that social support has a significant negative relationship with neuroticism ( $\beta=-0.46$ ,  $P= 0.000$ ) and a significant positive relationship with conscientiousness ( $\beta=0.32$ ,  $P= 0.003$ ). While, it has no significant relationship with openness to experience ( $\beta=-0.02$ ,  $P= 0.820$ ) and extraversion ( $\beta= 0.13$ ,  $P= 0.115$ ) and agreeability ( $\beta=0.18$ ,  $P= 0.489$ ).

Finally, Hypothesis 4 was tested by including all variables of job stress, social support and personality traits in the model. Eliminating insignificant paths, the results showed that this model was acceptable ( $ML-\chi^2 = 294.677$ ,  $DF = 187$ ;  $CFI = .91$ ;  $TLI = .89$ ;  $GFI = .90$ ;  $AGFI = .86$ ,  $RMSEA = 0.05$ ), which showed that social support moderate effects of job stress only on neuroticism ( $\beta=-0.48$ ,  $P= 0.000$ ) and conscientiousness ( $\beta=0.33$ ,  $P= 0.000$ ) (Table 2).

In general, it can be said that the model presented

in this study has conformity with the observed data, indicating that job stress has a relationship with social support and personality traits, and affects them.

### **Discussion and Conclusion**

In recent years, some studies have investigated the relationship between changes in personality features and work experiences such as job satisfaction, job demands, or work investment (e.g., Hudson, Roberts, & Lodi-Smith, 2012; Roberts, Caspi, & Moffitt, 2003; Roberts, Walton, & Viechtbauer, 2006). However, there is little research on the relationship between job stress and personality traits. This is the first study that investigates the effects of job stress on personality traits in the offshore oil industry.

The present study confirmed the hypothesis that the stressors related to offshore oil industry jobs affect personality features. The results showed the predictive effect of job stress on neuroticism to increase it. This finding is consistent with the studies that showed high job stress is associated with increase in neuroticism (Leger, Charles, Turiano & Almeida, 2016; Lee, Donnelland & Conger, 2014; Wu, 2017; Shields, Toussaint & Slavich, 2016). Job stress can affect neuroticism through negative evaluation of job events (Wu, 2017), and neuroticism, in turn, exacerbates negative emotions (Motamedi & Tangestani, 2019). Offshore workers evaluate their job negatively, especially most of the workers believe that this job takes them away from their family and isolates them from friends and increases their loneliness. These negative evaluations may result in increased concerns about their family and decreased emotional stability. In addition, the lifestyle of these workers which includes recurring social isolation can affect neuroticism through the gradual growth of depression (Roozbehani, Tarkhan & Agha Yousefi,

2018).

The results of the present study also showed that job stress has a predictive effect on extraversion and decreases it. Several studies indicated that higher levels of extraversion are associated with the lower perception of stress (For example, Mroczek & Almeida, 2004; Bakker, van der Zee, Lewig, & Dollard, 2006). There is little research on the effects of stress on extraversion. However, Wu (2017) has recently found that having stress at the beginning of a job and its gradual growth reduces extraversion.

Conscientiousness can play a protective role against stress. There are findings that show high conscientiousness is associated with a lower perception of daily stress (Leger, Charles, Turiano & Almeida, 2016). Conscientious people can reduce daily stress to a great extent by planning and organizing their life. But to answer the question whether stressors can be related to decreased conscientiousness, the findings of the present study showed that job stress has a relationship with conscientiousness so that an increase in stress can decrease conscientiousness. There is a little research on the effects of stress on conscientiousness. This finding is in line with the findings of the recent study by Wu (2017). He showed that having stress at the beginning of a job and its increase over the years gradually decreases conscientiousness.

Moreover, the present study indicated that job stress has a relationship with agreeability so that increased stress causes a decrease in agreeability. This finding has not been investigated in other studies. Thus, it can open a new vision for further studies in the future. Furthermore, there was not any relationship between job stress and openness to experience in this study. This finding is also consistent with the findings of recent study (Wu, 2017), which revealed that job stress has no effect on the cognitive aspects of personality.

The studies on the effect of stress on personality traits are so limited. Hence, the mechanism by which job stress affects personality traits is not yet fully understood. Some researchers have suggested that these effects can occur through changes in neurochemical levels (Wu, 2017). In other words, stress can change the biological function, resulting in personality traits. This is reflected in Sociogenomic model of personality development (Roberts & Jackson, 2008). It states that changes in the external environment may trigger the process of changing personality for adaptation; in this sense, the responsive interaction processes between the individual and the environment can better explain the personality changes (Roberts, Wood, & Caspi, 2008). Based on the revised model of sociogenomic model of personality development (Roberts, 2018), environment can act directly on states and also on personality, but only through epigenetic systems. Specifically, the translation of environmental effects on traits are mediated by changes in pliable and elastic system. Elastic changes refer to temporary changes of the way people think, feel and act. For example, living in insecure environment may temporarily increase neuroticism but it does not reflect true change of personality. Pliable change, on the other hand, reflects permanent changes in traits. For example, exposure to the highly stressful or traumatic environment could cause enduring changes in traits such as Neuroticism (Roberts, 2018). So, based on sociogenomic model of personality development (Roberts & Jackson, 2008; Roberts, 2018), there are two types of change in personality, temporary and permanent. Change in the level of state and through elastic mechanism in the level of epigenetic systems refers to a temporary change in the trait. The results of the present study may indicate temporary changes in personality traits. Then, by reducing occupational stress through

environmental or individual interventions, changes in trait such as neuroticism may disappear.

The results of the present study also showed that social support can be effective in moderating the impacts of job stress on personality features (neuroticism and conscientiousness). It decreases neuroticism and increases conscientiousness, though it has a greater effect on neuroticism. There is no study showing that social support can moderate the effects of job stress on personality traits. Thus, this is the first research in this regard.

To answer the question of how social support can play a protective role against the effects of stress, the studies indicated that social support may affect the perception of a situation as a stressor (Viswesvaran, Sanchez, & Fisher, 1999). The family members of offshore oil workers can decrease the effects of job stress on workers by providing a safe environment through a situation for talking about job problems, understanding their work conditions, letting them open their heart, meeting each other's needs and demands, helping them with their duties when they are at work, and complaining less. Social support can also decrease the effects of stress on the person by making bottom-up changes in the nervous system by reducing severe sympathetic responses (McEwan & Stellar, 1993) or by reducing activities in parts of the brain that are active in stressful situations (Taylor, 2012).

Regarding the effects of offshore oil production stress on personality features, some preventive actions can be taken into consideration. For example, ambiguity in job role, low job enrichment, work pressure, coworker's support, and concerns about family are the stressors with major roles in affecting the personality traits of offshore oil workers. Job role can be clarified, and the workers can be expected based on their job role. Also, the jobs can be enriched, if possible, by increasing their variety, integrating some jobs, and allowing

some creativity in doing the work and replacement of people in the similar jobs. Further, worn-out equipment and lack of required facilities and tools to do the work impose a lot of pressure on workers. The policymakers of the oil industry need to consider these pressures to provide the required tools and instruments for doing more effectively. Also, they must pay attention to the interaction between the workers. The important role of the supervisor in creating unity or boosting the group interactions should not be ignored. Both supervisors and workers, need to be trained how to interact with each other, especially during stressful times. Also, it is of great importance for family members to learn how interact with each other and cope with the problems of intermittent husband syndrome in a better and effective way. In countries with more emphasis on family life, offshore workers work for two weeks and return to their homes and stay home for three weeks (Clark, McCann, Morrice, & Taylor, 1985). It is suggested that employers and decision makers make changes in the working and resting periods of the offshore workers. As the last suggestion, it should be accepted that the bad effects of offshore jobs may last for years on the workers and their family members. Increased interpersonal problems, increased likelihood of separation of the couples and decreased mental and physical health can be mentioned as some of these long-term effects of such jobs. Therefore, it is required to move the staff to their living place after a certain period of time.

The present study had some limitations. Due to the time limitations, the cross-sectional method was used. Therefore, it is recommended to other researchers use the longitudinal method in future studies. Also, because the present study was carried out in one of the operational zones of offshore oil production, it may lead to generalization of the findings to a limited population of offshore

workers. Besides, the present study may yield biased findings due to the use of self-reported questionnaires. Especially, individuals may, for some reason, describe their situations better or worse than what they really were (Robins, Fraley, Roberts & Trzesniewski, 2001). Hence, using parallel questionnaires (evaluation by spouse or colleagues) can increase the accuracy of the data. Though the sample size in the present study was not relatively large, it is recommended to use a larger sample size in further studies. Moreover, due to some constraints, it was not possible to select the subjects randomly; however, random sampling can increase the accuracy of the findings. Finally, it is suggested that future studies examine the role of coping strategies in reducing job stress on personality traits.

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