






The relationship of personality traits and stress with problem solving skill among nurses: A correlational study

Navid Asadi Zeidabadi¹, Amanallah Soltani^{2*}, Zahra Zeinadinni³, Alireza Manzari Tavakoli³

¹Phd Student in Psychology, Islamic Azad University, Kerman, Iran

²Assistant Professor, Department of Educational Psychology, Islamic Azad University, Kerman, Iran

³Assistant Professor, Department of Educational Sciences and Psychology, Islamic Azad University, Kerman, Iran

Abstract

Background and aims: Nurses experience different psychological problems due to their occupational conditions. Therefore, they need problem solving (PS) skill to manage their problems. The aim of this study was to evaluate the relationship of personality traits and stress with PS skill among nurses.

Methods: This cross-sectional correlational study was conducted in 2019–2020. Participants were 425 nurses randomly selected from hospitals of Kerman, Iran. Data were collected using the NEO Personality Inventory, Nursing Stress Scale, and Problem-Solving Inventory. The SPSS software (v. 22.0) was used to analyze the data via the coefficient's correlation and the linear regression analyses.

Results: Neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness personality traits and stress significantly predicted 27%, 19%, 30%, 25%, 25%, and 37% of the total variance of PS skill, respectively ($P < 0.001$).

Conclusion: Reducing nurses' workload and occupational problems, providing them with education about stress management and PS, and strengthening their positive personality traits are recommended to improve their PS skill and professional practice.

Keywords: Stress, Nurse, Problem solving, Personality traits

*Corresponding Author:

Amanallah Soltani, Assistant Professor, Department of Educational Psychology, Islamic Azad University, Kerman, Iran.

Email: soltanimani@yahoo.com

Received: 5 January 2021

Accepted: 15 April 2021

ePublished: 30 June 2021

Introduction

Quality healthcare delivery largely depends on the availability of knowledgeable and skillful nurses whose main priority and concern are care quality improvement (1). The core of quality care delivery is problem solving (PS). Patients have unique conditions and there is no one-size-fits-all approach for managing the different problems of all patients. Therefore, nurses need PS skill to make appropriate judgments and decisions and select the best solutions for managing patients' problems particularly in new situations (2). Thus, nursing education needs to greatly focus on developing nurses' PS, stress and anxiety management, decision making, critical thinking, and interpersonal communication skills in order to empower them to use their knowledge in practice and more effectively manage their problems at work (3).

PS is a main thinking skill and a psychotherapy approach. By definition, PS is the ability to manage problems in new situations (4). It is a problem-based coping style which leads to adaptation and purposeful policies. PS skill is a basic need of all individuals to manage their daily problems. During PS, individuals define a problem, provide different solutions to it, select the best solution, and use it to solve the problem (5). Accordingly, the main steps of PS are defining the problem, generating a list of possible solutions, deciding on the best solution, and

using the selected solution. The three main components of PS are perceived self-efficiency for facing problems, modification of emotional and expressional experiences when facing problems, and tendency to face problematic situations instead of avoiding them (6). PS provides individuals with the opportunity to use their cognitive skills for coping with challenging situations and use their learned skills in new situations (5). It improves individuals' self-confidence, self-efficacy, and environmental adaption. Contrarily, limited PS skill is associated with different emotional and behavioral problems such as stress (7).

PS skill is affected by different factors. Personality traits are factors with potential effects on PS skill. Personality consists of attributes which determine individuals' behaviors in different situations and help predict their reactions in a given situation. These attributes include thoughts, feelings, self-concept, thinking style, and habits (8). Psychologists suggested different approaches for understanding human personality. One of these approaches is the five big personality traits model which states that human personality consists of five main traits, namely neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (9). Neuroticism is the base of experiencing chronic upsetting emotions. It differentiates emotional stability and calmness from negative sensation seeking. Extraversion is defined as an

active approach to the social and material worlds and includes attributes such as collectivism, activity, bravery, positive sensation seeking, cordiality, loquacity, optimism, and kindness. Openness to experience indicates the extent, depth, and complexity of the mind and personal life experiences and refers to attributes such as imagination, curiosity, interests, creativity, and intellectual attitudes. Agreeableness differentiates between relational orientation and direction towards others and between hostility and disagreement and refers to trust, empathy, and collaboration. Conscientiousness controls impulses determined by the society, refers to task- and goal-oriented behaviors such as thinking before action, adherence to norms, planning, organizing, continuous supervision, and prioritization of duties, and includes senses of sufficiency and responsibility and need for organization and progression (10). A study reported that personality traits affected nurses' occupational performance (1). Another study showed that neuroticism and conscientiousness had significant direct correlation with constructive PS and conscientiousness was the strongest predictor of constructive PS. That study also found that extraversion, agreeableness, and conscientiousness had significant inverse correlation with unconstructive PS, while neuroticism had significant direct relationship with unconstructive PS (8). Similarly, a study revealed that the five personality traits had significant relationship with coping styles (9) and another study reported significant relationship among PS skill, five personality traits, and medical errors (11).

Stress is another factor with potential effects on PS. By definition, stress is a set of general and human-specific reactions to unpredictable situations. It is the outcome of interactions between its causes and individuals' resources. Individuals' responses to an identical stressful situation vary based on their personalities and life experiences (12). Stress negatively affects the physical and mental health of workforce, imposes heavy costs on organizations, and reduces the effectiveness of occupational activities (13). A major cause of stress is occupation and workers and professionals in educational and medical fields experience higher levels of stress (14). Nurses, as the principal healthcare providers, undergo varying levels of stress due to factors such as heavy workload, patients' suffering and death, and companions' grieving for their patients (15). A study reported that PS skill had significant relationship with occupational stress (13). Another study during the coronavirus disease 2019 pandemic showed the significant relationship of coping skills and PS knowledge with stress among healthcare workers (16).

Despite the prevalence of stress among nurses, the significant effects of stress on their health, the importance of PS skill for sound nursing practice, and the potential effects of personality traits on perceived stress, our literature search revealed limited information about the relationships among these variables. Thus, the present study was conducted to narrow this gap. The aim of this

study was to evaluate the relationship of personality traits and stress with PS skill among nurses.

Methods

Design

This cross-sectional correlational study was conducted in 2019–2020.

Participants and setting

The population of the study consisted of all nurses in hospitals of Kerman city, Iran, and participants were 425 nurses randomly recruited to the study. The only inclusion criterion was employment as nurse in hospitals of Kerman city, Iran. Exclusion criteria were voluntary withdrawal from the study and incomplete answering to the study instruments. Sample size was determined through the Cochran formula.

Instruments

Study instruments were the NEO Personality Inventory, Nursing Stress Scale, and Problem-Solving Inventory.

The NEO Personality Inventory was developed in 2003 by McCrae and Costa. It has 60 items in five twelve-item dimensions, namely neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Items are scored on a five-point Likert scale from 5 ("Completely agree") to 1 ("Completely disagree"). Therefore, the possible dimensional score is 12–60 which is interpreted as follows: scores 12–24: low; scores 25–48: moderate; and scores 49–60: high (1). A former study reported the acceptable reliability of the Persian version of this inventory with Cronbach's alpha values of 0.57–0.83 and test-retest correlation coefficients of 0.53–0.76 for its dimensions (17).

The Nursing Stress Scale was developed in 2000 by French et al. This scale has 57 items in nine dimensions, namely death and dying (seven items), conflict with physicians (five items), inadequate preparation (four items), problems with peers (six items), problems with supervisors (seven items), workload (nine items), uncertainty concerning treatment (eight items), patients and their families (eight items), and discrimination (three items). Items are scored on a five-point Likert scale as follows: 1: "Never stressful"; 2: "Occasionally stressful"; 3: "Frequently stressful"; 4: "Extremely stressful"; and 5: "Does not apply". The possible total score of this scale is 57–225, with higher scores standing for higher stress. The total score of the scale is interpreted as follows: scores 57–114: mild stress; scores 114–171: moderate stress; and scores 171–225: severe stress. A former study in Serbia reported the acceptable validity and reliability of this scale with a Cronbach's alpha of 0.96 (18). A study in Iran also reported that the Cronbach's alpha of the scale was 0.90 and the Cronbach's alpha values of its dimensions were 0.55–0.76 (15).

The Problem-Solving Inventory was introduced in 1982 by Heppner for assessing perceptions of PS behaviors. The

35 items of this scale are scored on a six-point scale from 1 (“Strongly agree”) to 6 (“Strongly disagree”). The three subscales of this inventory are self-confidence (with eleven items and a total score of 11–66), PS approach (with sixteen items and a total score of 16–96), emotional control (with five items and a total score of 5–30), and extra items (three items with a total score of 3–18). A study in Iran reported the acceptable validity and reliability of the inventory with a Cronbach’s alpha of 0.86 (19,20).

Data analysis

The SPSS software (v. 22.0) was used to analyze the data at a significance level of less than 0.05. The mean and standard deviation measures of descriptive statistics were used for data description and the coefficient’s correlation and the linear regression analyses were used for data analysis.

Results

In total, 425 nurses (259 female and 166 male) participated in this study. The age of participants was 25 years and lower in 14.3% of cases ($n=61$), 26–30 years in 37.9% of cases ($n=161$), and 35 years and more in 47.8% of cases ($n=203$). Moreover, 47.8% of participants had bachelor’s degree.

The mean scores of neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness personality traits were 28.40 ± 4.23 , 41.74 ± 4.59 , 38.66 ± 5.71 , 37.85 ± 5.21 , and 46.31 ± 4.63 , respectively. Moreover, the mean scores of stress and PS skill were 134.56 ± 11.39 and 112.43 ± 12.31 , respectively. The results of correlation analysis revealed that personality traits had significant correlations with each other and also with stress and PS skill. The correlations of neuroticism trait with other traits and with PS were inverse, while its

correlation with stress was direct ($P < 0.05$). Moreover, the correlations of extraversion, openness to experience, agreeableness, and conscientiousness traits with each other and with PS were direct, while their correlations with stress were inverse ($P < 0.05$). Stress also had significant inverse correlation with PS skill ($P < 0.05$) (Table 1).

Linear regression analysis revealed that the significant predictors of PS skill were neuroticism (adjusted $R^2 = 0.274$), extraversion (adjusted $R^2 = 0.194$), openness to experience (adjusted $R^2 = 0.301$), agreeableness (adjusted $R^2 = 0.255$), conscientiousness (adjusted $R^2 = 0.247$) and stress (adjusted $R^2 = 0.376$) ($P < 0.001$; Table 2).

Discussion

This study aimed at evaluating the relationship of personality traits and stress with PS skill among nurses. Findings revealed that personality traits and stress significantly explained 27% and 21% of the total variance of PS, respectively. This is in line with the findings of several previous studies. For example, a study found that the five personality traits, particularly conscientiousness trait, had significant effects on nurses’ occupational performance (1). Another study showed that neuroticism and conscientiousness had significant relationship with constructive PS, while unconstructive PS had significant inverse relationship with extraversion, agreeableness, and conscientiousness personality traits and significant direct relationship with neuroticism (8). Similarly, a study showed significant relationships among personality traits, PS skill, and medical errors (11). Moreover, a study found that personality traits had significant relationships with coping styles (9).

Nursing is a stressful occupation and nurses need to have considerable PS and decision making skills in order to effectively manage patients’ problems. Neuroticism

Table 1. The relationships of personality traits, stress, and PS

Variables	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness	Stress	PS
Neuroticism	1						
Extraversion	-0.31*	1					
Openness	-0.38*	0.47**	1				
Agreeableness	-0.39*	0.57**	0.42**	1			
Conscientiousness	-0.44*	0.31**	0.31**	0.39**	1		
Stress	0.59*	-0.33**	-0.40**	-0.31**	-0.45**	1	
PS	-0.55*	0.41**	0.38**	0.31**	0.47**	-0.612**	1

*Correlation is significant at a level of less than 0.05.

Table 2. The results of the linear regression analysis to determine the predictors of PS skill among nurses

Variables	R ²	Adjusted R ²	Beta estimate	Standard error	Standardized beta	t	P value
Neuroticism	0.205	0.274	-5.628	0.538	-0.453	-10.458	<0.001
Extraversion	0.314	0.194	-5.512	0.327	0.621	21.367	<0.001
Openness	0.278	0.301	-4.328	0.417	-0.329	14.209	<0.001
Agreeableness	0.189	0.255	-5.124	0.499	0.477	18.241	<0.001
Conscientiousness	0.213	0.247	-6.034	0.671	-0.663	23.433	<0.001
Stress	0.329	0.367	-2.016	0.222	0.403	9.06	<0.001

attributes such as anxiety, irrational thinking, anger, and tension waste nurses' energy, impair their decision making and practice, reduce their productivity, and gradually cause them problems such as fatigue and physical and psychological burnout (8). In stressful conditions, individuals with neuroticism attributes use passive coping strategies such as avoidance, self-blame, wishful thinking, rumination, hostility, and emotional burst. Consequently, high level of neuroticism is associated with negative emotions and thereby, reduces PS skill. Moreover, individuals with neuroticism personality trait are more critical of others and situations. Contrarily, extraversion is associated with positive emotions and positive social experiences. Individuals with high conscientiousness also have better mentalities and beliefs, better cope with their conditions, have less complaint about others and situations, less frequently experience despair, are modest and self-controlled, and are more tolerant, optimistic, and hopeful. Accordingly, nurses with conscientiousness personality can base their self-esteem more on realities than on successes and failures, can create dissociable attributes in themselves, feel self-worth, are confident in their abilities (16), and hence, have greater PS skill (13,16) and are more successful at work (16).

Our findings also showed stress as a significant predictor of PS skill. In line with this finding, two previous studies reported the significant relationship of stress with PS skill (13), PS knowledge, and coping styles (16). Occupational stress among nurses is mainly due to factors such as heavy workload, heavy responsibilities, personal concerns, role performance concerns, limited time to mentally support patients and perform care-related activities, staff shortage, and conflicts with physicians, peers, and family members (21). Normal levels of stress help nurses improve the quality of their services and more effectively manage their problems, while excessive stress reduces efficiency and care quality and increases the risk of physical and mental health problems among nurses (15). PS skill and creativity improve nurses' self-efficiency and help them better manage new situations. Therefore, PS education is recommended for nurses to reduce their stress and improve their job satisfaction (22).

One of the limitations of the present study was data collection through self-reported questionnaires which might have been associated with some levels of data collection bias. Moreover, this study was conducted in the hospitals of Kerman, Iran, and generalization of its findings to other settings should cautiously be done. In addition, the potential confounding effects of age, employment type, and socioeconomic status were not controlled.

Conclusion

This study concludes that five personality traits and stress significantly predict PS skill among nurses. Therefore, personality trait assessments are recommended for nurses, particularly for those with problems in PS, in order to

What does this paper contribute to the wider global clinical community?

- Provide for nurses, necessary educational and counseling services.
- Educational and therapeutic programs on stress management are needed for nurses.
- Holding personality tests and hiring conscientious and responsible nurses.
- Understanding personality traits in nurses before using them.
- Teaching nurses problem-solving skills.

determine nurses with problems in personality traits and provide them with necessary educational and counseling services. Moreover, educational and therapeutic programs on stress management are needed for nurses. Future studies are recommended to assess the relationship of personality traits and stress with PS skill in larger samples of nurses from different sociocultural backgrounds. Moreover, studies are needed to evaluate the role of PS skill in nurses' occupational success and the role of organizational factors in their PS skill development.

Acknowledgement

This article was extracted from a PhD dissertation in educational psychology in Kerman Islamic Azad University, Kerman, Iran. Hereby, we would like to thank all nurses who helped us conduct this study.

Conflict of Interests

The authors declare no conflict of interests.

Ethical Approval

The Ethics Committee of Kerman University of Medical Sciences, Kerman, Iran, approved this study (code: IR.IAU.KERMAN.REC.1399.041). Participation in and withdrawal from the study were voluntary and participants were informed about data confidentiality and were appreciated for their participation.

References

1. Khanjankhani K, Askari R, Askari Shahi M, Shafii M. Evaluate the dimensions of the internal environment and the five personality traits in nurses' job performance in an educational hospital. *Nurs Midwifery J*. 2018;16(5):324-34. [Persian].
2. Feizi Konjini L, Fadakar Soghe R, Chehrzad M, Kazemnejad-Leili E. Problem solving skills and their related factors in nursing students. *J Holist Nurs Midwifery*. 2016;26(3):86-95. [Persian].
3. Nooreddini A, Sanagoo A, Talebi Z, Majidnia M, Shahroodi M. Comparison effectiveness of problem solving and participatory teaching methods by current method on clinical ability, anxiety, and satisfaction of nursing students in the ICU ward. *J Nurs. Educ*. 2020;9(1):29-39. [Persian].
4. Strine TW, Chapman DP, Kobau R, Balluz L, Mokdad AH. Depression, anxiety, and physical impairments and quality of life in the U.S. noninstitutionalized population. *Psychiatr Serv*. 2004;55(12):1408-13. doi: 10.1176/appi.ps.55.12.1408.
5. Hayatbakhsh S, Entesar Foumany G, Hejazi M. Effectiveness of problem solving methods training in educational ethic and educational self-efficacy students. *J Nurs Educ*. 2020;9(4):31-40. [Persian].
6. Bartley JE, Boevig ER, Riedel MC, Bottenhorn KL, Salo T,

- Eickhoff SB, et al. Meta-analytic evidence for a core problem solving network across multiple representational domains. *Neurosci Biobehav Rev.* 2018;92:318-37. doi: 10.1016/j.neubiorev.2018.06.009.
7. Korkmaz S, Kazgan A, Çekiç S, Tartar AS, Balcı HN, Atmaca M. The anxiety levels, quality of sleep and life and problem-solving skills in healthcare workers employed in COVID-19 services. *J Clin Neurosci.* 2020;80:131-6. doi: 10.1016/j.jocn.2020.07.073.
 8. Tahery R, Karimi F. The relationship between personality traits and problem-solving strategies among undergraduate nursing students of Isfahan University of Medical Sciences. *Iran J Med Educ.* 2015;15(0):613-22. [Persian].
 9. Zhou Y, Li D, Li X, Wang Y, Zhao L. Big five personality and adolescent Internet addiction: the mediating role of coping style. *Addict Behav.* 2017;64:42-8. doi: 10.1016/j.addbeh.2016.08.009.
 10. Parvin L. *Personality Psychology.* Trans. by Javadi MJ, Kadivar P. Tehran: Rasa Press; 2018. [Persian].
 11. Babaei M, Mohammadian M, Abdollahi M, Hatami A. Relationship between big five personality factors, problem solving and medical errors. *Heliyon.* 2018;4(9):e00789. doi: 10.1016/j.heliyon.2018.e00789.
 12. Habibi F, Safarzadeh S. Predicting job stress on the basis of coping strategies, spiritual intelligence and resilience in employees with chronic pains in National Iranian South Oil Fields Company. *Knowledge & Research in Applied Psychology.* 2017;18(3):76-85. [Persian].
 13. Espedido A, Searle BJ, Griffin B. Peers, proactivity, and problem-solving: a multilevel study of team impacts on stress appraisals of problem-solving demands. *Work Stress.* 2020;34(3):219-37. doi: 10.1080/02678373.2019.1579767.
 14. Tesfaye TD. Coping strategies among nurses in South-west Ethiopia: descriptive, institution-based cross-sectional study. *BMC Res Notes.* 2018;11(1):421. doi: 10.1186/s13104-018-3557-5.
 15. Hajiseyedrezaei SR, Alaei N, Zayeri F. Survey of status stress among nurses that working in critical care units at hospitals of Tehran city, 2019. *J Urmia Nurs Midwifery Fac.* 2020;18(1):1-10. [Persian].
 16. Babore A, Lombardi L, Viceconti ML, Pignataro S, Marino V, Crudele M, et al. Psychological effects of the COVID-2019 pandemic: perceived stress and coping strategies among healthcare professionals. *Psychiatry Res.* 2020;293:113366. doi: 10.1016/j.psychres.2020.113366.
 17. Haghshenas H. Persian version and standardization of NED personality inventory-revised. *Iran J Psychiatry Clin Psychol.* 1999;4(4):38-48. [Persian].
 18. Milutinović D, Golubović B, Brkić N, Prokeš B. Professional stress and health among critical care nurses in Serbia. *Arh Hig Rada Toksikol.* 2012;63(2):171-80. doi: 10.2478/10004-1254-63-2012-2140.
 19. Heppner PP. *The Problem-Solving Inventory.* Palo Alto, CA: Consulting Psychologists Press; 1988.
 20. Khosravi Z, Darvizeh Z, Rafatti M. The role of mood state on self-appraisal of problem. *Iran J Psychiatry Clin Psychol.* 1998;4(1):35-46. [Persian].
 21. Johan S, Sarwar H, Majeed I. To identify the causes of stress among nurses working in intensive care unit of Ittefaq hospital Lahore. *Int J Soc Sci Manag.* 2017;4(2):96-109.
 22. Zamani N, Barahmand A, Farhadi M. The effects of problem-solving training in reducing anxiety among a group of nursing students. *J Nurs Educ.* 2017;6(3):56-61. [Persian].

Cite this article as: Asadi Zeidabadi N, Soltani A, Zeinadinni Z, Manzari Tavakoli A. The relationship of personality traits and stress with problem solving skill among nurses: a correlational study. *Journal of Multidisciplinary Care.* 2021;10(2):75-79. doi: 10.34172/jmdc.2021.15.