

## **Original-research-article**

### **The impact of novice nurses' characteristics and personalities on work-related stress**

#### **Abstract**

Background: High stress is related to the high turnover rate of new nursing staffs. Accordingly, determining how to retain novice nurses is critical. Purpose: Understand the relationship between novice nurses' basic characteristics, personality traits, and work-related stress.

Methods: This cross-sectional study used purposive sampling to recruit novice nurses working in the general wards and intensive care unit of a medical center (179 questionnaires).

Results:(1) Length of past clinical nursing experience, and self-perceived compatibility with current position were found to be significantly correlated with work-related stress. (2)

Personality traits and work-related stress were significantly and negatively correlated. (3)

“length of past clinical nursing experience,” “self-perceived compatibility with current position,” “emotional stability,” and “conscientiousness” were able to predict work-related

stress with an explanatory power of 46%. Conclusion:If will allow nursing students to

familiarize themselves with the clinical work model early, add to clinical nursing experience, and lower the turnover rate for novice nurses.

**Keywords:** Novice nurse, Personality traits, job stress

#### **Introduction**

The nursing shortage of issue has attracted national and international attention, and affected many developing countries and it is a global issue. It was estimated that this shortage will reach 20% by 2020, leaving global demand unmet [1-3]. Compared to other members of the International Council of Nurses (ICN) such as Denmark, Singapore, Indonesia, Malaysia, and Thailand, where nursing staff have 30 years of nursing experience on average, nurses in Taiwan had merely 6-7 years of working experience and also suffered from an abnormally high turnover rate [4]. On average, hospitals here have to deal with a 9% nursing staff shortage, far higher than the 5%

26 indicated in Lin's study [5,6].

27       The work that nurses undertake is difficult, complex, and emotional and they must deal  
28 with disease and death on a daily basis [7-9]. When novice nurses enter the clinical workplace,  
29 their role transition and reality shock that they feel can cause excessive stress, which has led  
30 to novice nurses having one of the highest turnover rates [10]. One study indicated that about  
31 60% of novice nurses leave their first job within six months [11]; a Taiwanese study revealed  
32 that the turnover rate for novice nurses who have completed three months of service was  
33 30-70%, which was 5-10 times higher compared to the rate for other nurses, and the shock of  
34 reality might be a key reason [10]. The first three months of work is the most stressful time  
35 for novice nurses; the strongest feelings occur during the transitional period between their  
36 third and twelfth months. More than half of novice nurses either transferred positions or left  
37 the profession within one year [1, 12-15].

38       Personality traits are different from others' unique character, attitude, beliefs, emotions  
39 and values et al of thought and behavior. Personality traits affect the individual's behavior and  
40 adaptation patterns. It is to determine the individual and other important indicators of  
41 differences [16]. Many studies have found that personality traits are relevant to work  
42 performance and work stress [16-18]. Therefore, the purpose of this research was to  
43 understand the relationship between novice nurses' basic characteristics, personality traits,  
44 and work-related stress. Predict the reasons associated with the work stress, hoping to reduce  
45 novice nurses' the work-related stress and increasing retention rates.

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## 49 **Methods**

### 50 **Study design and study population**

51 This is a cross-sectional study that used purposive sampling, the study's participants  
52 consisted of novice nurses from a hospital and its branches in southern Taiwan. In order to  
53 ensure that the nursing experiences of the participants were consistent and to account for the  
54 training system for novice nurses joining the hospital, the following inclusion criteria were  
55 used: 1. the participant was a novice nurse who had been working in the hospital's general  
56 wards or intensive care unit for a period between one month and one year since starting to  
57 contact patients.; 2. the participant had agreed to participate in this study. The exclusion  
58 criteria were: 1. novice nurses are part time; the period differs from contracts. 2. Novice  
59 nurses who worked in the emergency, surgery, outpatient, and gynecology/obstetrics and  
60 pediatrics departments have no consistency in nursing experience and group. 3. past clinical  
61 nursing experience: Served in the same unit of this hospital, currently serving unit, working  
62 experience exceeds 6 years (stage above proficient).

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### 64 **Ethical consideration**

65 After this study was reviewed and approved by the Institutional Review Board (IRB) of  
66 our hospital (approval number 10405-007), and prior to it being carried out by researchers  
67 according to the participant list, said researchers had explained to the participants the study's  
68 purpose, questionnaire collection method, and the rights of participants, and with their  
69 approval, the “Consent Form for Responding to Research Questionnaire” was signed.  
70 Permission was obtained from the original authors of the scales used in this study before they  
71 were used.

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## 74 **Instruments**

75 Data was collected using a structured questionnaire which included basic individual  
76 characteristics, personality traits, and work-related stress. The items within basic individual  
77 characteristics were constructed based on past studies; these characteristics included gender,  
78 age, education level, marital status, length of service, and past experience as these may affect  
79 the working environment, personality traits, and work-related stress levels of novice nurses.  
80 Since the clinical nursing workplace is made up of various departments and specialties, and  
81 the study was investigating personality traits and work-related stress “as consistent within a  
82 follow-up care environment,” novice nurses working in general wards and the intensive care  
83 unit therefore became the participants of the study.

### 84 ***The Nurse Stress scale***

85 The nurse stress scale for nurses was based on the Taiwan Nursing Stress Scale created  
86 by Dr. Tsai. This scale is still frequently used in nursing staff stress assessment studies.  
87 Cronbach’s  $\alpha$  was 0.84 or higher, and the scale was a 9-point Likert-type scale in which “0”  
88 meant “Not accurate” and “8” meant “Very accurate.” The scale covered four factors. 1.  
89 Personal responses: negative physical and psychological responses that the nurse has  
90 developed toward nursing work (17 questions in total). 2. Work concerns: Problems that arose  
91 from communication with physicians and family members (of patients) while providing  
92 clinical care for patients, personal expectations with respect to the profession, assessment of  
93 the medical system's operations, three questions in this section concerned the lack of time,  
94 reflecting the conflict between these nurses' self-expectations and the time constraints that  
95 they faced (13 questions in total). 3. Competency: Fulfillment and completion of work and  
96 individual professional competence. This section consisted of negatively worded questions  
97 (11 questions in total; this part is a reverse questions). 4. Incompleteness of personal  
98 arrangement: These questions indicated another form of stress that arose from interaction

between the individual and the environment (6 questions in total). Scores combined are the pressure level, and the higher score represents the greater pressure [19].

### ***The Big Five Mini-Markers scale***

The Big Five mini-markers were put together by Prof. Teng using forward translation, backward translation, expert reviews, and think-aloud protocols. The items with higher item-total correlation values were then selected to form the scale (40 questions in total). The scale was a 5-point Likert-type scale, with 1 point indicating that “one does not conform to the characteristic at all” and 5 points indicating that “one conforms fully to the characteristic.” Negatively worded questions were reverse scored, and the higher the score for a personality trait, the more inclined the participant was toward that trait. With regard to reliability, Cronbach’s  $\alpha$  was 0.79 or higher, and 35 (87.5%) of the 40 questions had ITC values of 0.50 or higher. The Big Five personality traits are described using eight different adjectives, namely: 1. Extraversion: inclination toward being talkative, energetic, extroverted, and lively; reverse questions covered: inclination toward introversion, taciturnity, reticence, and silence. 2. Openness to experience: inclination toward being full of ideas, intelligent, appreciative, clever, philosophical, and profound; reverse questions covered: lack of creativity and lack of imagination. 3. Emotional stability: inclination toward being unworried, content, and patient; reverse questions covered: inclination toward being envious, sentimental, impatient, jealous, and emotional. 4. Conscientiousness: inclination toward being efficient, neat, systematic, and organized; reverse questions covered: inclination toward being disorganized, casual, inefficient, and sloppy. 5. Agreeableness: inclination toward being kind, sympathetic, cooperative, and warm; reverse questions covered: inclination toward being ruthless, uncordial, unreasonable, and inconsiderate [20].

## **Data collection**

During the period from August to December 2015, researchers approached participants at the general wards and intensive care unit where they worked, explained to them the study's purpose, and then distributed the questionnaires to them. After the participants have completed the questionnaires, the researchers then personally collected them and confirmed their completeness. A total of 192 nurses received questionnaires, of these, 11 recipients had quit and 2 had declined to participate, resulting in a total of 179 questionnaires being collected (recovery rate of 93.2%). These questionnaires were all 100% completed.

## **Statistical analyses**

For this study, the statistical software SPSS 20 was used to carry out descriptive and inferential statistical analyses, with  $p < 0.05$  being the statistically significant level. The descriptive statistical analysis was expressed using frequency, mean and standard deviation; the inferential statistical analysis was carried out using the independent t-test, Pearson product-moment correlation, one-way analysis of variance (one-way ANOVA) and Scheffe's post hoc test, after which multiple regression analysis was used to analyze the influencing factors behind the work-related stress felt by novice nurses.

## Results

### Correlation between novice nurses' basic characteristics and their work-related stress

The various construct results for the novice nurses' basic characteristics and work-related stress indicated that: personal responses stress were significantly higher among female nurses when compared to male nurse ( $t=-2.09$ ,  $p=0.038$ ). The personal responses and work concerns-related stress levels in those who had without past clinical nursing experience were significantly higher compared to those who had that past clinical nursing experience ( $t=3.27$ ,  $p<0.001$ ), and length of past clinical nursing experience was significantly and negatively correlated ( $r=-0.20$ ,  $p=0.009$ ;  $r=-0.23$ ,  $p=0.002$ ). The work concerns-related stress in length of service at this hospital during the first four months was significantly higher compared to that experienced during between the eighth to twelfth month ( $F=4.25$ ,  $p=0.016$ ). Those who expressed a “self-perceived incompatibility with their current position” scored significantly higher with respect to the various constructs of work concerns-related stress as compared to those who expressed a “self-perceived compatibility with their current position” ( $p<0.05$ ) (see Table 1).

### Correlation between novice nurses' personality traits and work-related stress

After analyzing the novice nurses' personality traits and the various constructs of work-related stress, it was discovered that: novice nurses had a mean work-related stress level of  $179.69 \pm 54.99$  points. While nurses from the intensive care unit scored slightly higher in competence in handling stress as compared to nurse from the general wards. It shows negative correlation on extraversion and openness to experience traits. The stress scores for the other constructs were higher in the general wards. Extroversion and openness to experience were not correlated with the inability to complete personal work, and agreeableness was not correlated with stress from personal responses. The remaining personality traits and

work-related stress various structures were significant negative correlation ( $p < 0.05$ ) (see Table 2).

### **Predictive power with respect to novice nurses' work-related stress**

The predictors of the novice nurses' work-related stress were analyzed using multiple regression analysis. For this analytical model, its independent variables comprised the basic characteristics that showed significant correlations (past clinical nursing experience and self-perceived compatibility with current position) and the Big Five personality traits (extraversion, openness to experience, emotional stability, conscientiousness, and agreeableness), while work-related stress served as the dependent variable. To avoid overly high correlation levels among the independent variables, tolerance and the variance inflation factor (VIF) were used to investigate the data; no multicollinearity issues were found among the variables. Regression coefficients were used to analyze the independent variable statistics, and the results provided an explanatory power of 46% for work-related stress. In terms of stress levels, nurses who had less than one year of past clinical nursing experience and nurses who had more than one year of past clinical nursing experience scored 25.24 and 26.04 points less than nurses who did not have past clinical nursing experience, respectively. Nurses who expressed a self-perceived compatibility with their current position scored 46.43 points more than those who expressed a self-perceived incompatibility with their current position. For every point gained for emotional stability, work-related stress would drop by 3.50 points. For every point gained for conscientiousness, work-related stress would drop by 5.60 points (see Table 3).



Table 1 Correlation between basic characteristics and work-related stress constructs of novice nurses (N=179)

Work-related stress Variables (N)	Personal response			Work concerns			Competence			Unable to complete personal work		
	Mean±SD	t/F	p	Mean±SD	t/F	p	Mean±SD	t/F	p	Mean±SD	t/F	p
<b>Gender</b>		-2.09	0.038*		-1.75	0.082		-0.15	0.883		-0.28	0.777
Male (17)	54.35±29.17			35.06±17.14			46.18±14.57			20.71±10.66		
Female (162)	70.20±29.78			43.86±19.97			46.62±11.43			21.47±10.53		
Age (20-33)‡	r=-0.14		0.062	r=-0.12		0.116	r=-0.12		0.102	r=-0.04		0.579
<b>Education level</b>		0.75	0.474		0.16	0.850		0.06	0.938		0.07	0.937
Professional college(8)	79.00±39.08			40.75±16.70			46.38±12.31			20.88±9.28		
Two-year technical college (105)	66.90±29.44			43.70±20.98			46.84±12.35			21.21±10.30		
Bachelor's (66)	70.29±29.90			42.24±18.49			46.18±10.74			21.76±11.11		
<b>Marital status</b>		0.38	0.706		-0.03	0.976		0.44	0.659		-0.63	0.529
Single (170)	68.89±29.87			42.02±20.05			46.66±11.74			21.28±10.42		
Married (9)	65.00±34.23			43.22±16.30			44.89±11.96			23.56±12.72		
<b>Past Clinical nursing experience</b>		3.27	0.001**		3.27	0.001**		-0.12	0.906		1.00	0.320
No (126)	73.32±28.24			46.09±19.73			46.50±10.69			21.90±10.29		
Yes (53)	57.70±31.45			35.75±18.31			46.75±13.97			20.19±11.05		
Experience (months)‡	r=-0.20		0.009**	r=-0.23		0.002**	r=-0.09		0.219	r=-0.01		0.940
①0(129)	73.26±28.44	5.83	0.004**	46.09±19.79	6.41	0.002**	46.40±10.63	1.28	0.280	21.95±10.19	0.98	0.376
②1~12(15)	60.93±32.13		①>③	39.67±15.23		①>③	51.00±11.74			18.07±10.27		
③12 or more (35)	55.20±30.83			33.20±18.74			45.34±15.06			20.80±11.76		
<b>Length of service (months)††</b>	r=-0.07		0.370	r=-0.13		0.078	r=-0.06		0.460	r=0.06		0.445
①1-4 months (101)	71.83±29.32	1.31	0.272	46.71±20.18	4.25	0.016*	47.20±10.70	0.33	0.722	21.40±10.47	0.46	0.635
②4-8 months (32)	63.50±30.74			37.06±16.39		①>③	45.88±11.98			20.03±9.58		
③8-12 months (46)	65.41±30.78			39.09±19.89			45.70±13.71			23.35±11.33		
<b>Self-perceived compatibility with current position</b>		-6.46	<0.001***		-2.50	0.012*		-2.00	0.047*		-2.93	0.004**
Compatible (154)	63.43±27.77			41.54±19.86			45.88±11.58			20.49±10.42		
Not compatible (25)	101.12±22.11			52.20±17.39			50.88±11.91			27.00±9.49		

Note: 1. Reasons for studying nursing was a multiple choice question, each reason was analyzed.

2. †Length of service at the hospital was broken down into the three groups: 1. 1-4 months; 2. 4-8 months; 3. 8-12 months.

3. Used independent sample t-test, significant level  $\alpha=0.05$ , two-tailed test.

4. Used one-way ANOVA, significant level  $\alpha=0.05$ , Scheffe s method (for post-hoc test)

5. ‡ Age, Past Clinical nursing experience and length of service at this hospital were continuous variables analyzed using the Pearson product-moment correlation coefficient, significance level  $\alpha = 0.05$ , two-tailed test.

6. \*  $p < 0.05$     \*\*  $p < 0.01$     \*\*\*  $p < 0.001$

Table 2 Correlation between novice nurses' personality traits and work-related stress constructs (N=179)

Variables (Mean±SD)	Extraversion	Openness to experience	Emotional stability	Conscientiousness	Agreeableness
Work-related stress (179.69±54.99)	-0.24**	-0.33***	-0.41***	-0.50***	-0.18*
General wards (181.12±54.05)	-0.21*	-0.26*	-0.37***	-0.54***	-0.19*
Intensive care unit (176.21±57.60)	-0.31*	-0.47***	-0.48***	-0.42**	-0.15
Personal response (68.69±30.00)	-0.20**	-0.26***	-0.44***	-0.36***	-0.05
General wards (69.86±29.33)	-0.17	-0.20*	-0.40***	-0.37***	-0.04
Intensive care unit (65.85±31.71)	-0.25	-0.39**	-0.53***	-0.35*	-0.08
Work concerns (43.03±19.84)	-0.22**	-0.22**	-0.19*	-0.44***	-0.18*
General wards (43.41±19.90)	-0.18*	-0.16	-0.17	-0.48***	-0.21*
Intensive care unit (42.10±19.85)	-0.30*	-0.36**	-0.22	-0.40**	-0.08
Competence (46.58±11.72)	-0.23**	-0.38***	-0.27***	-0.35***	-0.25**
General wards (46.20±11.89)	-0.20*	-0.36***	-0.28**	-0.44***	-0.24**
Intensive care unit (47.48±11.36)	-0.31*	-0.44**	-0.26	-0.15	-0.27
Unable to complete personal work (21.40±10.52)	-0.03	-0.12	-0.21**	-0.36***	-0.18*
General wards (21.65±10.43)	-0.04	-0.06	-0.15	-0.36***	-0.19*
Intensive care unit (20.79±10.80)	-0.02	-0.25	-0.31*	-0.38**	-0.17

Note: 1. Used Pearson product-moment correlation coefficient, significance level  $\alpha = 0.05$ , two-tailed test.

2. \*  $p < 0.05$     \*\*  $p < 0.01$     \*\*\*  $p < 0.001$ .

Table 3 Multiple regression analysis of novice nurses' work-related stress (N=179)

Predictor variables	Tolerance	VIF	B estimated value	Standard error	$\beta$ distribution	$t$
Constant			426.48	33.72		12.65***
Past Clinical nursing experience						
No (reference group)						
1-12 months	0.95	1.05	-25.24	11.43	-0.13	-2.21*
More than 12 months	0.93	1.08	-26.04	8.08	-0.19	-3.22**
Self-perceived compatibility with current position	0.92	1.08	46.43	9.26	0.29	5.01***
Extraversion	0.86	1.17	-1.18	0.69	-0.11	-1.73
Openness to experience	0.70	1.42	-0.09	1.02	-0.01	-0.09
Emotional stability	0.82	1.22	-3.50	0.93	-0.23	-3.76***
Conscientiousness	0.67	1.50	-5.60	1.06	-0.37	-5.29***
Agreeableness	0.74	1.36	0.36	0.96	0.02	0.02
R=0.68	R <sup>2</sup> =0.46		Adjusted R <sup>2</sup> =0.44		F=18.21***	

Note: 1. Basic characteristics included in variables analysis (gender, age, Past Clinical nursing experience, self-perceived compatibility with current work), personality traits (extraversion, openness to experience, emotional stability, conscientiousness, agreeableness).

2. \*  $p < 0.05$     \*\*  $p < 0.01$     \*\*\*  $p < 0.001$

## Discussion

Statistically significant differences were found between work-related stress and basic characteristics in self-perceived compatibility with current position. In addition, personal response stress and basic characteristics in gender, and past clinical nursing experience were significant differences. Then work concerns stress and basic characteristics in past clinical nursing experience and length of service were significant differences. Among them personal response, work concerns stress and past clinical nursing lengths of experience were negative significantly correlated. This is consistent with the findings (relating to gender, work experience, length of service, and work-related stress) from Purcell et al. (2011) [21]; Zhang et al. (2013) [22]. Work-related stress was felt more strongly by female nurses, and nurses with less work experience and shorter lengths of service, especially the work-related stress felt by these nurses tended to come from personal responses and work concerns. But what affecting novice nurses' work-related stress the most were self-perceived incompatibility with their current position.

With regard to the novice nurses' personality traits and work-related stress, no significant differences were found between the extraversion, openness to experience trait and work-related stress associated with the inability to complete personal work and between the agreeableness trait and personal responses-related stress; the remaining traits were all significantly and negatively correlated with stress. Chien & Wu's (2014) [17] study showed that positive emotions were strong when a nurse adapted well to the workplace, the higher the work-related stress felt by novice nurse, the lower the level of positive emotions felt, thus work-related stress and positive personality traits were inversely related. Wen et al.'s (2010) [18] study found that the neurotic personality trait and stress were significantly and positively correlated, extraversion and cognitive confusion over stress were significantly and negatively correlated, and extraversion and emotional stability were significantly correlated to stress;

these findings were similar to those of this study. Intensive care unit on the Competence stress is higher than general wards, This result is mentioned in the research of Tastan et al. (2013) [15] and Purcell et al. (2011) [21]: Intensive care unit is the most common stress factor in the work of novice nurses . It is related to the job nature of Intensive care unit, for novice nurses Competence stress is relatively higher, thus showing the result of this study.

### **Predictive power with respect to novice nurses' work-related stress**

Novice nurses' "length of clinical nursing experience," "self-perceived compatibility with current position," "emotional stability," and "conscientiousness" were able to predict work-related stress with an explanatory power. The results pertaining to the impact of clinical nursing experience on work-related stress were similar to those of Chang et al. (2010) [5] and Zhang et al. (2013) [22]. Although their participants were different, the results showed that nursing work-related stress and clinical nursing experience were significantly correlated, and length of service and work-related stress were inversely related. Past studies revealed that work-related stress was a subjective, continuous, and dynamic process that arose from the interaction between individual ability and the environment. In a work environment, work-related stress can be affected by the workplace and team morale, which in turn affects a nurse's self-perceived compatibility with his or her current position [9, 23], these results are similar to those in this study (regarding the impact of a nurse's self-perceived compatibility with his or her current position on work-related stress). The findings on the impact of emotional stability on work-related stress were consistent with those of Chang et al.(2010) [5] and Wen et al.(2010) [18], which illustrated that an emotionally stable personality was significantly correlated with stress and emotionally stable participants performed better at work. The findings on the impact of conscientiousness on work-related stress were consistent with those of Chien & Wu (2014) [17], which indicated that the longer the length of service of

a nurse, the more likely it is that he or she will have a conscientious personality. Their results regarding the link with stronger positive emotions and better adaptability to work were consistent with those from this study.

With respect to work-related stress, we concluded that a longer time working as a clinical nurse equates to more clinical care experience and better performance in a care environment; this environment affects the formation of a conscientiousness personality; and learning experience creates familiarity with the clinical environment and compared to emotionally stable and conscientious personalities, increases stress tolerability. However, stress scores were higher among those who expressed a self-perceived compatibility with their current position as compared to those who did not. This may be because they were still unclear about the extent to which they had adapted to the workplace. Moreover, this finding may be similar to that from Lin & Huang's (2014) [24] study, which found that given the high level of unemployment at present, nurses chose to stay in the profession due to economic considerations, which thus led to novice nurses, who expressed a self-perceived compatibility with their current position, scoring higher in terms of stress level.

## Conclusion

This study found that personality traits and work stress have significantly and negatively correlated, but the associated strength is low. Although personality traits in emotional stability and conscientiousness are significant predictors for work stress; these two personality traits take time to experience. On the other hand, past clinical nursing experience, and self-perceived compatibility with current position were not only significant differences in working pressure, but they were also a significant predictor of working pressure. It is suggested that the hospital not only need to build a more completed new nursing personnel training, but also add the cooperation with school's last mile program and voluntary training in summer vacation. So that nurse students in addition to clinical practice courses, have more opportunities to contact the clinical environment. Which not only accumulate clinical care experience, but also experience a suitable medical department and environment for oneself. Medical institutions can also assess the appropriate new nurses, and then reducing the turnover rate of new nurses.

This study has some limitations. This study focused only on a single hospital system in southern Taiwan and involved a cross-sectional investigation of the personality traits and work-related stress of novice nurses (one month to one year); hence, the results may not be generalizable in terms of the status of novice nurses in other hospital systems or the difference in work-related stress levels felt by novice nurses (newly graduated) before and after they commenced clinical nursing work. The results also cannot infer whether the personality traits of novice nurses were compatible with their current position. Moreover, although the Big Five mini-markers used in this study are currently the most popular personality trait classification tools used by scholars, they may not be sufficient for the ever-changing clinical nursing environment.



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