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Terry, D. R., Peck, B., Smith, A., Stevenson, T., & Baker, E. (2019). Is nursing student personality important for considering a rural career? *Journal of Health Organization and Management*, 33(5), 617–634.

<https://doi.org/10.1108/JHOM-03-2019-0074>

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Is nursing student personality important for considering a rural career?

Abstract

Purpose

Identifying and measuring personality traits assists to understanding professional career choices, however, what impact personality traits have on nursing student rural career choice remains absent. The aim is to identify personality traits among nursing students that may be predictive of pursuing a rural career.

Design

A cross sectional design was used to examine the importance Bachelor of Nursing students place on undertaking rural careers. All nursing students (n=1,982) studying a three-year bachelor's degree were invited to complete a questionnaire examining personality traits and rural practice intentions.

Findings

Students who saw themselves working rurally after graduation had higher levels of conscientiousness than those who wanted metropolitan careers. Students with higher levels of agreeableness or open-mindedness were more likely to consider rural practice when individual community factors were carefully considered. Lastly, students with higher levels of neuroticism were less likely to consider rural practice as a future career pathway.

Research limitations

The cohort had high numbers of student from rural and regional settings, which may limit the ability to generalise the findings. In addition, student respondents of the survey may not be representative of the whole student cohort given the low response rate.

Originality/value

Key personality traits are identifying factors that contribute to nursing student decision-making regarding rural practice. Students who displayed higher levels of agreeableness and conscientiousness and open-mindedness have traits that are most likely to impact the consideration of rural practice across their nursing career, which gives additional insight into targeted recruitment strategies.

Keywords: Community Apgar, Health Workforce, Health Services Needs and Demand, Nurses, Personality, Recruitment and Retention, Rural, Students.

Introduction

Identifying and measuring personality and personality traits is not a new concept or approach to understanding professional career choices, employment outcomes, and even the location where someone may work. There has been a long history of measuring personality to answer the fundamental question of why an individual or groups of individuals are predisposed to undertake certain career pathways or professional interests (Cloninger, 2004, Campbell et al., 2016). In fact, when seeking to understand the personality traits of health professionals such as doctors, nurses, and allied health professionals, or even undergraduate health students and career pathways that are followed, the literature is replete (Campbell et al., 2016, Eley et al., 2012, Eley et al., 2015, Eley et al., 2010, Vaidya et al., 2004, Lysack et al., 2001, Adamson et al., 2003).

However, when examining the impact that personality traits or temperament and character, when influenced by developmental, environmental and sociocultural stimuli (Campbell et al., 2013) have on individuals taking up rural and remote practice, it has been shown that general practitioners and medical students across Australia in rural and remote practice exhibit lower levels of harm avoidance, higher levels of persistence and self-directedness, and greater levels of resilience than their metropolitan counterparts (Reed et al., 2012). These findings provide insight into specific personality traits that can be identified among health professional students, specifically medical professionals, in terms of their rural career intentions (Eley et al., 2009).

This was similarly observed in a study by Campbell et al. (2013), which focused on allied health professionals nationally, where it was indicated that allied health professionals scored high in traits of novelty seeking, and very high in reward dependence, persistence, self-directedness and cooperativeness. It was suggested that those allied health professionals with higher levels of novelty seeking may be more likely to take up rural and remote employment in the short-term. However, there needs to be more balance to ensure longer-termed staffing, particularly within those with lower levels of harm avoidance, where lower levels of pessimism or fear of uncertainty would not impinge on taking up rural and remote practice.

Again, in terms of regional students and nurses, it was shown that younger students and nurses had higher levels of novelty seeking, all students had higher levels of reward dependence including approval by others, while younger students and nurses had lower levels of persistence than older students and nurses. In addition, it was shown that older and working students were more likely to be self-directed and have lower levels of harm avoidance (Eley et al., 2010). However, what remains absent is the impact that personality traits have on one's choice in terms of seeking employment in certain geographical locations or workplaces.

There are various types of personality measures being widely used in research and although there are a number of key arguments for and against certain personality measures and their veracity (Zillig et al., 2002, Capanna et al., 2012, Zuckerman and Cloninger, 1996, De Fruyt et al., 2000), what remains fundamental is the need for the shared use of personality measures in order to gain an understanding and insight into groups of individuals and a level of certainty and predictability. One such personality measure is the Neuroticism, Extraversion, Openness Personality Inventory-Revised (NEO-PI-R) or what is termed the "Big Five" (Styles et al., 2011, Costa and McCrae, 1992). These five levels of personality traits, as identified by Costa and McCrae (1992), include *extraversion*, a trait that includes being sociable, active, seeking excitement, pleasurable experiences and novelty seeking; *agreeableness*, a trait where an individual is cooperative and compliant, is unselfish and good-

natured; *conscientiousness*, a trait that includes being careful, systematic, organised, responsible and hardworking; *neuroticism*, a trait where there is propensity for emotional instability, where the individual may present as being anxious, depressed, or insecure about oneself; and *open-mindedness* where there is a tendency to be sensitive, self-directed, open-minded, and being open to new ideas and experiences (Roccas et al., 2002, McLaughlin et al., 2008, Fletcher, 2013, Costa et al., 2001, Donnellan et al., 2006).

This paper builds on the work of Eley et al. (2010) concerning nursing students and Reed et al. (2017) who focused on medical students. As such, this paper seeks to investigate the profiles of rural, regional and metropolitan nursing students to identify and predict the personality traits that are most likely to contribute to the decision-making of nursing students considering rural practice.

Methods

A cross sectional design was used to examine the importance Bachelor of Nursing students place on undertaking careers in rural areas. The study was conducted through an Australian university, which has campuses in rural, regional and peri-urban centres, which provides a wide range of views regarding future rural practice. The overall aim is to identify personality traits that may be predictive of pursuing a rural career pathway and increase nursing career longevity in general.

Recruitment of participants

All nursing students (n=1,982) studying the three-year bachelor's degree at an Australian University, 87.8% (n=1,740) female, were invited to complete an online questionnaire that examined their rural practice intentions, between 28 June and 31 July 2018. The invitation to participate in the study included follow-up in weeks 1, 2, and 4 post initial invitation. The invitation was sent in the winter break to reduce impact on studies and inhibit coercion. No incentives were offered to participants.

Data collection tool

Data were collected using a questionnaire that included demographic questions such as gender, year of birth, past and current place of residence, current employment, possible future work locations, marital status, and rural background. Additional questionnaires included a modified Nursing Community Apgar Questionnaire (NCAQ) (Prengaman et al., 2014, Prengaman et al., 2017) and the Mini International Personality Item Pool – Five Factor Model (Mini-IPIP-20) that measures the Big Five personality traits (Donnellan et al., 2006, Goldberg, 1999, Goldberg et al., 2006).

The modified NCAQ asks students the level of importance they place on 50 rural factors, which measure the intentions of nursing students in terms of taking up rural practice, with 10 items classified into five classes (Prengaman et al., 2014). The five classes include (a) geographic factors, (b) economic and resource factors, (c) management and decision-making factors, (d) practice environment and scope of practice factors, and (e) community and practice support factors (Prengaman et al., 2014).

The Mini IPIP-20 uses 20 items or statements that nursing students needed to self-rate on how true the statements are about themselves in terms of five personality traits. These include seeking fulfilment (*extraversion*), *agreeableness*, *conscientiousness*, being emotional (*neuroticism*) and being open to new experiences (*open-mindedness*)(Goldberg, 1999, Goldberg et al., 2006). Items are measured on a five-point scale with categories ranging from very inaccurate to very accurate (Donnellan et al., 2006).

Overall, the reliability of the personality scales had some acceptability with coefficients for *extraversion* being .707, *agreeableness* being .661, *conscientiousness* being .643, *neuroticism* being .500, and *open-mindedness* being .414. The reliability of the subscale of *neuroticism* and *open-mindedness* were much lower than anticipated (Donnellan et al., 2006) and it is noted that scales with a small number of items sometimes make it difficult to obtain an adequate Cronbach alpha (Palant, 2013). Nevertheless, similar studies have had higher levels of reliability (Donnellan et al., 2006), while others have had moderate levels of reliability, as observed here (Roccas et al., 2002).

Data analysis

Data were cleaned, checked and analysed. NCAQ data were then scored by assigning quantitative values to the four-point scale according to the participant’s perceived importance on a four-point scale (very important = 4, important = 3, unimportant = 2, very unimportant = 1) (Prengaman et al., 2014, Prengaman et al., 2017). These importance scores for each factor were then divided by the number of participants to give an overall mean score. Further, Mini IPIP-20 data were scored by assigning values to the responses given and each of the five subscales are summed and averaged to get a subscale composite average for each of the five subscales, as described by Donnellan et al. (2006). Personality traits ranged between 6 and 20 and were categorised into high (16-20), Moderate (11-15), and low (6-10) scores.

The Statistical Package for the Social Sciences (SPSS, Version 22.0) was utilised to analyse the data. Cronbach Alpha (α) was used to test questionnaire item reliability, while Pearson’s correlation (r), independent sample t-test, and one-way ANOVAs were used to analyse data and identify differences according to metropolitan and rural residence, sex, where students grew up, and student intention to practice after graduating the bachelor’s degree. Hierarchical multiple regression was also used to examine the association between personality and a number of predictor variables. To adjust for age and gender, these variables were entered at step 1 after which the five NCAQ classes were entered into step 2. Preliminary analysis was undertaken to ensure no violations of assumptions were present. Significance was determined at two-tailed $p \leq .05$.

Ethics approval:

Ethical approval was provided by Federation University Human Research Ethics Committee (A18-017).

Results

A link to the survey was sent via email to a total of 1,982 first, second and third year students undertaking a Bachelor of Nursing degree, of which 329 responded, yielding a response rate of 16.60%, however, 202 surveys (10.20%) were completed in full. Table 1 outlines key demographic items regarding the participants and highlights more than half of participants were aged between 25 and 45 years of age with less than half (43.50%) of participants having grown up in areas that they considered rural (property or farm or rural town).

Table 1: *Participant demographics*

Demographic information	Frequency	Percentage (%)	Mean score
Gender (n=286)			
- Female	261	91.25	-

- Male	24	8.40	-
- Other	1	0.50	-
Age (years) (n=269)			
- Under 25	92	34.20	21.1 years
- 25-45 years	149	55.40	35.5 years
- Over 45 years	28	10.40	49.8 years
Where student grew up (n=274)			
- Metropolitan area	89	32.50	19.2 years
- Regional area	66	24.00	21.4 years
- Rural	119	43.50	19.2 years
After graduation (n=284)			
- I see myself practicing in a metropolitan setting	117	41.49	-
- I see myself practicing in a rural/remote setting	102	36.17	-
- I do not know where I see myself	55	19.50	-
- I see myself practicing overseas	10	3.55	-

The outcomes of the Mini-IPIP-20 highlighted that among the whole cohort of nursing students, 74.90% had high levels of *agreeableness* followed by 53.97% who had high levels of *conscientiousness*, while 76.15% had a moderate level of *open-mindedness* and 54.81% had moderate levels of *neuroticism* as outlined in Figure 1.

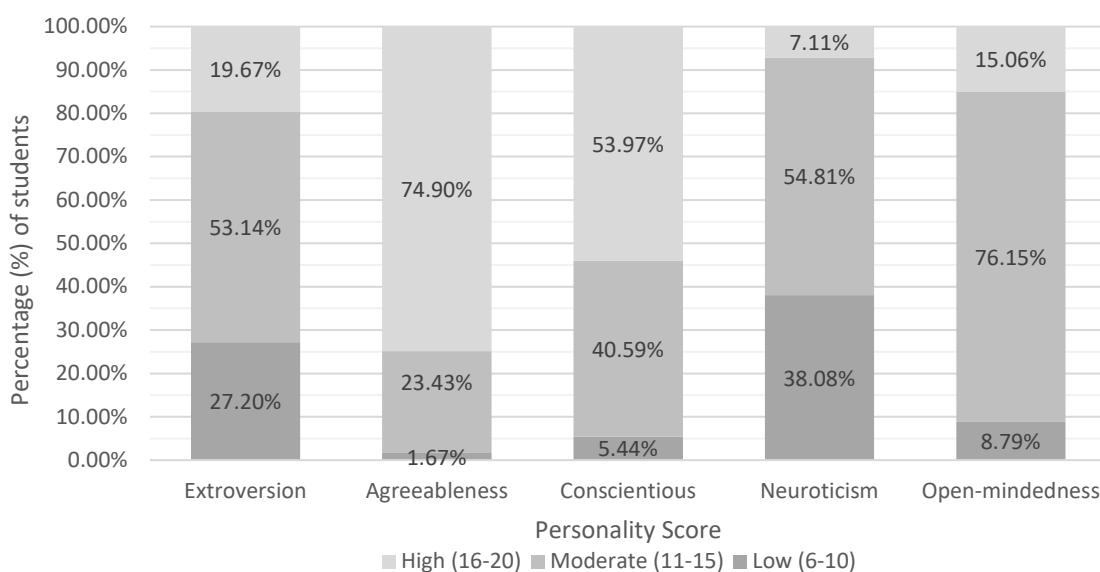


Figure 1: Big five personality traits among nursing students

In addition, two personality factors showed significant difference between males and females and these factors were *agreeableness* and *conscientiousness* where males scored lower than females.

It is highlighted that there were fewer males participants which reflected the overall student body. Nevertheless, they scored lower among all personality traits except *open-mindedness*, where the difference was marginal and not statistically significant.

Table 2: Reliability and mean scores of personality factors by sex

	Mean	Mean	Mean Difference	p-value
	Females (n=216)	Males (n=23)		
Extraversion	12.69	11.34	1.34	.058
Agreeableness	16.81	15.21	1.60	.002
Conscientiousness	15.56	13.86	1.70	.006
Neuroticism	11.37	11.13	0.24	.649
Open-mindedness	13.19	13.86	-0.67	.124

The examination of mean differences between age groups among the sexes revealed that there were no significant differences in mean scores for all personality traits except *neuroticism*. It was highlighted that there was a 1.78 difference in *neuroticism* scores between female students under 25 years old (11.83) and those over 45 years old (11.04), $p=0.28$, where those older than 45 years of age had lower levels of *neuroticism* than the younger age groups.

Similarly, no significant difference was shown to occur between personality and where students grew up except for *agreeableness*. *Agreeableness* was shown to only occur among those students who were 45 years and older. For example, students 45 years and older who grew up in regional areas (14.25) were less agreeable than those students who grew up in metropolitan (17.09), $p=.012$ and rural areas (16.70), $p=.034$.

Beyond age and where students grew up, personality traits were examined against where they intended to work geographically upon graduating. Again, there was no significant difference between personality and where students saw themselves working after completing their nursing degree except for *conscientiousness*. This personality trait had a 0.93 difference in mean scores between female students who wanted to work rurally (16.12) and those who wanted to work in a metropolitan centre (15.19), $p=.024$.

Multiple regression to establish if personality is predictive of rural practice

Multiple regression analyses highlighted several significant predictors of students considering rural practice. After controlling for age and gender, it was indicated that the predictor variables explained 7.0% of the variance that attributes to factors important to working rurally $F(7,181)= 2.249$, $p = .032$. As outlined in Table 3, the personality trait of *Extraversion* and *Conscientiousness* had a significant association among those students with higher NCAQ scores, or those who were more likely to considering rural practice.

Table 3: *Personality traits considered important to working rurally*

Predictor	Adj.OR [±]	95% CI	p-value
Age	1.00	0.99-1.01	.764
Gender	0.93	0.78-1.12	.447
Extraversion	1.02	1.00-1.04	.036*
Agreeableness	0.99	0.97-1.02	.586
Conscientiousness	1.03	1.00-1.05	.023*
Neuroticism	1.00	0.98-1.03	.738
Open-mindedness	1.03	1.00-1.06	.094

* $p < 0.05$; \pm Adj.OR= Adjusted Odds Ratio (After controlling for Age and Gender).

When specifically examining the association that exists between personalities, where students grew up, and classes of factors that students indicated are most important to them in taking up rural

practice, it was identified that *gender*, *conscientiousness* and *neuroticism* had a significant association with students who grew up in a regional area. When examining students from a metropolitan background, there were no significant associations with any of the factors identified. However, among rural students, *extraversion* was identified as the only significant predictor (Table 4).

Table 4: *Personality traits considered important to working rurally in relation to where grew up*

Predictor	Where student grew up								
	Metropolitan			Regional			Rural		
	Adj.OR [±]	95% CI	p-value	Adj.OR	95% CI	p-value	Adj.OR	95% CI	p-value
Age	1.00	0.99-	.857	1.01	1.00-	.037	1.00	0.99-	.308
Gender	1.09	1.01	.545	0.62	1.02	.000**	1.04	1.01	.855
Extraversion	1.01	0.82-	.655	1.02	0.49-	.132	1.04	0.70-	.018*
Agreeableness	0.98	1.46	.412	0.96	0.79	.051	1.02	1.52	.403
Conscientiousness	1.01	0.98-	.499	1.06	0.99-	.003*	1.03	1.01-	.117
Neuroticism	0.99	1.03	.654	1.06	1.06	.002*	1.00	1.07	.857
Open-mindedness	1.01	0.95-	.743	1.00	0.92-	.965	1.02	0.97-	.381
		1.02			1.00			1.07	
		0.97-			1.02-			0.99-	
		1.05			1.10			1.07	
		0.96-			1.02-			0.96-	
		1.03			1.10			1.03	
		0.96-			0.95-			0.97-	
		1.06			1.06			1.07	

* p < 0.05; ** p < 0.01; ±Adj.OR= Adjusted Odds Ratio (After controlling for Age and Gender).

In addition to examining the association between personalities, where students grew up, and classes of factors for rural practice, it was identified that *extraversion* and *open-mindedness* had a significant association with students who intended to work in a rural or remote setting after graduation. Among students who indicated their preference for metropolitan or more urban settings, *agreeableness* was identified as the only significant predictor (Table 5).

Table 5: *Personality traits considered important to working rurally according to student intention*

Predictor	Student workplace setting intention after graduation					
	Metropolitan/Urban setting			Rural/Remote setting		
	Adj.OR [±]	95% CI	p-value	Adj.OR [±]	95% CI	p-value
Age	1.00	1.00-1.01	.230	0.99	0.99-1.00	.103
Gender	0.90	0.74-1.09	.848	1.01	0.77-1.32	.037*
Extraversion	1.00	0.98-1.02	.026*	1.03	1.00-1.05	.093
Agreeableness	1.04	1.01-1.07	.708	0.96	0.92-1.01	.181
Conscientiousness	1.01	0.98-1.04	.705	1.02	0.99-1.05	.293
Neuroticism	1.01	0.98-1.03	.855	0.98	0.96-1.01	.007*
Open-mindedness	1.00	0.96-1.04	.264	1.06	1.02-1.10	.938

* p < 0.05; ** p < 0.01; ±Adj.OR= Adjusted Odds Ratio (After controlling for Age and Gender).

Correlation between personality and individual factors important to working rurally

When specifically examining the association that exists between personalities, where students grew up, and individual NCAQ factors that students indicate are most important to them taking up rural

practice, it was identified that students who grew up in regional areas had a higher number of correlations with individual NCAQ factors considered important. For example, Table 5 demonstrates that regional students with more agreeable personalities are more likely to consider rural practice if *effective interdisciplinary partnerships* between nurses and other healthcare staff are in place ($r=.468, p=.001$) and where extracurricular *family-friendly activities* are available ($r=.466, p=.001$). Whereas, regional students with higher levels of *extraversion* would consider rural practice if there were *opportunities for socialising* and being socially connected to the community ($r=.463, p=.001$) and opportunities for *recreational activities* that are more readily available ($r=.339, p=.023$). Further, regional students with higher levels of *neuroticism* would consider rural practice if the factor *cost of living* were lower than other areas ($r=.421, p=.004$), while regional students with high levels of *open-mindedness* did not correlate with any rural practice factors.

Among students from metropolitan and rural backgrounds, it was highlighted that there were a smaller number of correlations with rural practice factors considered important. For example, among metropolitan students with higher levels of *extraversion* ($r=.370, p=.004$) and rural students that have high levels of *conscientiousness* ($r=.363, p=.001$), the need for a *diverse demographic of patients* or access to a specific niche of patients, respectively, may be integral to a student taking up rural practice. Interestingly, metropolitan students that had higher levels of *agreeableness* or *conscientiousness* and rural students with higher levels of *neuroticism* or *open-mindedness* did not correlate with any rural practice factors.

[Table 6 about here]

When examining where student see themselves geographically working after graduation, it was noted that there was no correlation with any rural practice factors among those who saw themselves working in rural, regional, or overseas settings. However, students who indicated that they saw themselves working in metropolitan areas and who had high levels of *agreeableness* showed that they would consider taking up rural practice if there were key factors in place. As outlined in Table 6, these include the existence and adequacy of a recruitment plan and welcome programs for newly recruited nurses ($r=.487, p=.001$), having a stable workforce that can assist candidates in feeling welcomed and supported ($r=.478, p=.001$), and having effective interdisciplinary partnerships between nurses and other healthcare staff in the rural healthcare facility ($r=.426, p=.001$).

Similarly, among the students who were unsure where they see themselves working after graduation, it was noted that among those students with high levels of *extraversion*, they were more likely to consider rural practice if there were a diverse demographic of patients ($r=.530, p=.002$) or the lifestyle of living and working in a rural community met their needs ($r=.520, p=.003$). Among students with high levels of *open-mindedness*, rural practice was more appealing if there was an adequate orientation, preceptorship, support, training ($r=.513, p=.003$), opportunities, and support for nurses to branch out into other aspects of nursing outside the hospital setting ($r=.469, p=.008$).

[Table 7 about here]

Discussion

This study is one of the first to examine personality traits and the relative importance nursing students place on working in rural areas or what may be the determining factors to undertake rural practice. The outcomes may be used among healthcare facilities to develop strategies in terms of recruitment, but also facilitate greater long-term retention of nursing staff.

The nursing students in this study showed they were individuals with high levels of *agreeableness*, which are individuals that have a propensity to be good-natured, cooperative and compliant, while those who scored low are more likely to be inflexible, irritable and suspicious (Roccas et al., 2002). It remains unsurprising that nursing students have high levels of *agreeableness*, as it is these individuals that comply with traditional values, whether cultural or religious, do not like to upset or violate social norms, and have empathy and concern for the welfare others (Digman, 1990, Roccas et al., 2002, Costa et al., 2001). Similarly, the nursing students in the study also had high levels of *conscientiousness*, which is related to being careful, systematic, organised, and responsible. It is those individuals with high levels of *conscientiousness* that seek to achieve outcomes and tend to be less impulsive in their behaviours and decision-making process (Roccas et al., 2002).

It was indicated that females had significantly higher levels of *agreeableness* and *conscientiousness* than males and scored slightly higher across all personality types, except *open-mindedness*. These findings are unsurprising as it has been shown to be the case among many Western countries such as Germany, France, United States, and Norway, including China (Schmitt et al., 2008, Costa et al., 2001, McCrae, 2002, Weisberg et al., 2011). In some cases, females have been shown to have higher levels of *neuroticism*. In this study, females did have higher levels of this trait; which could be due to the relatively small number of males compared to females in this study's cohort, this might explain the minor differences within this personality trait (Costa et al., 2001). Regardless, the outcomes are similar to the findings elsewhere (Costa et al., 2001) in that females have a tendency to provide emotional and physical care for others and have higher levels of anxiety than their male counterparts, which is further observed among the this study's cohort of nursing students (Eley et al., 2012, Eley et al., 2011).

Among the different age groups, it was shown that females who were 25 years of age and younger had higher levels of *neuroticism*, than those nursing students who were aged 45 years of age and older. Those with higher levels of *neuroticism* are prone to more be anxious and depressed, while demonstrating higher levels of anger and insecurity about oneself (Roccas et al., 2002). In the case of younger nursing students, it has been hypothesised that this cohort may have higher levels of *neuroticism* due to a certain level of immaturity and/or having less life experiences (Ely 2010). However, more definitive evidence indicates younger females are more likely to experience a number of psychological and social challenges, negative emotions, and negative self-perceptions than observed in younger males (Soto et al., 2011, Weisberg et al., 2011). In addition, over the course of adulthood, females have a tendency to develop greater emotional regulation and develop supportive relationships that safeguard against life challenges compared to males (Soto et al., 2011).

However, when examining students 45 years of age and older, it was noted that there were lower levels of *agreeableness* among those who grew up in regional communities compared to metropolitan and rural areas. This may suggest that more non-traditional students from regional backgrounds are more likely to be suspicious, disagreeable, and inflexible, with lower levels of benevolence (Roccas et al., 2002). It is suggested that middle-age individuals remain focussed on developing relationships and building careers, and therefore higher levels of *agreeableness* remains vital in achieving these goals (Soto et al., 2011). Although *agreeableness* among regional students is

relatively high, their scores remain significantly lower when compared to metropolitan and rural students. It may be suggested that due to the regional locations of the university, this may have an impact on why metropolitan and rural students have a propensity to be more agreeable and compliant. This is in contrast to students who live within close proximity to the campuses, who may experience greater social harmony, or who see developing social contacts within the university setting as less essential (Soto et al., 2011, Weisberg et al., 2011).

When examining the overall NCAQ scores among all students, it was shown that students who scored higher for what was considered important for taking up a rurally career after graduation had higher levels of *conscientiousness* than those who saw themselves working in metropolitan areas. This indicates this study's cohort of students seeking to work rurally may have greater levels of organisation and self-control, are proactive, committed, hardworking, and more cautious than students seeking to work in metropolitan areas (Roccas et al., 2002, Weisberg et al., 2011). This may indicate that students who are considering rural practice may have made their decision to work rurally due to rural background, having carefully taken into consideration the requirements of rural practice, or have carefully considered all aspects of the workplace after experiencing rural placement. The findings of this study confirms this, it has also been suggested that individuals with a certain pattern of personal traits are more attracted to rural practice (Eley et al., 2015, Jones et al., 2013), while rural placement and exposure to rural life may select those more likely to choose rural practice (Smith et al., 2017).

Nevertheless, when isolating out those students who indicated they would take up rural careers, it was shown that these students were more *open-minded* or had higher levels of *extraversion*. Students with higher levels of *extraversion* have a greater likelihood that they will take up rural practice if there is access to geographic stimuli and community factors that motivate the desire to work and live rurally. This finding remains unremarkable, as individuals who score high in *extraversion* are social, active, seek excitement, pleasurable experiences, and are novelty seeking (Roccas et al., 2002, McLaughlin et al., 2008). Therefore, they are more likely to choose rural practice based on geographical factors which has been observed among allied health professionals (Campbell et al., 2016).

However, students who indicated that they saw themselves working in metropolitan areas and who had high levels of *agreeableness* showed that they would consider taking up rural practice if there were key factors in place. These factors include the existence and adequacy of a recruitment plan, and the presence of welcome programs for newly recruited nurses. While the provision of a structured welcome program as a criteria for recruitment success is surprisingly a new finding within current literature, the maintenance of a stable workforce as a vehicle for assisting candidates to feel welcomed has been supported previously (Collini et al., 2015, DiMeglio et al., 2005). The students situated within this sub-cohort also identified with having effective interdisciplinary partnerships between nurses and other healthcare staff as a criterion for considering rural employment. This finding has been reported elsewhere with interdisciplinary collaboration being identified as a significant indicator of nurse satisfaction (Chen and Johantgen, 2010), and a means of developing the professional practice environments needed to develop and sustain cultural change that supports workforce initiatives and nurse retention (Bakker et al., 2010).

However, when examining the specific geographical factors that were most likely to be correlated among metropolitan and regional students included social networks, community demographics, and recreational opportunities. Alternatively, among nursing students who were unsure geographically where they would work after completing their studies, these students were more likely to consider rural practice if they had access to larger communities, if the town they lived and worked in was

large enough, had a wide demographic or patient diversity, and if they had access to recreational activities (Terry et al., 2016, Prengaman et al., 2017). Despite this finding, it has been suggested that retaining staff with these *extraversion* personalities traits long-term can be challenging (Campbell et al., 2016).

Those students with higher levels of *agreeableness* or *open-mindedness* and who were more likely to consider rural practice when individual community factors were taken into account. As outlined previously, individuals who have high levels of *agreeableness* are focussed on developing relationships, building careers, being good-natured, and being cooperative. Conversely, those who have high levels of *open-mindedness* tend to be sensitive, self-directed, imaginative, appreciate nature, and are open to new ideas and experiences (Roccas et al., 2002, McLaughlin et al., 2008). In this case, it was found that regional students and students who were unsure geographically where they would work after graduating, were more likely to consider rural practice if they were accepted and welcomed by staff, work where there is a high level of reciprocity, connectedness, where there is welcomeness of the health services provided, welcomeness in the community, where the health service has a good image within the community, and where they were allowed access to distance education (Terry et al., 2016, Prengaman et al., 2017).

Interestingly, those students with higher levels of *conscientiousness* had small positive correlations with all classes of factors. As such, the motivation to take up rural practice among nursing students with high levels of *conscientiousness* is not only determined by economic reasons, but geographic, management, practice, and community factors. In this case, in addition to access to current and adequate materials and up-to-date equipment, regional students were more likely to consider rural practice if effective interdisciplinary partnerships and positive work environments were present. However, students who indicated they wanted to work in metropolitan practice after graduating also indicated they would consider rural practice if health facilities had adequate recruitment and welcoming plans, and if the facility had processes that were timely and efficient. Further, rural practice was also considered if there was low staff turnover or an absence of understaffing issues. It is these challenges that can impact work-life balance and impact the capacity for new nurses to learn and garner support (Terry et al., 2016, Prengaman et al., 2017, Hegney et al., 2006).

Neuroticism did not correlate with any class of factors, again, this is unremarkable, and may be related to *neuroticism* being characterised by emotional instability, low-self-esteem, anxiety, depression, and propensity for psychological distress (McLaughlin et al., 2008, Fletcher, 2013). It may be that there are no 'group' of factors are felt to be important when considering employment in rural practice. In this case, those with higher levels of *neuroticism* are less likely to consider rural practice as a future career pathway, and nursing students with anxiety, depression or low self-esteem may also be less inclined to choose rural practice as a career pathway (Geuens et al., 2017). However, when examining individual factors, it was noted that among regional and metropolitan students with high levels of *neuroticism*, having an appealing cost of living, good access to day care, and an adequate recruitment and welcoming process were in place correlated with taking up rural practice.

These factors may be worth contemplating when student candidates are considered for rural nursing positions. Further, when considering new graduates with neurotic personality traits, it remains vital to understand the person-environment theory, where individuals work and thrive in environments that match and complement their personality (Holland, 1959). Further, it must be noted that nursing students who have higher levels of *neuroticism* have a tendency to drop out of higher education (McLaughlin et al., 2008), and higher levels of *neuroticism* is predictive of exhaustion and burnout among nurses (Allen and Mellor, 2002, Geuens et al., 2017).

Lastly, the data indicated that students from regional backgrounds, with higher levels of *agreeableness* and *conscientiousness*, and students who were unsure where they would geographically practice after graduation, with higher levels of *open-mindedness* or *extraversion*, had the highest number of correlations with individual factors considered important for taking up rural practice. This suggests that these student from metropolitan and rural backgrounds may have the capacity to make more concrete decisions regarding where they want to work geographically after graduation, and there are very few factors that they consider important or would influence their current decision-making. Interestingly, there were no factors considered important among students already considering rural practice, while students considering metropolitan practice had indicated that key management, practice, and the community factors were important to take up rural practice. However, it is among those students who are unsure with regard to where they would practice geographically that had the highest number of correlating factors considered important.

This would suggest that students from regional backgrounds and those yet to make a clear decision concerning where they would take up practice are those who may become the students, depending on personality traits, that would be the cohort more likely to facilitate greater recruitment and retention in rural health services. This realisation would be around meeting what is considered important in terms of their individual personality traits, while also ensuring this cohort have both rural community and nursing practice exposure in their undergraduate training when considering taking up rural practice.

Limitations

Overall, a cross sectional design indicates relationships between variables, thus the findings should be considered carefully. Other considerations of this study is that the university having campuses in rural, regional and peri-urban locations with a high student cohort from rural settings may limit the ability to generalise the findings as there are a myriad of factors that may have impacted the student responses. Further, the questionnaire assumes that the nursing students have context as to what nursing in rural areas involves, therefore this may be problematic; however, this highlights where future iterations of the questionnaire may be improved. In addition, student respondents of the survey may not be representative of the whole student cohort given the low response rate, with only 10.2% (n=202) of the total student cohort completing the surveys in full. The low response rate may be due to survey being administered in the mid-semester break. To increase response rate without increasing coercion, the survey may be more suited to be administered at other times which are outside the study period.

Conclusion

The findings from this study seek to understand the characteristics of rural, regional and metropolitan nursing students in order to identify and predict those personality traits that are most likely to contribute to their decision-making in considering rural practice. It is suggested that students from regional backgrounds who displayed higher levels of *agreeableness* and *conscientiousness* and those who were unsure with regard to where – geographically – they would like to practice and who have higher levels of *open-mindedness* or *extraversion*, had the highest number of correlations with individual factors that are considered important for taking up rural practice. It would follow, that it is students that fit this profile that are most likely to consider rural practice across their nursing career. It is therefore this cohort that are in need of targeted recruitment strategies.

With regard to undergraduate programs, we suggest that those programs that stand to make the greatest contribution to the rural and regional workforce are those that incorporate a wide variety of regional, and rural/remote clinical experiences across their respective nursing programs. In doing so, programs such as this will help to strengthen the resolve of those from rural areas to return as well as to provide sufficient exposure for those who are unsure of their future geographical work setting so that regional or rural/remote settings becomes a legitimate option for the future.

This research challenges the 'one size fits all' recruitment strategies that are commonly adopted by healthcare agencies. Instead, we are suggesting that healthcare agencies seek ways to target those students who are from rural areas and/or to influence those students who are yet to make up their minds about rural practice. More specifically, requiring that potential graduates or employees to engage in an interview/scenario/dialogue that provides an opportunity to make determinations about a candidate's key personality traits are paramount. The commonly used 'group-interview' which is often reserved for the interviewing of a new-graduate is a productive example where a focus could reasonably be made upon factors such as *agreeableness*, *conscientiousness* and *open-mindedness*. While we acknowledge that a group interview is perhaps a particularly difficult requirement in some rural/regional settings, any approach that facilitates an understanding of the applicant's inherent personality traits will provide greater insight with regard to the degree of best fit.

In culmination, we are suggesting that healthcare agencies seeking to enhance their recruitment strategies might find parallels with the art of fly fishing. In fly fishing, the angler goes to – at times painstakingly – great lengths to develop the perfect fly that will lure the specific fish species that they seek. While there is no doubt that fishing with a standard lure, bait, or net may indeed yield a bountiful catch of fish, there will inevitably be a great mix of species and sizes that are not really suitable for the task at hand and are therefore thrown back. Research like that presented here helps us to identify the nuances that are required of the 'fly' in order to land the very best species of employee with the characteristics that we recognise as being valuable for a long-term, positive rural employment experience.

References

- Adamson, B., Covic, T., Kench, P. & Lincoln, M. 2003. Determinants of undergraduate program choice in two health science fields: Does personality influence career choice? *Focus on Health Professional Education: A Multi-disciplinary Journal*, 5, 34.
- Allen, J. & Mellor, D. 2002. Work context, personal control, and burnout amongst nurses. *Western Journal of Nursing Research*, 24, 905-917.
- Bakker, D., Butler, L., Fitch, M., Green, E., Olson, K. & Cummings, G. 2010. Canadian cancer nurses' views on recruitment and retention. *Journal of Nursing Management*, 18, 205-214.
- Campbell, N., Eley, D. & Mcallister, L. 2013. What does personality tell us about working in the bush? Temperament and character traits of Australian remote allied health professionals. *Australian Journal of Rural Health*, 21, 240-248.
- Campbell, N., Eley, D. S. & Mcallister, L. 2016. How Do Allied Health Professionals Construe the Role of the Remote Workforce? New Insight into Their Recruitment and Retention. *PLoS one*, 11, e0167256.
- Capanna, C., Struglia, F., Riccardi, I., Daneluzzo, E., Stratta, P. & Rossi, A. 2012. Temperament and Character Inventory—R (TCI—R) and Big Five Questionnaire (BFQ): Convergence and Divergence. *Psychological reports*, 110, 1002-1006.
- Chen, Y.-M. & Johantgen, M. E. 2010. Magnet Hospital attributes in European hospitals: a multilevel model of job satisfaction. *International Journal of Nursing Studies*, 47, 1001-1012.
- Cloninger, C. R. 2004. *Feeling Good: The Science of Well Being*, New York, Oxford University Press.
- Collini, S. A., Guidroz, A. M. & Perez, L. M. 2015. Turnover in health care: the mediating effects of employee engagement. *Journal of nursing management*, 23, 169-178.
- Costa, P. T. & McCrae, R. R. 1992. *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) Professional Manual*, Odessa, FL, Psychological Assessment Resources, Inc.
- Costa, P. T., Terracciano, A. & McCrae, R. R. 2001. Gender differences in personality traits across cultures: robust and surprising findings. *Journal of personality and social psychology*, 81, 322-331.
- De Fruyt, F., Van De Wiele, L. & Van Heeringen, C. 2000. Cloninger's psychobiological model of temperament and character and the five-factor model of personality. *Personality and individual differences*, 29, 441-452.
- Digman, J. M. 1990. Personality structure: Emergence of the five-factor model. *Annual review of psychology*, 41, 417-440.
- Dimeglio, K., Padula, C., Piatek, C., Korber, S., Barrett, A., Ducharme, M., Lucas, S., Piermont, N., Joyal, E. & Denicola, V. 2005. Group cohesion and nurse satisfaction: examination of a team-building approach. *Journal of Nursing Administration*, 35, 110-120.
- Donnellan, M. B., Oswald, F. L., Baird, B. M. & Lucas, R. E. 2006. The mini-IPIP scales: tiny-yet-effective measures of the Big Five factors of personality. *Psychological assessment*, 18, 192.
- Eley, D., Eley, R., Bertello, M. & Rogers-Clark, C. 2012. Why did I become a nurse? Personality traits and reasons for entering nursing. *Journal of advanced nursing*, 68, 1546-1555.
- Eley, D., Eley, R., Young, L. & Rogers-Clark, C. 2011. Exploring temperament and character traits in nurses and nursing students in a large regional area of Australia. *Journal of clinical nursing*, 20, 563-570.
- Eley, D., Laurence, C., Cloninger, C., Walters, L. & Walters, D. E. C. L. L. 2015. Who attracts whom to rural general practice? Variation in temperament and character profiles of GP registrars across different vocational training pathways. *Rural and remote health*, 15, 1-15.
- Eley, D., Young, L. & Przybeck, T. R. 2009. Exploring temperament and character traits in medical students; a new approach to increase the rural workforce. *Medical Teacher*, 31, e79-e84.
- Eley, R., Eley, D. & Rogers-Clark, C. 2010. Reasons for entering and leaving nursing: an Australian regional study. *Australian Journal of Advanced Nursing*, The, 28, 1-13.

- Fletcher, J. M. 2013. The effects of personality traits on adult labor market outcomes: Evidence from siblings. *Journal of Economic Behavior & Organization*, 89, 122-135.
- Geuens, N., Van Bogaert, P. & Franck, E. 2017. Vulnerability to burnout within the nursing workforce—The role of personality and interpersonal behaviour. *Journal of clinical nursing*, 26, 4622-4633.
- Goldberg, L. R. 1999. A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. *Personality psychology in Europe*, 7, 7-28.
- Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R. & Gough, H. G. 2006. The international personality item pool and the future of public-domain personality measures. *Journal of Research in personality*, 40, 84-96.
- Hegney, D., Eley, R., Plank, A., Buikstra, E. & Parker, V. 2006. Workforce issues in nursing in Queensland: 2001 and 2004. *Journal of clinical Nursing*, 15, 1521-1530.
- Holland, J. 1959. A theory of vocational choice. *Journal of Counseling Psychology*, 6, 35-45.
- Jones, M., Eley, D., Lampe, L., Coulston, C., Malhi, G., Wilson, I., Kelly, B., Talley, N., Owen, C., Corrigan, G., Griffin, B., Humphreys, J., Alba, B. & Stagg, P. 2013. Role of personality in medical students' initial intention to become rural doctors. *Australian Journal of Rural Health*, 21, 80-89.
- Lysack, C., Mcnevin, N. & Dunleavy, K. 2001. Job choice and personality: a profile of Michigan occupational and physical therapists. *Journal of allied health*, 30, 75-82.
- Mccrae, R. R. I. E., T 2002. NEO-PI-R data from 36 cultures: Further intercultural comparisons. In: MCCRAE, R. R. & ALLIK, J. (eds.) *The five-factor model of personality across cultures*. New York: Kluwer Academic/Plenum Publishers.
- Mclaughlin, K., Moutray, M. & Muldoon, O. T. 2008. The role of personality and self-efficacy in the selection and retention of successful nursing students: a longitudinal study. *Journal of Advanced Nursing*, 61, 211-221.
- Palant, J. 2013. SPSS survival manual: a step by step guide to data analysis using IBM SPSS. 5th ed. Melbourne: Allen & Unwin.
- Prengaman, M., Bigbee, J., Baker, E. & Schmitz, D. 2014. Development of the Nursing Community Apgar Questionnaire (NCAQ): A rural nurse recruitment and retention tool. *Rural and remote health*, 14.
- Prengaman, M., Terry, D. R., Schmitz, D. & Baker, E. 2017. The Nursing Community Apgar Questionnaire in Rural Australia: An evidence based approach to recruiting and retaining nurses. *Online Journal of Rural Nursing and Health Care*, 17, 148-171.
- Reed, A., Schmitz, D., Baker, E., Girvan, J. & McDonald, T. 2017. Assessment of factors for recruiting and retaining medical students to rural communities using the Community Apgar Questionnaire. *Family Medicine*, 49, 132-136.
- Reed, A. J., Schmitz, D., Baker, E., Nukui, A. & Epperly, T. 2012. Association of "grit" and satisfaction in rural and nonrural doctors. *The Journal of the American Board of Family Medicine*, 25, 832-839.
- Roccas, S., Sagiv, L., Schwartz, S. H. & Knafo, A. 2002. The big five personality factors and personal values. *Personality and social psychology bulletin*, 28, 789-801.
- Schmitt, D. P., Realo, A., Voracek, M. & Allik, J. 2008. Why can't a man be more like a woman? Sex differences in Big Five personality traits across 55 cultures. *Journal of personality and social psychology*, 94, 168-182.
- Smith, T., Sutton, K., Pit, S., Muyambi, K., Terry, D., Farthing, A., Courtney, C. & Cross, M. 2017. Health professional students' rural placement satisfaction and rural practice intentions: A national cross-sectional survey. *Australian Journal of Rural Health*.
- Soto, C. J., John, O. P., Gosling, S. D. & Potter, J. 2011. Age differences in personality traits from 10 to 65: Big Five domains and facets in a large cross-sectional sample. *Journal of personality and social psychology*, 100, 330-348.

- Styles, M., Cheyne, H., O'carroll, R., Greig, F., Dagge-Bell, F. & Niven, C. 2011. The Scottish Trial of Refer or Keep (the STORK study): midwives' intrapartum decision making. *Midwifery*, 27, 104-111.
- Terry, D. R., Nguyen, H. B., Prengaman, M., Schmitz, D. & Baker, E. 2016. Marketing your rural community: Identifying strengths and addressing challenges to recruit rural nurses. Shepparton.
- Vaidya, N. A., Sierles, F. S., Raida, M. D., Fakhoury, F. J., Przybeck, T. R. & Cloninger, C. R. 2004. Relationship between specialty choice and medical student temperament and character assessed with Cloninger Inventory. *Teaching and learning in medicine*, 16, 150-156.
- Weisberg, Y. J., Deyoung, C. G. & Hirsh, J. B. 2011. Gender differences in personality across the ten aspects of the Big Five. *Frontiers in psychology*, 2, 178-189.
- Zillig, L. M. P., Hemenover, S. H. & Dienstbier, R. A. 2002. What do we assess when we assess a Big 5 trait? A content analysis of the affective, behavioral, and cognitive processes represented in Big 5 personality inventories. *Personality and Social Psychology Bulletin*, 28, 847-858.
- Zuckerman, M. & Cloninger, C. R. 1996. Relationships between Cloninger's, Zuckerman's, and Eysenck's dimensions of personality. *Personality and Individual Differences*, 21, 283.