The relationship between emotional intelligence, previous caring experience and mindfulness in student nurses and midwives: a cross sectional analysis

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SUMMARY

Background: Emotional Intelligence (EI), previous caring experience and mindfulness training may have a positive impact on nurse education. More evidence is needed to support the use of these variables in nurse recruitment and retention.
Objective: To explore the relationship between EI, gender, age, programme of study, previous caring experience and mindfulness training.
Design: Cross sectional element of longitudinal study.
Setting and participants: 938 year one nursing, midwifery and computing students at two Scottish Higher Education Institutes (HEIs) who entered their programme in September 2013.
Data: Participants completed a measure of 'trait' EI: Trait Emotional Intelligence Questionnaire Short Form (TEIQue-SF); and 'ability' EI: Schutte's et al. (1998) Emotional Intelligence Scale (SEIS). Demographics, previous caring experience and previous training in mindfulness were recorded.
Methods: Relationships between variables were tested using non-parametric tests.
Results: Emotional intelligence increased with age on both measures of EI [TEIQ-SF $H(5) = 15.157$ p $= 0.001$; SEIS $H(5) = 11.388$, p $= 0.044$]. Females (n $= 786$) scored higher than males (n $= 149$) on both measures [TEIQ-SF, $U = 44{,}931$, $z = -4.509$, $p < .001$; SEIS, $U = 44{,}744$, $z = -5.563$, $p < .001$]. Nursing students scored higher that computing students [TEIQ-SF $H(5) = 46{,}496$, p $< .001$; SEIS $H(5) = 33.309$, p < 0.001. There were no statistically significant differences in TEIQ-SF scores between those who had previous mindfulness training (n $= 50$) and those who had not (n $= 857$) [$U = 22{,}980$, $z = 0.864$, $p = 0.388$]. However, median SEIS was statistically significantly different according to mindfulness training [$U = 25{,}115.5$, $z = 2.05$, $p = .039$]. Neither measure demonstrated statistically significantly differences between those with (n $= 492$) and without (n $= 479$) previous caring experience, [TEIQ-SF, $U = 112{,}102$, $z = 0.938$, $p = .348$; SEIS, $U = 115{,}194.5$, $z = 1.863$, p $= 0.063$].
Conclusions: Previous caring experience was not associated with higher emotional intelligence. Mindfulness training was associated with higher 'ability' emotional intelligence. Implications for recruitment, retention and further research are explored.

Background

The Francis Report (2013) detailed multiple recommendations to improve the quality of nursing in the UK. The Government and Nursing and Midwifery Council subsequently expressed the desire to select student nurses for caring values and attributes. In order to operationalize this Higher Education Institutions (HEIs) need evidence on which to base decisions about which attributes and values must be present in students. This paper explores three potentially useful factors: emotional intelligence, mindfulness and previous caring experience. It presents baseline results from the first phase of a longitudinal study designed to ascertain the relationship between these variables with clinical and academic performance in nurses (Snowden et al., 2014). The key variables are first described and then the study method is detailed. Results from this first phase of data collection are then presented.

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Emotional Intelligence

Emotional intelligence (EI) is contested but well conceptualised in the psychology literature (Mayer et al., 2004; Petrides et al., 2004; Schutte et al., 2001) and might be related to quality of nursing care (Bulmer Smith et al., 2009). It is suggested that EI is a useful variable to understand in relation to nurse recruitment (Taylor et al., 2014). Most EI theorists see emotional intelligence either as an ability, a trait, or some combination of the two (Austin et al., 2004), and then attempt to measure it in accordance with that view (Qualter et al, 2010). For example Schutte et al.'s (1998) self reported Emotional Intelligence Scale (SEIS) is an 'ability' measure. It is theoretically grounded in Salovey and Mayer's (1990) concept of emotional intelligence that sees it as a subset of social intelligence concerning the capacity to:

1. *Monitor one's own and others' feelings and emotions,*
2. *Discriminate among them, and*
3. *Use this information to guide one's thinking and actions.*

(Salovey and Mayer, 1990, p189)

This conception of emotional intelligence therefore described it as a cognitive process of active social judgement; a useful ability to measure in prospective and practicing nurses. By contrast the most widely utilized trait measure is the Trait Emotional Intelligence Questionnaire (TEIQ) developed by Petrides and Furnham (2000), in part from a critique of Schutte's conception. Rather than seeing EI as a function of cognitive processes inherent in 'ability' measures Petrides (2011) conceptualises EI as an aspect of personality. The distinction is psychometrically important as the two require different measurement techniques and Petrides goes on to point out that these measures do not correlate with each other. Despite this there are consistent findings that emotional intelligence, however conceptualized and measured, increases with age and is higher in females than males (Fernández-Berrocal et al., 2012; Petrides, 2011; Schutte et al., 2009).

There are ongoing debates between the proponents of different EI theories arguing for the superiority of one conception over another (Cherniss, 2010; Gignac, 2010; Roberts et al., 2010). The position we took was that it is likely that different interpretations of emotional intelligence are *useful*. This is why in our study we chose to utilize both Schutte's et al.'s (1998) measure (SEIS) and the short form TEIQ-SF (Cooper and Petrides, 2010). The results from these measures can then be interpreted against their unique theoretical underpinnings (Petrides, 2011).

Previous caring Experience

It seems intuitive to think that those with previous caring experience may make better nurses (Finfgeld-Connett, 2008). Even acknowledging that caring is not a straightforward construct (Paley, 2002) previous practical experience should at least ensure students are more likely to go into their training with realistic expectations. This is why the UK government has supported Health Education England to pay 200 prospective nurses to work as healthcare assistants before starting their nurse training (Health Education England, 2014a, 2014b).

However, there is no evidence to support this assertion, and Scotland has not taken this step. The assumption that previous caring experience would somehow offset the issues raised in the Francis enquiry instead needs to be tested, and there may be other more cost effective and empirically based methods of doing so. To this end this study collected data on previous caring experience so as to examine the relationship between those nurses with and without previous experience and various measures of subsequent performance. Specifically, participants were asked to self identify whether they had previous caring experience or not. If so participants were then asked to specify how much experience they had (in months) and where this experience had taken place so as to get more nuanced data on the quantity and type of experience referred to for the purpose of generalizing to other countries.

Mindfulness Training

Nurse education focuses primarily on the knowledge and skills students need to attain competence. Emphasis has shifted over the previous decades from methods of teaching to a more critical understanding about how students learn (Pashler et al., 2009; Snowden, 2013). This means facilitating learning that equips students for the real-world demands of professional practice and employment. As this environment can be emotionally difficult, a key related area of current scrutiny is the role affective factors play in learning – the interrelationship between emotion and cognition in learning (Hyland, 2009; Mikulas, 2011) – and how to address these within curricula.

Mindfulness is based on the precept of developing self-knowledge and enhancing well-being through becoming aware of the present moment, specifically how one responds to each situation that arises (Khoury et al., 2013). In the field of education it has become a progressively influential concept and focus of research. There is a body of evidence that attests to mindfulness' potential for facilitating the kind of broader learning around well-being and emotional intelligence that are relevant to coping with the realities of 21st Century professional nursing practice (White, 2014). What is currently unknown is whether mindfulness training is associated with higher emotional intelligence and/or better academic and clinical performance. In the first phase of data collection this study examined the relationship between EI and mindfulness. Later phases will explore performance.

Aim

The longitudinal study aims to identify the impact of emotional intelligence, previous caring experience and mindfulness training on student progression and graduate retention and achievement. The aim of this cross sectional study is to understand the relationships between these variables at baseline.

Hypotheses

1. Emotional intelligence will increase with age
2. Nurses and midwives with previous caring experience will show higher emotional intelligence than those without previous caring experience
3. Mindfulness will be associated with higher emotional intelligence
4. Men will have lower emotional intelligence than women
5. Nurses and midwives will have higher emotional intelligence than non-nursing and midwifery students.

Method

Design

Cross sectional analysis embedded within longitudinal quasi-experimental design. The cross section refers to the baseline data collection from the student cohort. The quasi-experimental design entailed non randomized hypothesis testing between groups.

Sample

Participants were 870 nursing and midwifery students and sixty-eight computing students attending day one of the first year of their degree programmes at two Scottish universities in September 2013. All students had been informed about the study in writing prior to the beginning of their course. One midwifery student declined to participate.

Data

All participants completed shortened version of the Trait Emotional Intelligence Questionnaire (TEIQue-SF) and Schutte's (1998) Emotional Intelligence Scale (SEIS). Demographic data (gender, age), previous caring and previous training in mindfulness were also collected. All data were collected on paper and transcribed to electronic databases for analysis.

Analytic Plan

Data were input into SPSS. Descriptives were constructed for all variables. Distributions were tested for normality. All hypotheses were subsequently tested utilising either parametric or non-parametric tests according to the results of normality tests.

Ethics

Ethical approval was gained from University of the West of Scotland and Edinburgh Napier University school ethics committees.

Results

The sample was predominantly young with over 2/3 under 26 and 786 female to 149 males (Fig. 1). Table 1 shows the majority were adult nursing students.

Almost half (n = 452) had had some previous caring experience. Of these, 48% got their experience form nursing home, 33% from hospital and 17% from home. 50 reported they had mindfulness training. Both measures of emotional intelligence showed positive kurtosis and negative skew. Fig. 2 illustrates the distribution for the TEIQ measure.

Analysis

Distributions of all responses to both EI measures were tested for assumptions of normality using boxplot. Extreme outliers were noted and confirmed with anomaly detection. However, despite removing these outliers and rerunning normality tests the assumptions of normality were still violated. The Z-score for kurtosis in SEIS was 7.5, nearly three times acceptable level (Laerd, 2014) (kurtosis = 1.245, standard error = 0.166). The Z-score for skewness was −4.57 (skewness

Table 1
Sample by programme.

Programme					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Adult	586	62.5	62.5	62.5
	Mental health	124	13.2	13.2	75.8
	Learning disability	29	3.1	3.1	78.9
	Children's	47	5.0	5.0	83.9
	Midwifery	83	8.8	8.9	92.7
	Computing	68	7.2	7.3	100.0
	Total	937	99.9	100.0	
Missing	System	1	.1		
Total		938	100.0		

−0.38, standard error 0.083); nearly double the acceptable limit. For the TEIQ the same pattern emerged with positive kurtosis (kurtosis = 0.79, standard error = 0.166) and negative skew (Skewness = −0.46, standard error = 0.083). EI scores were not normally distributed as confirmed by Shapiro-Wilk's test [TEIQ-SF (p < 0.001); [SEIS, p = 0.001]. Non-parametric tests were therefore utilized to test the study hypotheses.

1. Emotional intelligence will increase with age

A Kruskal-Wallis test was run to determine if there were differences in EI scores between the six groups of participants by age (17–20, 21–25, 26–30, 31–35, 36–40, over 40). The distributions of TEIQ-SF scores were statistically significantly different between groups, $H(3) = 14.468$, $p = .002$. The distributions of the SEIS score were also statistically significantly different between groups $H(5) = 11.388$, p = 0.044. Both measures increased with age. Fig. 3 shows the trend on SEIS, indicating increase in emotional intelligence with age.

2. Nurses with previous caring experience will show higher emotional intelligence than those without previous caring experience

As the sample for this hypothesis excluded computer students the normality tests were repeated in the nursing only sample (N = 869). Again the boxplots showed outliers and the distributions of both measures of EI appeared non-normal. EI scores were not normally distributed in either group as confirmed by Shapiro-Wilk's test
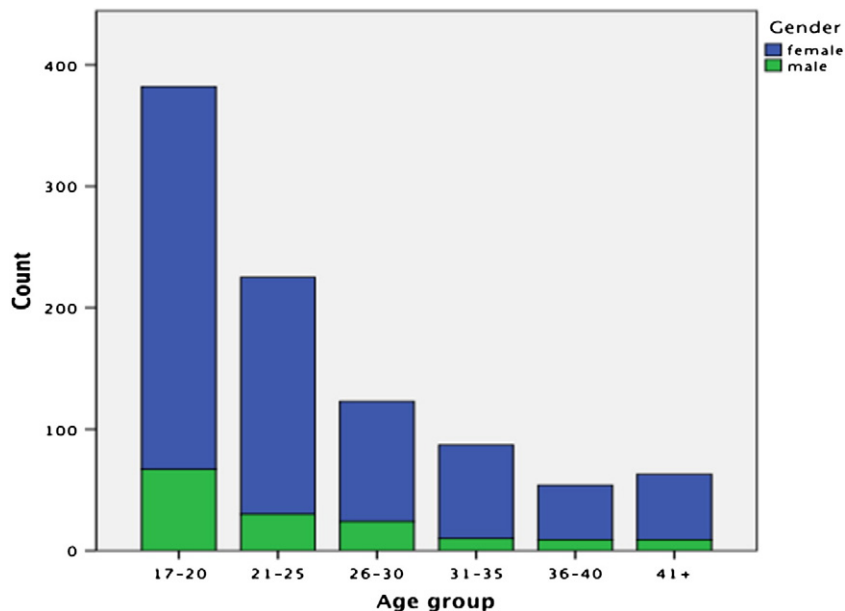

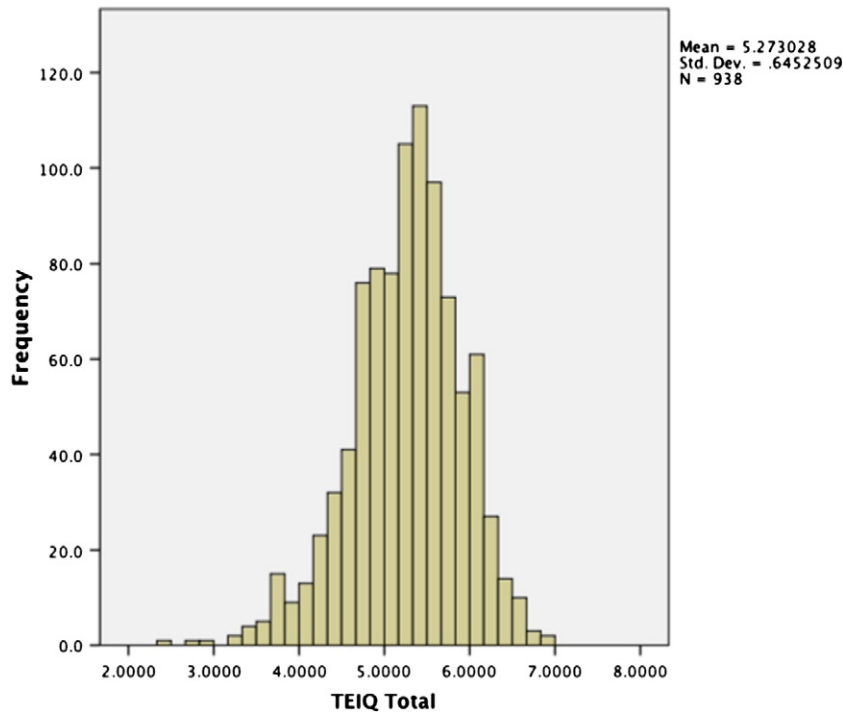**Fig. 1.** Sample age and gender.

Fig. 2. TEIQ total distribution.

(p < 0.001). This hypothesis was therefore also tested using non-parametric assumptions.

A Mann-Whitney U test was run to determine if there were differences in EI scores between nurses with previous caring experience and those without. Distributions of the scores for both groups were similar, as assessed by visual inspection. Median TEIQ-SF score was not statistically significantly different between the two groups, $U = 112,102$, $z = 0.938$, $p = .348$. Median SEIS scores were also not statistically significantly different, $U = 115,194.5$, $z = 1.863$, $p = 0.063$. In fact means (SD) were virtually identical on TEIQ-SF [yes = 5.3 (0.63), no = 5.33 (0.60)] and SEIS [yes = 3.87 (0.42), no = 3.86 (0.42)].

Previous caring experience was not associated with higher emotional intelligence in this sample.

3. Mindfulness will be associated with higher emotional intelligence

This hypothesis was tested with Mann Whitney U test due to the normality issues discussed above. Median TEIQ-SF was not statistically significantly different between those with experience of mindfulness and those without, $U = 22,980$, $z = 0.864$, $p = 0.388$. Median SEIS was statistically significantly different between those with experience of mindfulness and those without, $U = 25,115.5$, $z = 2.05$, $p = .039$. In this sample previous mindfulness training was not associated with
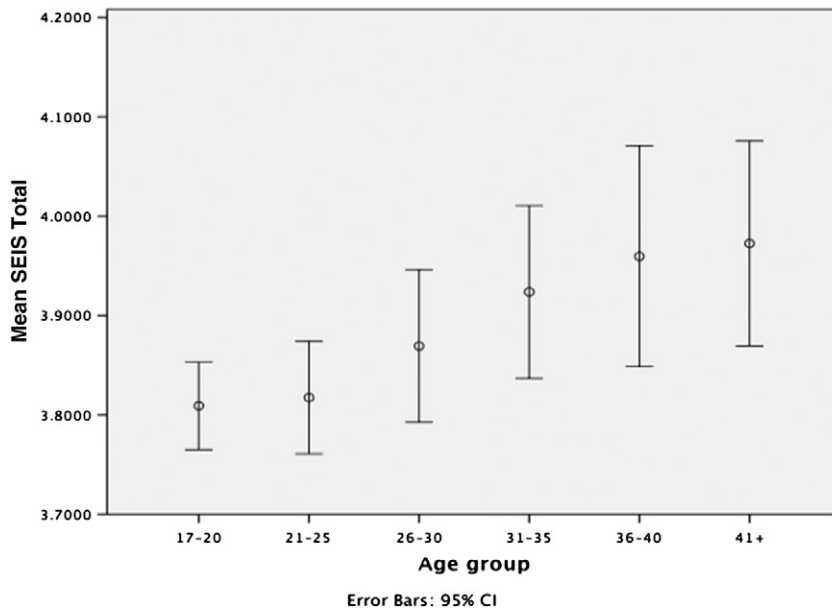

Fig. 3. Emotional intelligence and age group.

higher trait emotional intelligence but was associated with higher ability EI.

4. Men will have lower emotional intelligence than women

Although the distribution of responses to both EI measures was normal in males it was not in females as assessed by Shapiro-Wilk test ($p < 0.001$). A Mann-Whitney U test was run to determine if there were differences in EI scores between males and females. Median TEIQ-SF was statistically significantly different between males and females, $U = 44,931$, $z = -4.509$, $p < .001$. Median SEIS was statistically significantly different between males and females, $U = 44,744$, $z = -5.563$, $p < .001$. The null hypotheses were rejected in both EI measures. Women had significantly higher emotional intelligence than men in this sample.

5. Nurses will have higher emotional intelligence than non-nursing students.

A Kruskal-Wallis test was run to determine if there were differences in EI scores between programme of study. Distributions of TEIQ-SF scores and SEIS scores were not similar for all groups, as assessed by visual inspection of boxplots. The distributions of TEIQ-SF scores were statistically significantly different between groups, $H(5) = 46,496$, $p < .001$ (Fig. 4). The distributions of the SEIS score were also statistically significantly different between groups $H(5) = 33.309$, $p < 0.001$. The differences in both tests could be accounted for by the low scoring of the computing students in comparison to all the nursing student groups.

In summary, emotional intelligence was found to significantly increase with age. Previous caring experience was not associated with any difference in EI scores. Previous mindfulness training was not

associated with trait EI but was associated with higher ability EI. Females scored significantly higher than males on both measures of EI, and nursing students showed significantly higher EI scores than computing students on both measures.

Discussion

It is unknown if emotional intelligence is associated with success in this cohort. This will be established over the course of the ongoing study by analysing co-variables such as retention, clinical and academic achievement. Nevertheless, the findings presented here show that previous caring experience is not associated with increased emotional intelligence in this sample. Mean scores between the groups in both measures were virtually identical.

Caution needs to be exercised here as the previous caring experience reported included a large range of activity including caring for relatives at home. However, over 81% reported their experience included hospital and/or nursing home activity. This type of activity would reasonably be considered as the type of experience the UK government and NMC is suggesting should be encouraged in order to mitigate some of the criticisms in the Francis report. Current pre-nursing experience pilots designed to facilitate this type of experience have been described as 'bold' (p2) by the authors of the first report into these pilots (Health Education England, 2014a, 2014b), and there is intuitive plausibility for some form of pre-selection process grounded in 'real world' nursing experience. However, a more critical assessment of these pilots would describe them as expensive, politically motivated and lacking in evidence.
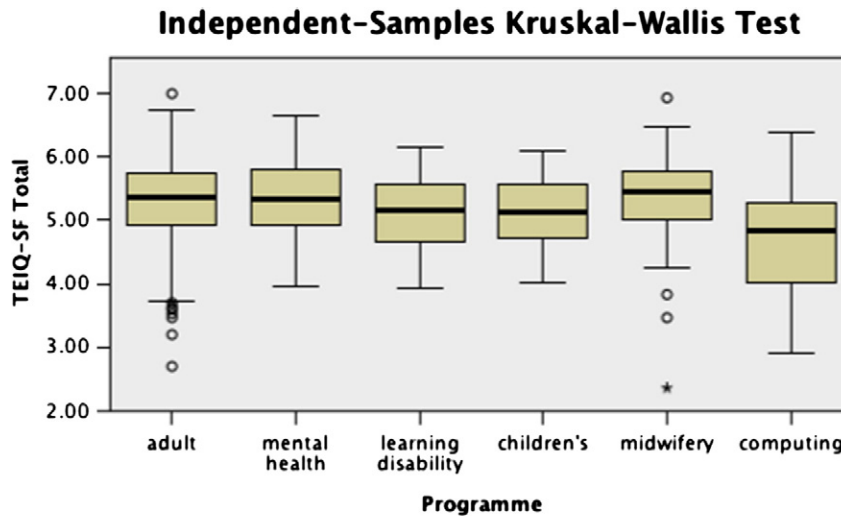
Total N	937
Test Statistic	46.496
Degrees of Freedom	5
Asymptotic Sig. (2–sided test)	.000

1. The test statistic is adjusted for ties.

Fig. 4. Median emotional intelligence scores by programme of study.

By contrast selecting students on the basis of evidence-based criteria would provide a more economically sustainable and long-term solution to enhancing recruitment. Again we stress that it remains unknown in this sample whether EI will show any subsequent association with future performance. Nevertheless baseline results show previous nursing experience is not associated with any difference in relation to emotional intelligence. If EI is subsequently shown to be associated with better performance, and many studies suggest that it is (Bar-On, 2006; Schutte et al., 2001; Van Rooy and Viswesvaran, 2004), then prior nursing experience would be irrelevant in this sample.

Instead, the sample of nurses scored higher than average across the board. Mean scores on TEIQ-SF in the Cooper and Petrides (2010) paper were all within 0.2 points of 5 for males and females suggesting that 5 is probably a useful midpoint benchmark. On this assumption all the nurses in our study were above average and the computing students below (Table 2). On the SEIS Schutte et al. (2009) conducted a meta review of studies utilizing the scale and although they did not average all the scores because of the variation in sample types that means grouped around 3.6. This implies the nurses in our sample again scored above this average and the computing students below (Table 2). It is therefore reasonable to explore the factors that may impact upon emotional intelligence in order to better facilitate them if possible. In this study we found significant differences in relation to mindfulness, age and gender. These are discussed in turn.

Mindfulness training was associated with higher EI as measures by SEIS but not TEIQ-SF. In the introduction the distinction between the measures was explained as being grounded in theoretical distinctions between viewing EI as ability or a trait. The SEIS is considered an ability measure, associated with cognition as opposed to personality. This makes sense in interpreting this finding, as mindfulness is a cognitive mechanism designed to help people focus on the present (Khoury et al., 2013). Although causality is not possible to establish it is rational to suggest that mindfulness training would be expected to positively impact upon an ability measure of EI. From a practical perspective, in line with the findings from this study, it also raises the possibility that mindfulness training may be a better way of enhancing emotional and cognitive abilities than pre-nursing programmes.

In relation to age and gender, this study found that being female and increasing age were both associated with significant increase in emotional intelligence. These are common findings in the literature (Kafetsios, 2004; Mayer et al., 2008), but their practical benefit to nursing recruitment is less obvious. For example on face value it would seem that older women would therefore possess a superior emotional skillset and should be prioritised for recruitment. However, this is unknown, and a key reason for conducting the longitudinal elements of the current study is to explore the more nuanced elements of these findings.

For example a related element of our current work considered the psychometric properties of the EI measures. As discussed the SEIS and TEIQ are ostensibly measuring different global constructs, one cognitive, the other personality (Petrides, 2011). Each measure claims to also consist of discrete factors, such as appraising, utilizing and discriminating emotions in SEIS (Ng et al., 2009; Qualter et al., 2010) and self-control, emotionality, well-being and sociability in the full version of TEIQ (Petrides, 2009), though not necessarily the TEIQ-SF (Petrides, 2006). However, gender differences are not explained by these distinctions.

In order to investigate the psychometric properties of the TEIQ-SF we conducted a concurrent Rasch and confirmatory factory analysis (CFA) (Snowden et al., 2014). The CFA showed a different four factor structure to the *a priori* suggestion proposed by Petrides (2006). This is quite common in the factor analytic literature. Factor interpretations are rarely replicated in different samples. However by using Rasch analysis (Bond and Fox, 2007) at the same time we also discovered a secondary factor. Rasch analysis tests the assumption that the data is consistent with a unidimensional model (Engelhard, 2012). There should not be a secondary factor if the measure is consistent with Petrides' 'global trait' assumption. By finding a secondary factor the Rasch analysis showed that five of the TEIQ-SF items were not measuring the same construct as the rest of the items.

The key finding from comparing both these analyses was that the secondary factor in the Rasch analysis contained exactly the same items as the second factor in the CFA. Given these two measurement techniques are grounded in entirely different philosophies any convergence in outcome is worth close investigation. The secondary factor consisted of the following five TEIQ-SF items:

5. I generally don't find life enjoyable.
12. On the whole I have a gloomy perspective on most things.
13. Those close to me often complain I don't treat them right.
16. I often find it difficult to show my affection to those close to me.
28. I find it difficult to bond well even with those close to me.

These items are all associated with negative (disconnected) aspects of sociability and mood, and would not intuitively be expected to be associated with positive relationships in nursing. This is being investigated as the performance data on this cohort emerges. Interestingly, removal of these five items from TEIQ-SF totals resulted in elimination of the mean difference between males and females. This implies that the gender difference associated with the TEIQ-SF may be a function of different gender specific responses to *just* these five items. In our dataset females scored substantially more positively on these five items than males. This finding will be monitored closely as the study progresses. Further understanding of the relationship of these five items to student progression and completion of nursing and midwifery education will enhance knowledge about the role of this factor should the TEIQ-SF be used for selection purposes.

Limitations

A number of limitations to the present study must be noted. First, the study is reliant on self-report measures. These have long been known to be subject to response bias (McGrath et al., 2010). Also, there were only 68 in the control group and as such it is difficult to claim the comparative findings utilizing this sample would be replicable. A related limitation was the non-normal distribution of the responses to both EI measures. This assumptions of normality were based on z-tests and Shapiro-Wilk test (Laerd, 2014). Other authors have been more lenient, Petrides being of particular note here. For example he has cited Curran, West, and Finch's (1996) criteria of skewness and kurtosis absolute values of 0 to 2, and 0 to 7 respectively as demonstrating sufficient univariate normality (Cooper and Petrides, 2010). Because of our more stringent criteria that incorporated standard error measurement

Table 2
Mean emotional intelligence scores by programme of study.

Report			
Programme		TEIQ-SF Total	SEIS Total
Adult	Mean	5.32	3.87
	Std. deviation	.62	.42
Mental health	Mean	5.37	3.87
	Std. deviation	.58	.46
Learning Disability	Mean	5.14	3.79
	Std. deviation	.61	.35
Children's	Mean	5.14	3.79
	Std. deviation	.53	.32
Midwifery	Mean	5.37	3.94
	Std. deviation	.67	.42
Computing	Mean	4.74	3.57
	Std. deviation	.75	.47
Total	Mean	5.27	3.85
	Std. deviation	.65	.43

we could not use parametric tests. However, despite these limitations where the results are significant they are worthy of further exploration.

The second phase of data collection, repeating the TEIQ-SF and SEIS at the beginning of second year and the first comparison of performance data began September 2014.

Conclusion

Emotional intelligence is a well-developed construct that is logically consistent with the social and relational aspects of nursing. It makes sense that if emotional intelligence can be identified and nurtured then nursing would benefit, particularly in relation to current anxieties around care and compassion. However, this is not known. This paper has presented data from the first phase of a longitudinal study designed to explore the relationship between emotional intelligence and nursing performance in more detail. Consistent with other studies it found that emotional intelligence scores increased with age, and that females scored higher on EI measures than males. Nurses and midwives scored higher on EI than non-nursing students. Mindfulness training was associated with ability but not trait EI.

Most notably, previous nursing experience was not associated with any difference in EI scores. Mean scores on both EI measures were virtually identical between those with previous nursing experience and those without. Whilst it remains to be seen if these findings explain any subsequent variance in performance, it suggests that there may be more important prerequisites to successful nursing recruitment than prior nursing experience.

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