

ORIGINAL RESEARCH

Stress, coping and satisfaction in nursing students

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Abstract

Aim. This article is a report of a study conducted to explore the relationship between sources of stress and psychological well-being and to consider how different sources of stress and coping resources might function as moderators and mediators on well-being.

Background. In most research exploring sources of stress and coping in nursing students, stress has been construed as psychological distress. Sources of stress likely to enhance well-being and, by implication, learning have not been considered.

Method. A questionnaire was administered to 171 final year nursing students in 2008. Questions were asked to measure sources of stress when rated as likely to contribute to distress (a hassle) and rated as likely to help one achieve (an uplift). Support, control, self-efficacy and coping style were also measured, along with their potential moderating and mediating effects on well-being, operationalized using the General Health Questionnaire and measures of course and career satisfaction.

Findings. Sources of stress likely to lead to distress were more often predictors of well-being than were sources of stress likely to lead to positive, eustress states, with the exception of clinical placement demands. Self-efficacy, dispositional control and support were important predictors, and avoidance coping was the strongest predictor of adverse well-being. Approach coping was not a predictor of well-being. The mere presence of support appeared beneficial as well as the utility of that support to help a student cope.

Conclusion. Initiatives to promote support and self-efficacy are likely to have immediate benefits for student well-being. In course reviews, nurse educators need to consider how students' experiences might contribute not just to potential distress, but to eustress as well.

Keywords: coping, eustress, nursing education, stress, survey

Introduction

Stress can be the result of 'too much or too little arousal resulting in harm to mind and body' (Schafer 1992, p. 14).

There is a growing body of evidence on stress among nurses and nursing students and its effect on well-being (Beck & Srivastava 1991, Parkes 1994, Heaman 1995, Jones & Johnston 1997, 1999).

Background

Some of the sources of stress experienced by nursing students are experienced by students generally. Sources of academic stress include examinations and assessments (Kipping 2000, Howard 2001) and the timing of examinations has a particular impact on the work-life balance of female students with children. The latter is more common among nursing students than among other students (Pryjmachuk & Richards 2007). In relation to workload, nursing students also experience longer hours of study and an associated lack of free time (Jones & Johnston 1997, Mahat 1998, Lo 2002).

The main sources of stress relate to experiences on placement. Some of these are common to those reported by practising nurses, such as working with dying patients; conflicts with other staff; insecurity about clinical competence; interpersonal problems with patients; and work overload (Rhead 1995, Snape & Cavanagh 1995). Additional stressors faced by nursing students include developing clinical skills and, more broadly, a perceived lack of practical skills (Mahat 1996, 1998). Time pressures within which they are expected to operate on placement, together with evaluations of clinical experience, are frequently reported (Jack 1992). Status as a student on placement has been reported, and aligned to this are nursing staff attitudes towards students on placement (Kirkland 1998, Howard 2001). Initial placements also produce disproportionate anxiety (Jack 1992).

Coping with stress

In Lazarus and Folkman's (1984) Transactional model of stress, the primary appraisal refers to the initial perception about a stressor and whether it is judged to be positive (leading to eustress), negative (leading to distress) or benign. The secondary appraisal refers to the coping responses the individual draws on. Interacting between the perception of stressors and the individual's response are a number of moderators. These include self-efficacy (Schaubroeck & Merritt 1997, Lo 2002); perceived control, support and coping style (Folkman 1997, Van der Doef & Maes 1999).

Lazarus and Folkman (1987) identified two types of coping – problem-based and emotion-based. Both can be used to effect, but emotion-based coping is more frequently expressed in ineffective ways. Ceslowitz (1989) found a beneficial effect on clinical performance and the health consequences of stress as a result of problem-based coping, and others claim similar benefits for nursing student learning, performance and well-being (Lindop 1999, Tully 2004). Chang *et al.* (2006) summarize evidence that emotion-focused coping is more likely to be detrimental to health, and Lambert *et al.* (2004)

found that escape-avoidance coping correlated with reduced mental health in a sample of Japanese nurses.

Lo (2002) explored stress and coping in over 100 Australian and New Zealand nursing students in a 3-year longitudinal study. In addition to finding similar results to Chang *et al.* on coping, Lo found that friends, family and spouses or partners were important sources of emotional support and often, with family and spouses, financial support too. Payne (2001) claimed that support available rather than type of coping used was the strongest predictor of nurses' well-being. Lucas *et al.* (1993) attributed the low psychological distress and high job satisfaction among nurses working on intensive and critical care units to the level of support available. This, in turn, was attributable to the nature of the work. Other researchers also claim a beneficial effect among nurses who have a strong sense of control in the work they do. Boey (1999), for example, found that nurses in Singapore who scored high on well-being reported strong internal locus of control, although they were also much more likely to report strong family support.

As with control, support and coping behaviour, students high in self-efficacy are much more likely to achieve in their academic and clinical work (Laschinger 1996, Andrew 1998). However, it is important to note that self-efficacy, as well as being a dispositional quality it is also affected by experience. Greenglass and Burke (2000), for example, found that nurses working in Canadian hospitals undergoing change were much more likely to report a strong sense of self-efficacy if they believed that they had been adequately consulted and informed on the need for change, compared with those nurses who believed that they had not been consulted. It is possible, however, that it was the self-efficacy characteristic that affected how those changes were appraised, rather than variations in how different managers introduced the changes affecting self-efficacy. In short, a causal relationship cannot be assumed, as measures of support, control, coping style and self-efficacy are likely to be affected by, and to affect, what is perceived as a source of stress and, in turn, the kind of impact it has on well-being.

Wu *et al.* (2007) explored the relationship between burnout and professional efficacy in 495 nurses in China. This is one of the few studies in which these different coping resources and moderators were considered. An inverse relationship was found between control and emotional exhaustion. Younger nurses were more likely to report burnout, and those low in educational status were more likely to report low professional efficacy. Interestingly, control, support and coping style were strong predictors not just of burnout, but also of professional efficacy.

Measuring stress

Many of the inventories used to measure sources of stress in nursing students have been accused of not being psychometrically rigorous (Jones & Johnston 1999).

Moreover, what is common to all existing inventories exploring sources of stress [including the Beck and Srivastava (1991) Stress Inventory; Expanded Nursing Stress Scale (Clarke & Ruffin, 1992); Student Nurse Stress Inventory (Jones & Johnston 1999) and the Stress in Nursing Students questionnaire (Deary *et al.* 2003)] is that they ask respondents to rate a range of stressors in terms of the extent to which they are distressing. The assumption is that, if course and placement experiences are reported as less distressing, then students' well-being, insofar as it is caused by the demands of the course, will be healthier and they will learn more. Such an approach ignores the fact that those stressors may, at different times, contribute to eustress or a level of stress that enhances performance. Deary *et al.* (2003), for example, measured burnout and stress in nursing students and found increased perceived stress combined with increased levels of personal achievement, suggesting that stress experiences can contribute to eustress.

Gibbons *et al.* (2009a) developed and tested an inventory on sources of stress in nursing students. This instrument required respondents to rate sources of stress twice – once in terms of their potential to cause distress (a hassle) and once in terms of their potential to help the person to achieve (an uplift). An exploratory factor analysis revealed that the sources of stress were grouped into three factors: Learning and teaching, Placement-related and Course organization. Nursing students reporting caseness on the General Health Questionnaire, or who were at risk of developing a transient stress-related illness, did *not* report sources of stress as more distressing than those not reporting caseness, but did rate those sources of stress as providing far fewer opportunities to achieve. This finding challenges the traditional view that reducing distress will improve well-being; rather, what is more important is perceiving opportunities to achieve. Such a result questions the assumption that stress denotes psychological distress, a conception common to much earlier research.

The United Kingdom context

Across a range of professions, nurses top the league table for female suicides (Hawton *et al.* 2002). The profession has also experienced recruitment problems (Buchan & Seccombe 2003) and stress has also been linked to attrition among nursing students (Deary *et al.* 2003). Given the impact of

stress in the nursing profession, it is imperative that attempts are made to understand the factors that give rise to it and which are critical to good coping in nursing students. This is the first UK study that attempts to consider the potential positive and negative effects of perceived stress on coping, well-being and satisfaction.

The study

Aim

The aim of this study was to explore the relationship between sources of stress and psychological well-being and to consider how different sources of stress and coping resources might function as moderators and mediators on well-being.

Two research questions were addressed:

What is the relationship between sources of stress, rated as a potential for both eustress and distress, and well-being in nursing students?

What moderating and mediating role do self-efficacy, control, support and coping style have between perceptions of stress and well-being?

Design

A questionnaire-based study was carried out on data collected in 2008. Well-being was operationalized through measures on the General Health Questionnaire (Goldberg 1978) and course and career satisfaction. The Transactional model of stress underpinned the assumptions tested. The model allows for a stressor to be rated in terms of its potential negative effects (distress) and its positive effects (eustress). Both were measured along with some important coping resources – self-efficacy, control, support and coping style – and the effect they had as moderators and mediators between the appraisal of sources of stress and their effect on well-being.

Participants

A convenience sample of 280 nursing students were invited to take part by the lead researcher at the start of a course lecture and 171 (61%) consented. The inclusion criteria were students from all nursing specialities in one institution in the final year of their programme. For age, there were 15 missing values and for gender 20 missing values. For the remaining participants, 32% ($n = 50$) were under 21; 40% ($n = 62$) were 22–30; 23% ($n = 36$) 31–40 and 5% 41–50 ($n = 8$); and 87% were women ($n = 136$) and 9% were men ($n = 15$).

Measures

Index of Sources of Stress in Nursing (ISSN, Gibbons et al. 2009a, 2009b)

This instrument consisted of 29 items measuring sources of stress in three factors – learning and teaching, placement-related and course organization demands, and were followed by items measuring support. A continuous response scale was used, with each item rated twice – once from its perceived distress, called a ‘hassle’, and once from its perceived eustress, called an ‘uplift’. A non-applicable option was also included. A rating scale from 0 to 5 was used, 0 indicating that it was no source and 5 an extreme source of distress or eustress.

This was followed by four items generated by one of the authors measuring context and dispositional control and a further four measuring course and career satisfaction. Respondents answered the support, control and satisfaction items on a 5-point Likert response scale from strongly agree to strongly disagree. All these items had earlier undergone reliability and validity analyses: Cronbach’s alpha for these item groups as factors for control, support and satisfaction exceeded 0·7 and they were judged to have face validity.

The three hassle and uplifting factors and the support factor had been subjected to an exploratory and later confirmatory factor analyses (Gibbons et al. 2009a, 2009b). The exploratory factor analysis on the support items showed that they loaded well on to one factor, explaining 53·4% of the variance in hassles ratings and 63·3% in uplifting ratings.

Generalized Self-Efficacy Scale (Schwarzer 1992)

This scale consists of ten items and participants respond on a 4-point scale from ‘not at all true’ to ‘exactly true’. It is a context-free measure of self-efficacy and has been used in numerous studies, with Cronbach’s alpha ranging from 0·75 to 0·91, and its stability has been established in several longitudinal studies (e.g. Schwarzer 1992, Schwarzer & Schröder 1997).

General Health Questionnaire (GHQ, 12-item version) (Goldberg 1978)

This is an established measure of transitory distress. A scoring scale of 0, 0,1,1 was used, corresponding to the four response options per item, of which respondents select one. The response options refer to degrees of change in normal day-to-day functioning and emotional states. A total score of 3 or higher indicates ‘caseness’ or risk of developing a transitory stress-related illness. The internal validity and test-retest reliability of this version have been demonstrated to be adequate or good in numerous studies (Goldberg & Williams 1988).

Marlowe-Crowne Social Desirability (10-item version)

(Crowne & Marlowe 1960)

This measure required students to choose whether a series of statements were true or false for them. A score of 1 was given for each answer concordant with the scoring algorithm. The tool measures response tendency and was used to assess possible social desirability bias across the instrument. Adequate validity and reliability have been demonstrated across numerous studies (Crowne & Marlowe 1960 and McCrae & Costa 1983).

Brief COPE (Carver 1997)

This 28-item scale measures a broad range of coping responses. The items are context-free and respondents answer on a 4-point scale from ‘I usually don’t do this at all’ to ‘I usually do this a lot’. Carver recommends that researchers using the instrument subject it to their own factor analysis. This was done in a previous study and four coping factors were identified – approach coping; avoidance coping; altering consciousness and seeking support. They explained 57·99% of the variance in coping scores. Cronbach’s alpha exceeded 0·8 for each factor and they were judged to have face validity (Gibbons 2008).

The remaining items measured demographics.

Data collection

After being briefed during a course lecture on the project by the researcher, students interested in taking part were invited to attend a computer suite later that week. At that point, the aims were reiterated along with the ethical considerations.

Ethical considerations

The study was approved by a university ethics committee. Participation was voluntary and students were told that they were free to leave at any time, that being involved would have no effect on course progression, and that confidentiality would be maintained at all times. The researcher was unknown to the students. This was important as it could have introduced a power dimension affecting students’ decisions to participate.

Data analysis

The data were analysed using SPSS version 15.1 (SPSS Inc., Chicago, IL, USA) using hierarchical multiple regression analyses. The Transactional model of stress (Lazarus & Folkman 1984) informed the order in which the variables were entered into the analyses. The sources of stress relating to primary appraisal were entered in block one along with

measures on gender, age and social desirability. The secondary appraisal relates to coping resources, and coping and moderator factors were entered next: support rated as a hassle and as an uplift; the four cope factors; dispositional control, context control and self-efficacy. Entered in the final block were the moderators that had been identified following testing for interaction effects between each predictor and potential moderator variable.

To establish the moderators that were the result of interaction effects, separate regressions were carried out following the guidelines proposed by Baron and Kenny (1986). The three sources of stress factors and support as a hassle were combined individually with each of the moderator variables, i.e. with support as an uplift; with self-efficacy; with dispositional control and context control; and with each of the four cope factors. Those interaction variables that explained a statistically significant amount of variance in well-being were fed into the final block of the hierarchical multiple regression. If the moderator identified by this interaction process was the product of random error, it would be unlikely to explain a statistically significant amount of variance when tested in the final multiple regression analysis for each well-being measure.

The variables with the lowest Beta values were then removed one at a time and the regression analysis was repeated until the final model was judged to be the most parsimonious, i.e. until the Adjusted R^2 approximated the R^2 with the greatest amount of variance explained. In each case, the assumptions for using regression were checked and

confirmed. The regression coefficients Table for the final model in each case is shown below.

Results

The model explained 47.9% of the variance in GHQ scores. The Beta values in Table 1 indicate the amount of variance explained. As avoidance coping increased, so did GHQ scores. As support, self-efficacy, dispositional control and the interaction variable – 'learning and teaching hassles and self-efficacy' – increased, scores on GHQ decreased.

Gender was a statistically significant predictor of GHQ in block 1, but not in block 2 of the regression. Each of the different types of coping and self-efficacy found to be statistically significant in block 2 was separately tested as a possible mediator. Only self-efficacy was statistically significant when tested. Figure 1 shows the mediating effect of self-efficacy between gender and GHQ. Table 2 shows the mediated and unmediated values.

The unmediated path in Table 2 suggests that gender is a strong predictor of GHQ – being female was associated with higher GHQ score. However, Figure 1 suggests that self-efficacy might be the predictor that can explain this apparent relationship. When both gender and self-efficacy were tested in regressions, gender was no longer statistically significant (the unmediated path).

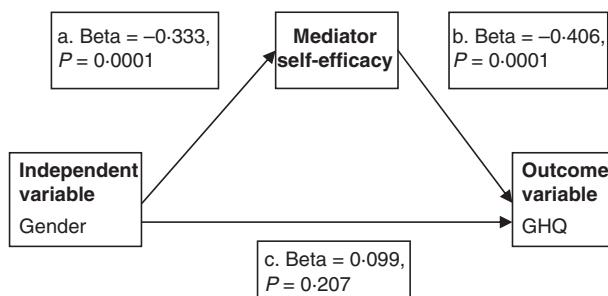
In relation to the predictor, 'learning and teaching hassles-self-efficacy', in Table 1, Figure 2 shows that when self-efficacy is low (the top line), as learning and teaching hassles

Table 1 Multiple regression with General Health Questionnaire (GHQ)

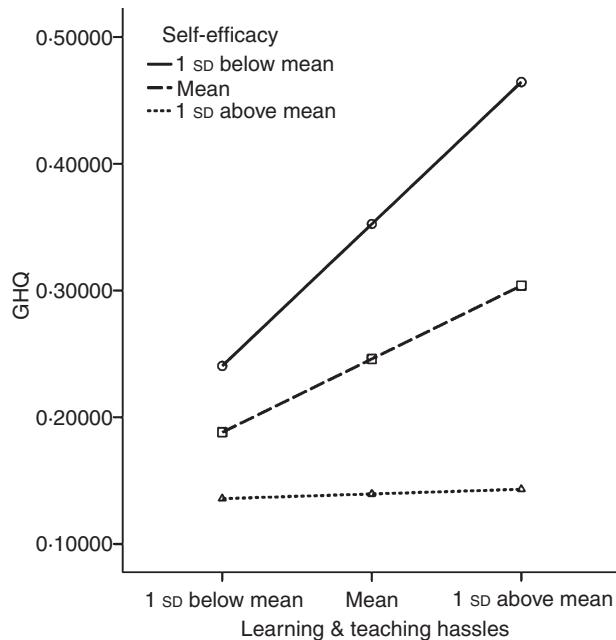
Model	Unstandardized coefficients		Standardized coefficients		
	B	SE	Beta	t	Sig.
(Constant)	0.408	0.307		1.329	0.186
Learning and teaching hassles	0.076	0.030	0.229	2.524	0.013
Learning and teaching uplifts	-0.023	0.031	-0.062	-0.730	0.467
Placement-related uplifts	0.054	0.034	0.124	1.589	0.114
Social desirability	0.173	0.121	0.095	1.437	0.153
Gender	0.072	0.058	0.084	1.244	0.216
Age	0.040	0.021	0.125	1.852	0.066
Avoidance coping	0.128	0.037	0.266	3.447	0.001
Support hassles	-0.067	0.028	-0.239	-2.360	0.020
Support uplifts	-0.090	0.030	-0.294	-3.012	0.003
Self-efficacy	-0.201	0.055	-0.264	-3.671	<0.001
Dispositional control	-0.058	0.024	-0.182	-2.427	0.017
Learning and teaching hassles – Self-efficacy moderator	-0.177	0.064	-0.179	-2.771	0.006
Learning and teaching hassles – Avoidance coping moderator	0.071	0.044	0.112	1.616	0.109

Dependent variable: GHQ.

$R^2 = 0.526$, Adjusted $R^2 = 0.479$.

**Figure 1** Self-efficacy mediator.**Table 2** Unmediated and mediated values between gender and General Health Questionnaire

	Beta value	P value
Unmediated path	0.234	0.004
Mediated path	0.099	0.207

**Figure 2** Slope graph testing the interaction between self-efficacy and learning and teaching hassles on General Health Questionnaire (GHQ).

increase, so too are GHQ scores. As learning and teaching hassles increase, for those average in self-efficacy (the middle line), there is a moderate increase in GHQ scores. However, for those high in Self-efficacy (the bottom line), increases in learning and teaching hassles did not lead to any increase in GHQ scores. This suggests that self-efficacy acts as a buffer, protecting the individual against the affects of this source of stress on well-being, as measured by GHQ.

The model explained 36.7% of the variance in scores on course and career satisfaction. As illustrated in Table 3, the more Altering consciousness, possibly a type of avoidance, was used, the lower were scores for course and career satisfaction. Similarly, the more placement-related demands were perceived as distressing, the lower were scores for course and career satisfaction. This was true of the two moderators. For the remaining predictors, statistically significant positive correlations were observed.

In relation to the predictor 'Course organization hassles-Dispositional control', in Table 3, Figure 3 shows that when Dispositional control is high (the top line), as course organization hassles increase, course and career satisfaction decrease. When Dispositional control is average (the middle line), as course organization hassles increase, course and career satisfaction show a moderate increase. When Dispositional control is low (the bottom line), as course organization hassles increase, career and course satisfaction increase.

Discussion

This study represented an attempt to explore the sources of stress that are likely to contribute not just to distress but to eustress as well and to look at the relationship between sources of stress and well-being. Most earlier research with nursing students only explored stress as a potential for distress, but not eustress. This is the first study to explore the role of coping and self-efficacy not just as a predictor of well-being and satisfaction, but in terms of the extent to which these predictors might have a moderating and mediating role with perceived sources of stress as a potential for eustress and distress.

Study limitations

There were some limitations to the study. It relied on self-reported responses and respondents were final-year students. They were selected because they had more academic and clinical experience to draw on, but that very experience would be likely to affect their appraisals and responses compared with students earlier in their studies. A longitudinal methodology, beginning with first year students, would negate this problem and the weaknesses associated with the cross-sectional design used here.

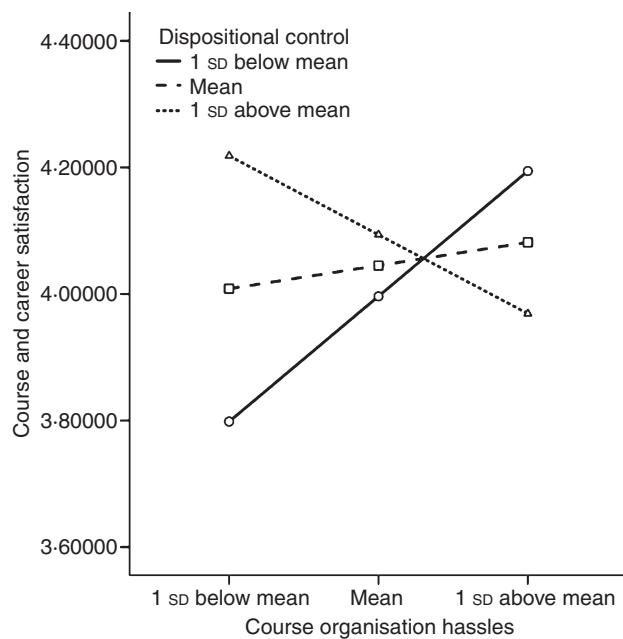
Correlations between predictor variables

Correlations between the predictors – sources of stress and coping resources and GHQ (Table 4) – support the assumptions of the transactional model (Lazarus & Folkman 1984).

Table 3 Multiple regression with course and career satisfaction

Model	Un-standardized coefficients		Standardized coefficients		t	Sig.
	B	SE	Beta	B		
(Constant)	1.972	0.622			3.171	0.002
Placement-related hassles	-0.232	0.066	-0.269		-3.505	0.001
Course organization hassles	0.258	0.074	0.268		3.497	0.001
Age	0.126	0.064	0.138		1.966	0.051
Social desirability	0.755	0.379	0.137		1.990	0.049
Support uplifts	0.173	0.070	0.187		2.489	0.014
Altering consciousness	-0.390	0.095	-0.279		-4.106	0.001
Context control	0.223	0.082	0.190		2.710	0.008
Course organization hassles	-0.194	0.079	-0.162		-2.438	0.016
Dispositional control moderator						
Placement-related uplifts	-0.209	0.109	-0.129		-1.921	0.057
Seeking support moderator						

Dependent Variable: Course and Career Satisfaction.

 $R^2 = 0.406$, Adjusted $R^2 = 0.367$.**Figure 3** Slope graph testing the interaction between dispositional control and course organization hassles on course and career satisfaction.

As the factors – learning and teaching demands, placement demands and course organization demands – rated as hassles increased, so did GHQ scores. When the factors were rated as uplifts, increased GHQ scores fell.

Whilst there were fewer statistically significant correlations with course and career satisfaction (Table 4), those that were statistically significant concerned placement demands, but not course organization or learning and teaching. This suggests that placement experiences play a critical role in students' sense of satisfaction. So too does the quality of

Table 4 Descriptive data and correlations between factors, support and well-being measures

Factor/predictor	GHQ	Well-being measures		
		Course and career satisfaction	Mean	SD
Learning and teaching hassles	0.308*	-0.121	2.776	0.815
Learning and teaching uplifts	-0.292**	0.133	1.901	0.967
Placement-related hassles	0.225**	-0.228**	2.241	0.916
Placement-related uplifts	-0.158*	0.184*	2.885	0.724
Course organization hassles	0.226**	0.020	3.972	0.647
Course organization uplifts	-0.168*	0.043	2.442	0.756
Support hassles	0.173*	-0.096	1.667	0.969
Support uplifts	-0.246**	0.276**	3.588	0.907
Self-efficacy	-0.411**	0.152	2.918	0.811
Dispositional control	-0.453**	-0.054	3.317	0.815
Context control	-0.417*	0.294**	2.918	0.674
Approach coping	0.149	-0.229**	2.299	0.659
Avoidance coping	-515**	-0.273**	1.773	0.563
Altering consciousness	0.114	-0.352**	1.627	0.567
Seeking support	0.052	-0.079	2.226	0.704

* $P < 0.05$.** $P < 0.01$ ($n = 159-171$, Pearson's rho).

support available: overall, the more support was rated as a hassle, the poorer were scores for well-being. The more support was rated as an uplift, the healthier were well-being measures. These results and those for correlates with control

and different types of coping suggested that a multiple regression analysis was appropriate.

General Health Questionnaire

As shown in Table 1, learning and teaching demands, when reported as a hassle but not an uplift, explained a statistically significant variance in GHQ scores. An anomalous finding was that while sources of support, when rated as a hassle or potential distress, did explain a statistically significant variance in GHQ scores, the relationship was negative – the more support was rated as a hassle, the lower or *healthier* were the scores on GHQ. It is possible that the less a given coping resource is used, the more a different coping resource is used; it might be that good coping in another area not measured here explained this result. It might also be that while some of the sources of support were rated as a hassle, the mere presence of support might have a beneficial effect (accounting for the lower corresponding scores on GHQ). Karasek and Theorell (1990) call this the additive effect. It is important also to be aware that experiences and relationships outside the course also contribute to GHQ.

Mediation

In terms of evidence of mediation (Figure 1 and Table 2), the results suggest that gender is a strong determinant of levels of self-efficacy, and that self-efficacy, in turn, is an important influence on psychological health, as measured by the GHQ. This suggests that self-efficacy plays an important mediating role in explaining the apparent relationship between gender and GHQ score.

Moderation

Ratings of learning and teaching as a hassle and measures on self-efficacy both separately explained a statistically significant amount of variance in GHQ scores. However, as Figure 2 illustrates, as a combined interaction, they explained an additional amount of variance. The negative Beta value reported in Table 1 suggests that while there was some benefit to having a strong self-efficacy in general (as indicated by the statistically significant variance it explained in GHQ scores when tested alone), the results on moderation showed that strong self-efficacy was particularly beneficial for those scoring high in learning and teaching hassles. Being efficacious not only means that stressors are less likely to be perceived as distressing but also indicates a stronger belief in personal coping abilities.

Course and career satisfaction

Altering consciousness coping accounted for the largest variance in course and career satisfaction: as it increased, *lower* scores were reported for course and career satisfaction. This type of coping included drug and alcohol use and meditative and religious practices. It might be that this type of coping was an expression of avoidance coping and, as this increased, career and course satisfaction decreased. Similar results were observed in a longitudinal study by Gibbons (2008), and the same conclusion might apply: that is, if an ineffective coping strategy is used, albeit infrequently, this can have an adverse affect on well-being. There is considerable evidence here and more broadly across the literature on nurses and nursing students that avoidance coping is ineffective coping (Lazarus & Folkman 1987, Hamill 1995, Chang *et al.* 2006).

Placement-related demands and course organization demands, when rated as a hassle or potential for distress, were also predictors of course and career satisfaction. The more placement-related experiences were rated as a source of distress, the lower were the scores on course and career satisfaction. However, the more course organization demands were rated as a hassle, the *higher* were the ratings for course and career satisfaction. These were final year students and they were experienced and used to the range of course organizational issues that would be part of this and indeed any other course of study. This finding, whilst on the face of it being counterintuitive, might reflect reduced frustration with course organization hassles compared with that of students earlier in their studies, who might have higher expectations. The former students might still recognize course demands that are a hassle, but they are less affected by them in terms of overall satisfaction.

Control

As context control increased, so did course and career satisfaction. This suggests that when students feel a greater sense of control in the learning context e.g. related to giving presentations, writing essays, portfolios and critical reviews, and in the placement learning context in exercising clinical skills, the more satisfied they are with the course and with nursing as a career.

Moderation

Figure 3 reveals that when course organization hassles and dispositional control were combined as an interaction variable, they explained a statistically significant variance in course and career satisfaction. Those high in dispositional

What is already known about this topic

- Researchers into stress in nursing students frequently use the term stress to denote psychological distress.
- Sources of stress likely to enhance well-being and, by implication, learning have not been considered in previous research.
- The moderating and mediating effects between sources of stress and coping measures have not been considered in previous research.

What this paper adds

- Measuring course demands rated as sources of eustress and distress increases the opportunity to identify the key components in effective learning in nurse education.
- From the range of coping resources available, those that look to bolster self-efficacy, control and support are likely to be most beneficial in student learning.

Implications for practice and/or policy

- Initiatives to promote support and self-efficacy are likely to have immediate benefits for student well-being.
- In course reviews, nurse educators need to consider how students' experiences might contribute not just to potential distress, but to eustress as well.
- Student coping should be developed through the psychology component of nursing programmes and through standalone initiatives, and should consider the coping mechanisms that not only reduce distress but also increase eustress opportunities.

control appear to be frustrated more by course demands that are rated as a potential source of distress compared with those moderate or low in dispositional control. This type of control is generally regarded as an indicator of effective coping (e.g. Lindop 1999, Antai-Ontong 2002), but here it was not; it seems that those high in this tendency are frustrated more by experiences where they are unable to express this tendency. It is not that they cannot cope, rather that they may react more strongly to repeated experiences where it is difficult for them to exercise this disposition, such as in relation to cancelled classes, variability in tutor style and having to listen to other students making presentations in class.

Many of the anticipated predictors (self-efficacy, dispositional control, support uplifts and placement uplifts) were positively related to measures of psychological health and explained a statistically significant variance in well-being.

Avoidance coping and the hassle factors were predictors of less healthy well-being. However, many of the anticipated predictors, such as learning and teaching uplifts, course organization uplifts and approach coping were not.

It is not surprising that avoidance coping was such a strong predictor, although its low mean compared with other types of coping (Table 4) indicates the strong adverse affect it can have, even when used infrequently. It could be inferred that the more avoidance coping was used, the less approach coping was, and that more approach coping would lead to healthier well-being scores, but this was not the case. This may indicate that the benefits of approach coping take longer to come to fruition. However, it was items from the Brief Cope that made up this factor (Carver 1997). These are context-free and relate to general coping; while avoidance coping might be a tendency that is apparent across different situations, this may be less true for approach coping, e.g. a nursing student can develop the clinical skills to engage in active coping in some contexts, but not in other contexts.

Course organization features relate to the smooth running of the course, and it is more likely that they will contribute to distress when those features are rated as ineffective, and less likely that they will be rated as a source of eustress when those features are acceptable. In a sense, course organization demands are analogous to Herzberg's (1959) hygiene factors in his theory of motivation. These are features that, if present, do not increase motivation or satisfaction but, if absent, contribute to dissatisfaction. This could explain why course organization demands, as a potential for eustress, were not a predictor of GHQ or satisfaction. That course organization as a factor was statistically significant with other factors (e.g. Figure 3) does suggest, however, that the items that make up this factor remain in the instrument, but be rated on the hassles scale only.

It was anticipated that learning and teaching as an uplift would predict healthy well-being measures, but this was not found. This may reflect the point that the well-being measures may be more responsive to distress than to eustress. It may be that, as the course nears its completion, students do prioritize course demands, and that focusing on this means that experiences of good teaching have less of an impact. They have become accustomed to good teaching and therefore find it less uplifting. It might also be that the quality of learning and teaching has changed because of cumulative demands on the teaching staff.

The evidence of mediation confirms some earlier findings, for example, that self-efficacy was the mediator representing the indirect relationship between gender and GHQ score (Jones & Johnston 1999). Nursing is a relatively new academic discipline; its population is largely female and in

most UK universities, it is taught largely by staff from a nursing background. Not all have higher degrees or are research-active. There is evidence that women more than men are likely to report lower self-efficacy (Zhang *et al.* 2001, Ferguson 2008), and this may inadvertently come to be reinforced by staff because of a school's relatively recent academic standing and because of the background of most teaching staff. This trend could be reversed if teaching staff engaged in more research, perhaps starting by researching and testing the pedagogy of what they teach, and if they make more opportunities to promote the status of nursing as a profession and a profession that also includes opportunities to engage in research.

Conclusion

All students can improve their coping, and initiatives aimed at bolstering student self-efficacy, control and support would help, for example, through induction, social, and learning and teaching initiatives involving peer interaction, and through support offered by personal tutors, tutors and lecturers.

Self-efficacy could be bolstered by validating student learning orally in response to contributions in teaching sessions, in feedback given during and after simulated and real clinical experiences, and in written comments made on students' work.

Problem-based learning has been shown to be effective, not just for pedagogic reasons, but because of the sense of control and empowerment students experience in addition to the support benefits that come from co-operative learning (Dunlap 2005).

The evidence here on avoidance coping shows that ineffective strategies can have adverse effects, even when used infrequently. This could usefully be conveyed to students, along with strategies to promote effective coping. It could be done through standalone workshops early in the course as well as being built into the psychological component of nursing programmes.

Approach coping was not found to be predictive of GHQ or satisfaction. This is not to question the efficacy of this coping strategy, and not to argue against its inclusion in stress management initiatives. Rather, it is to recognize that its benefits are likely to become evident in the medium- to long-term, and that other strategies, such as promoting support, control and self-efficacy, are likely to have more immediate benefits.

Teachers should not lose sight of the fact that changes, especially small changes, in how they interact with students in their teaching and pastoral roles can have dramatic effects.

Becoming or remaining aware of one's coping style and the small positive changes possible could contribute to improvements in student well-being and learning.

The evidence that uplifts and hassles are important predictors suggests that attempts to understand sources of stress must take both into account to understand the main influences on student well-being. This is critical in higher education because of its implications for student learning and attrition, and because nursing students' performance has a direct bearing on their fitness to practice and on patient safety.

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Conflict of interest

No conflict of interest has been declared by the authors.

Author contributions

CG was responsible for the study conception and design, performed data collection, performed data analysis, was responsible for the drafting of the manuscript, made critical revisions to the paper for important intellectual content and provided statistical expertise. MD contributed to the study conception, design and performed data analysis. MM contributed to the study conception, obtained funding and provided administrative, technical or material support.

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