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Stress, coping strategies and academic achievement in teacher education students

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ABSTRACT

University students experience stress, and how they cope with this stress affects their academic achievement. This study examined stress in teacher education students and had three objectives: to describe different degrees of stress and coping styles; to study the relationship between stress, coping strategies and academic achievement; and to examine whether increased age can moderate the effects of stress on academic achievement in 334 university-students. There were three main findings: many students experienced stress and used avoidance coping strategies; the students who were under less stress and engaged less in cognitive avoidance and more in problem-focused coping were also the students who made more academic achievement; and students under more stress performed worse, but with age stress affected performance less. In teacher education students, it is important to recognize and address the harmful effects of stress on well-being and academic achievement, to avoid long-term problems in professional and personal life.

Introduction

The data collected from various universities across the world suggest that university students experience higher levels of stress than the general population (Bewick et al. 2010; Bonneville-Roussy et al. 2017; Deasy et al. 2014a). The term *stress* is frequently used in social, academic and professional settings. It is generally agreed that a certain amount of pressure can help people perform better. However, when the pressure exceeds the ability to cope, this can result in stress (Chao 2012; Tavolacci et al. 2013). Lazarus and Folkman (1984) define psychological stress as 'a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being' (19).

Stress in teacher education students has been related to degree studies (assessments, exams and assignments), the practicum (tutor assignation, tutor visits, behaviour management, interviews, workload, excessive expectations and lack of support), social

concerns (being away from home) and financial stress (Deasy et al. 2014a, 2014b, 2016; Montgomery, MacFarlane, and Trumpower 2012). It is interesting to identify the mechanisms of stress generation and management among teacher education students, because as teachers their example will serve as a model for future generations of citizens (Deasy et al. 2014b). Although some studies have shown that teacher education students' stress during training may recur during their professional careers (Lindqvist et al. 2017), very little time is devoted to recognizing the signs of stress and introducing students to procedures, techniques and strategies to cope successfully with stressful situations (Gustems and Calderon 2013). Unfortunately, dropout rates within higher education worldwide reveal that approximately one-third of university students leave university in their first year (Respondek et al. 2017).

Coping can be understood as a process that is key in managing stress. In this process, the individual makes a cognitive and behavioural effort to manage both external and internal sources of stress (Moos 1993; Väisänen et al. 2018). Researchers have distinguished between approach coping and avoidance coping (Gustems and Calderon 2013; Moos 1993). In general, people who engage in approach coping focus on the problem at hand and make a cognitive and behavioural effort to control or eradicate stressors, while avoidance copers tend to focus on the emotions and make the same kinds of effort to avoid thinking about the source of stress and its consequences (Moos 1993).

The subject of stress and coping strategies in university students has been extensively studied (Mapfumo, Chitsiko, and Chireshell 2012; Väisänen et al. 2018). When stress levels are excessively high, this can have negative academic and emotional repercussions, which may be an underlying cause of the adoption of multiple unhealthy behaviours (Pitzer and Skinner 2016). A number of studies show that the use of problem-focused coping (an example of approach coping) can decrease the number of psychological or behavioural problems (Gustems and Calderon 2013), while the use of avoidance coping strategies focusing on emotions can lead to higher levels of substance abuse (cannabis, tobacco) (Murray-Harvey et al. 2000; Sun et al. 2011), health-damaging behaviours (Tavolacci et al. 2013) and increased suicidal ideation (Zhang et al. 2012). It should be noted that health-adverse behaviours are interlinked. For example, alcohol consumption adversely influences eating habits, smoking and physical activity (Deasy et al. 2014a).

Other studies report longitudinal changes in university students' levels of distress (Deasy et al. 2014a, 2016). These studies also observe that students experience higher stress levels in their first year of study, although the results of the former study indicate a high degree of stress in the last year. Prior research on proactive strategies implying the use of both self- and co-regulative strategies in reducing burnout is useful among teacher students in promoting a good learning environment fit, and in reducing the risk of burnout (Pietarinen et al. 2013; Väisänen et al. 2018). Vaez and Laflamme (2008) found that students who were older or enrolled in shorter degree programmes (e.g. three year-programmes) were more likely to complete their studies successfully.

Less attention has been paid to the effects of stress and coping styles on academic achievement. This is a subject of increasing interest, given the growing number of students, the increasing competition between them, and the importance of reaching the end of a degree programme successfully and becoming personally and academically fulfilled (Hökka and Eteläpelto 2014; Nonterah et al. 2015; Pluut, Ilies, and Curşeu 2015). Few studies of teacher education students have examined the relationship between

stress, coping and academic performance. In general, there is a lack of investment in the health of university students (Sancho-Gil, Sánchez-Valero, and Domingo-Coscollola 2017), which is not monitored extensively. However, an interest in improving academic achievement in teacher education programmes has led academic authorities in education faculties to implement effective tutorial action plans, to ensure that the welfare of their students is promoted through a certain institutional agenda (Sancho-Gil, Sánchez-Valero, and Domingo-Coscollola 2017).

This study focuses on stress, coping strategies and academic achievement in teacher education students and has three objectives: to describe different degrees of stress and coping styles; to examine the relationship between stress, coping strategies and academic achievement; and to examine whether increased age can moderate the effects of stress on academic achievement.

Method

Participants

The sample of this study consists of 334 undergraduate university students at a Spanish university enrolled in a bachelor's degree course in either Early Childhood Education or in Primary Education (79.6% women) whose mean age was 23.6 years old (SD = 5.2). Specifically, 53.2% were students of Early Childhood Education (n = 178), and 46.2% were students of Primary Education (n = 154). The majority were born in Spain (91.3%) (see Table 1).

Based on Hollingshead's four factor index (Hollingshead 2011), explained below in the section Measures, the participants' family socioeconomic status (FSS) corresponded to the

Table 1. Descriptive statistics of relevant variables (n = 334).

Variables	n (%)
Age. M (SD)	23.6 (5.2)
Girls. (n. %)	266 (79.6)
Academic year. n (%)	
2on year	88 (26.3)
3rd year	175 (52.3)
4th year	69 (20.6)
Not provide	2 (.6)
Bachelor degree. n (%)	
Early childhood education	178 (53.2)
Primary education	154 (46.2)
Not provide	2 (.6)
Country of birth	
Spain	305 (91.3)
Central America	12 (3.5)
South-America	3 (.9)
Africa	1 (.3)
Not provide	4 (1.2)
FSS family. n (%)	
FSS low	45 (13.4)
FSS low-medium	54 (16.1)
FSS medium	79 (23.6)
FSS medium-high	110 (32.9)
FSS high	46 (13.7)
FSS family. M (SD)	37.9 (14.7)

following categories: in 13.4% of the cases it was low; in 16.1% it was low to medium; in 23.6% it was medium; in 32.9% it was medium to high; and in 13.7% it was high.

Measures

The following questionnaires were administered.

The socio-demographic data sheet

This questionnaire provided information about the respondents' age, gender, year of study, degree being studied, country of birth and family socioeconomic status (FSS) (Hollingshead 2011). For the FSS, the educational and occupational levels of both parents were taken into account.

The perceived stress scale (PSS)

This questionnaire (Cohen and Williamson 1988) provided information about the participants' perception of the stress they experience. The questionnaire is widely used in educational studies with students (see Chao 2012; Tavolacci et al. 2013). PSS is a self-report instrument that evaluates the level of perceived stress during the month leading up to the questionnaire, and consists of 10 items with a 5-point response scale where 0 is 'never', 1 is 'almost never', 2 is 'sometimes', 3 is 'often' and 4 is 'very often' (for example: 'In the last month, how often have you felt nervous and stressed?'). The total score of the PSS is obtained by reversing the scores of items 4, 5, 7, and 8 (in the following manner: 0 = 4, 1 = 3, 2 = 2, 3 = 1, and 4 = 0) and then summing across all scale items. A higher score indicates a higher level of perceived stress. Internal consistency was adequate (ω = .89) and confirmatory factor analysis corroborated the factor structure (Reis et al. 2017). The PSS has a possible range of scores from 0 to 40. The range of PSS scores were divided into stratified quartiles. The upper two and lower two quartiles were combined (23 being the operational cut off value for the upper bound) and were labelled as 'stressed' and 'not stressed', respectively. This cut off value was selected in accordance with a similar study from France (Tavolacci et al. 2013).

The coping reponses inventory-adult form (CRI-A)

The CRI-A was used to obtain an indication of the respondents' coping strategies (Moos 1993). To evaluate the coping strategies, the Spanish adaptation (Kirchner et al. 2008) of the Coping Responses Inventory-Adult Form (CRI-A) was employed. This inventory consists of 48 items that require participants to indicate their responses on a 4-point Likert scale anchored by 'not at all' and 'fairly often'. These responses are measured by four scales: two scales measure approach coping and two scales measure avoidance coping (Moos 1993). The approach coping strategies were: logical analysis, positive reappraisal, seeking guidance and support, and problem solving (for example: 'I thought of different ways to solve the problem'). For the CRI-A approach coping measures, logical analysis refers to cognitive attempts to understand and prepare mentally for a stressor and its consequences. Positive reappraisal means cognitive attempts to construe and restructure a problem in a positive way while still accepting the reality of the situation. Seeking guidance and support refers to behavioural attempts to seek information, guidance, or support. Problem solving means behavioural attempts to take

action to deal directly with the problem. The avoidance coping strategies were: cognitive avoidance, acceptance/resignation, seeking alternative rewards, and emotional discharge (for example: 'I thought that time would solve it and that all I had to do was wait'). For the CRI-Adult avoidance coping measures, 'cognitive avoidance' measures cognitive attempts to avoid thinking realistically about a problem. 'Acceptance or resignation' refers to cognitive attempts to react to the problem by accepting it. 'Seeking alternative rewards' denotes the behavioural attempts to get involved in substitute activities and create new sources of satisfaction, and 'emotional discharge' refers to the behavioural attempts to reduce tension by expressing negative feelings. The Spanish adaptation of the CRI-A shows good reliability, measured by Cronbach's alpha coefficients ranging between .81 and .90 (Kirchner et al. 2008).

Academic achievement

The students specified their university grade-point average and the number of academic credits they had successfully completed. The formal curriculum was meant to be completed in four years; however, the system was somewhat flexible and a number of students took longer to complete their studies. Grade-point average was considered as an indicator of academic achievement.

Procedure

This study was approved by the Ethics Committee of the University of Barcelona, Spain, and observed the guidelines of the Belmont Report (1978), which establishes three basic principles to guide human research: respect for persons, beneficence, and justice. The study procedures were explained to the students in full, in a classroom information session, before they were invited to participate. A consent form to be signed by students was requested on the day of the data collection. Participation in the study was voluntary and anonymous.

The questionnaires were administered to groups of 15–30 students over a 1-hour session in their classrooms. Students were informed that there were no right or wrong answers, and that the answers should reflect their own experiences. Special attention was paid to ensure the privacy and confidentiality of the data, and to encourage students to answer all questions. Two members of the research team were present in the classroom to clarify doubts and help if necessary.

Data analyses

In the case of the quantitative variables, means and standard deviations were calculated; frequencies and percentages were used for qualitative variables. Bivariate correlations were calculated to evaluate the association between perceived stress, coping strategies (positive reappraisal, seeking guidance, problem solving, cognitive avoidance, acceptance, seeking alternative rewards, emotional discharge) and academic achievement (university grade-point average). Linear regression analyses were used to predict the academic achievement of the students in relation to the perceived stress and coping strategies. Here, the stepwise method was employed. Stepwise methods are used to evaluate the order of importance of variables and to select useful subsets of variables. In

the subsequent statistical analyses, academic achievement served as the criterion variable in the regression analyses, while perceived stress, as measured by the PSS, and coping strategies, as measured by the CRI-A, were utilized as the predictor variable. This test was administered according to age, family socioeconomic status, and the number of academic credits the respondents had successfully completed. The ModGraph program, version 3.0 (Jose 2013) was used to examine the moderating role of perceived stress between age (predictor variable) and raw scores on academic achievement (criterion variable). The study used a stepwise selection method and, for the statistical analysis, Version 22.0 of the *Statistical Package for the Social Sciences* (SPSS). For all the tests carried out, bilateral statistical significance was set at p equal to or less than .05.

Results

Descriptive and bivariate correlations

Table 2 lists descriptive statistics and bivariate correlations for predictor and criterion variables, so in perceived stress, 51.2% students experienced stress (PSS greater than 23). In coping strategies, students showed higher scores in avoidance coping strategies: cognitive avoidance, emotional discharge and seeking alternative rewards.

Perceived Stress ($r = -.116$) was negatively related to academic achievement. The use of approach coping strategies (seeking guidance $r = .132$ and problem-solving $r = .172$) was positively related to academic achievement. Seeking support from family, friends or adults was positively related to academic achievement ($r = .163$), while resorting to more cognitive avoidance strategies was negatively related to academic achievement ($r = -.215$).

Results of linear regression analyses for significance variables

A linear regression analysis was conducted to examine the predictive relationship between perceived stress, coping strategies (seeking guidance, problem-solving and cognitive avoidance) and academic achievement. The results indicated that cognitive avoidance, perceived stress, problem-solving and age explained 16% of the variance in academic achievement (F = 15.551, p = .0001), that is, approximately one-sixth of the variance in academic achievement is explained by these three variables. See Table 3.

Moderation analysis

Three moderation analyses were conducted. For the criterion variable (academic achievement), the first analysis used perceived stress, the second used cognitive avoidance and the third used problem-solving. The analyses were conducted with ModGraph (Jose 2013). The interaction between perceived stress and age was statistically significant (t = 2.496, p = .013) while the interactions between cognitive avoidance and age (t = .693, p = .489) and problem-solving and age (t = .956, p = .340) were not. See Table 3.

Figure 1 shows the interaction between perceived stress and age in relation to academic achievement. Perceived stress significantly moderated the relationship between age and academic achievement. Students experiencing higher stress levels

Table 2. Means, standard deviations, and Pearson intercorrelations among scales for teacher education students.

|	M	SD	1	2	3	4	5	6	7	8	9	10
1. Academic achievement	7.63	.51	1.00									
2. PSS. Perceived Stress	22.9	5.4	−.116**	1.00								
3. CRIA.Logical analysis	49.8	8.6	.094	−.025	1.00							
4. CRIA. Positive reappraisal	50.6	9.0	−.088	.257**	.442**	1.00						
5. CRIA.Seeking guidance	48.9	8.7	.132**	.163**	.217**	.210**	1.00					
6. CRIA.Problem solving	47.9	9.1	.172**	.292**	.557**	.423**	.370**	1.00				
7. CRIA.Cognitive avoidance	52.0	11.6	−.215**	−.165**	.026	.038	−.125*	−.165**	1.00			
8. CRIA.Acceptance	50.9	10.0	−.043	−.407**	−.018	−.152**	−.104	−.347**	.489**	1.00		
9. CRIA.Seeking alternative rewards	51.2	10.8	.017	−.075	.437**	.273**	.162**	.319**	.126**	.029	1.00	
10. CRIA.Emotional discharge	51.7	8.4	.027	−.467**	.275**	.058	.112*	−.099	.284**	.303**	.221**	1.00

*$p < .05$; **$p < .001$.

Table 3. Regression model to study the link between stress, coping strategies and academic achievement.

Predictor Variable	Criterion Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
Constant	Academic	7.350	.273		26.969	.000
Avoidance cognitive	Progress[1]	−.006	.003	−.124	−2.202	.028
Stress[a]		−.020	.005	−.210	−3.796	.000
Problem solving		.009	.003	.150	2.680	.008
Age		.027	.005	.277	4.881	.000
Constant[2]	Academic	7.907	.124		63.802	.000
Stress	Progress	−.011	.005	−.121	−2.178	.030
Constant[2]	Academic	7.167	.164		43.812	.000
Stress	Progress	−.013	.005	−.140	−2.680	.008
Age		.033	−005	.338	6.453	.000
Constant[2]	Academic	8.470	.547	−.210	15.492	.000
Stress	Progress	−.064	.023	−.736	−3.014	.003
Age		−.024	.023	−.245	−1.022	.307
Stress * Age		.002	.001	.866	2.496	.013

Notes. Control variables: age, family socioeconomic status, and number of academic credits successfully completed. [a]PSS. Perceived Stress Scales. Raw score. [1] Grade-point average in the student's academic transcript [2] Moderation analysis.
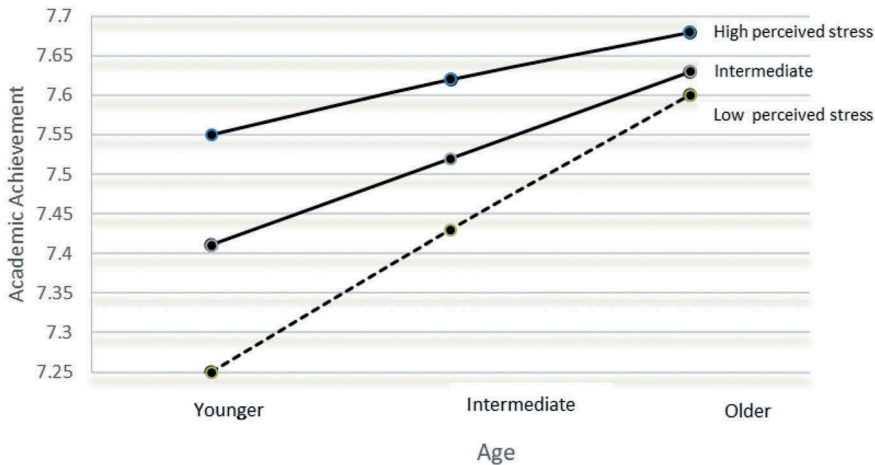
Figure 1. Interaction between perceived stress and age in relation to academic achievement. Modgraph figure.

performed worse academically. Age was associated with diminished stress (low slope = .756, t (334) = 13.55, p < .001; high slope = .954, t (334) = 36.39, p < .001).

Discussion

Regarding our first objective (to study the relationship between stress, coping strategies and academic achievement), a substantial proportion of the students in the study (51.2%) experienced notable levels of stress. The prevalence of stress reported in the study resembles the levels reported in international university student populations (Deasy et al. 2014a; Tavolacci et al. 2013). Stress negatively impacts the learning of university students and can influence students' adaptive functioning (Väisänen et al.

2018), and this is associated with the increase in risk behaviour and physical distress (Jennings et al. 2017), a higher risk of excessive alcohol consumption, eating disorders and internet addiction (Tavolacci et al. 2013). Prolonged exposure to stress may lead to numerous stress symptoms in teacher students such as somatic symptoms, anxiety disorder, depressive symptoms, and cognitive symptoms, which may also have an impact on academic achievement (Deasy et al. 2014a).

The relationship between stress and coping in university students is also interesting. Coping is a key variable in the process of reducing, minimizing or tolerating stress (Gustems and Calderon 2013) and preventing a negative academic result (Tavolacci et al. 2013). The coping profile of the students in our sample was characterized by avoidance strategies such as cognitive avoidance, emotional discharge and seeking alternative rewards. A study of Iranian university students found that individuals who considered their problems to be uncontrollable used many more avoidance strategies, such as cognitive avoidance and seeking alternative rewards, and made fewer positive reappraisals than their peers, who perceived the situation as controllable (Aguilar-Vafaie and Abiari 2007). The use of cognitive avoidance can negatively affect academic achievement. Some studies indicate that students are more likely to ignore their emotional or mental ill health and are more likely to employ maladaptive responses to stress (Deasy et al. 2016). These responses may include seeking alternative rewards in the form of substance use (alcohol, tobacco and cannabis) (Butler, Dodge, and Faurote 2010; Sun et al. 2011) and health-damaging diets (Tavolacci et al. 2013). Note, too, that although individuals may assume that these responses help to minimize stress, they are associated with an increase in distress and are in themselves risk behaviours. Tang and Qin (2015) go even further in a study of Chinese university students which associates emotional discharge with a significant increase in the risk of suicidal ideation. Cognitive avoidance can lead individuals to disengage from their studies, which compounds the effects of stress and negatively affects their academic future (Neveu et al. 2012), while problem-focused coping responses can alleviate the negative impact of stress and lead to more positive results (Doron et al. 2009). Students who use problem-focused strategies when revising for their examinations adopt more active strategies, such as planning or seeking social support for instrumental reasons (Rogaten and Moneta 2017), and this can affect their performance positively. Future lines of research on university students and stress would benefit from analyzing the relationship between stress, coping strategies and the perception of control.

Another finding in this study relates to the variables that are most closely associated with students' academic performance. Approach strategies such as seeking help and attempting to solve problems were positively related to academic performance, while cognitive avoidance and stress were negatively related. These results corroborate the findings of numerous studies (Deasy et al. 2014a; Gustems and Calderon 2013; Pietarinen et al. 2013), suggesting that academic performance depends in part upon how students perceive and cope with stressing situations (Murray-Harvey et al. 2000; Stormont and Young-Walker 2017; Vaez and Laflamme 2008). The literature shows that university students who use approach coping strategies, such as seeking social support (Väisänen et al. 2018), and who make changes to improve their stressful circumstances (Mapfumo, Chitsiko, and Chireshell 2012) adapt better than students who use avoidance coping strategies, such as substance use (Tavolacci et al. 2013), and who try to ignore

stress (Mapfumo, Chitsiko, and Chireshell 2012). These behaviours negatively affect not only academic performance but personal health and well-being (Tang, Xue, and Qin 2015; Zhang et al. 2012). One educational implication of the results is that knowledge of how students deal with personal and academic difficulties is a better predictor of their academic achievement than knowledge of their level of stress. Students who were under less stress and who responded to pressure with fewer avoidance coping strategies and more approach coping strategies were also those who performed best academically.

Studies have shown that teacher education students experience varying levels of stress over the course of their degree programme (Deasy et al. 2014a; Montgomery, MacFarlane, and Trumpower 2012; Stormont and Young-Walker 2017), particularly during practicum studies (Zhu 2017). Our results show that students perform worse under stress, but that the effects of stress on performance diminish with age, so younger students are more likely to ignore their emotional or mental ill health (Deasy et al. 2014b). These results can be related in part to the findings of Vaez and Laflamme (2008), who observe that older students or those who enrol in shorter degree programmes (e.g. three-year programmes) are more likely to complete their studies successfully. Bewick et al. (2010) observe that students experience higher levels of pressure at the beginning of their degree programme, mainly during the first year, and especially in the first semester.

Because stress is often accepted as being part and parcel of student life, few measures are taken to prevent it. However, it is important to understand the detrimental effects of stress on students' academic performance and personal well-being. In our case, this is also important because today's teacher education students will be tomorrow's teachers. Some studies suggest that student attrition is related to stress and to expectations about and motivations for entering teaching (Van Maele and Van Houtte 2015; Watt and Richardson 2012). Unhealthy lifestyles, high levels of psychological distress and maladaptive coping strategies raise concerns about students' future role as teachers in a profession which can become especially stressful and lead to early burnout (Deasy et al. 2014b; Hoglund, Klingle, and Hosan 2015; Pas, Bradshaw, and Hershfeldt 2012; Shen et al. 2012; Van Maele and Van Houtte 2015). A study of a broad sample of teacher education students of Ireland found that 41.9% showed levels of psychological distress (Deasy et al. 2014a). Some studies suggest that the origin of these experiences may be teachers' experience of teacher training (Gavish 2017), for instance, a lack of sufficient support and excessive workload (Väisänen et al. 2018). Therefore, those who are responsible for designing university curricula should work proactively to address the problem of stress in student populations, and help individuals acquire specific approach coping strategies (Vaez and Laflamme 2008; Väisänen et al. 2018), i.e. help the students to regulate one's well-being is an important part of a teacher's competence and it should be recognized and facilitated during the teacher studies (Väisänen et al. 2018). Environments that provide support and help teachers derive a sense of personal accomplishment and satisfaction from their work are more likely to promote resilience (Blackmore, Howard, and Kington 2018; Mansfield et al. 2016). Studies related to increasing students' level of well-being, help students create realistic expectations of the studies, as well as incorporate their previous school experiences and the incipient pedagogic identities can help prevent dropout from teacher education and later attrition from the profession (Bentea 2015; Bergmark et al. 2018; van Rijswijk et al. 2018).

Stress management programmes may be delivered by an education professional, as self-help, or as part of a university curriculum. Wellness training programmes, based on stress reduction techniques, are extremely helpful and should be an essential aspect of the university curriculum (Stormont and Young-Walker 2017). They include positive cognitions, knowing the curriculum, being organised, breathing and relaxation strategies, physical activity, humour and time management. A pilot study of an intervention for student-teachers prior to their practicum found that they were less stressed and anxious after the workshop and practicum. Student-teachers wanted to take part in this intervention and found it useful (Zhu 2017).

A number of training programmes develop teachers' well-being. These include: 'Managing Occupational Stress through the Development of Emotional Intelligence' (Vesely, Saklofske, and Nordstokke 2014); 'Cultivating Awareness and Resilience in Education (CARE)' (Jennings et al. 2017); 'Mindfulness-Based Wellness Education (MBWE)' (Poulin 2009); 'Stress Management and Relaxation Techniques in Education (SMART)' (Ragoonaden 2017); 'Mindfulness-Based Stress Reduction' (Kabat-Zinn 2003). In addition, various positive psychology exercises enhance well-being through increasing gratitude, such as 'Three Good Things' (Seligman et al. 2005).

To achieve an improvement in these areas requires the cooperation of staff and students' commitment, Health Promoting Universities project and the Ottawa Charter for Health Promotion (WHO 1986). Based on the main stressors identified in a study by Deasy et al. (2016), possible actions are: establishing a health and safety committee; avoiding over-bureaucratization; organizing workshops on relaxation, coaching, sexual health, assertiveness and drug prevention; reviewing curricula to avoid unnecessary student workload; encouraging participation in sports and cultural clubs, such as choirs, big bands and orchestras; extending mentoring and peer mentoring periods; establishing a tutorial action plan specially designed for the reception of first-year students; providing vocational guidance and transition for students in their final year; and promoting international mobility programmes (such as the European Erasmus Programme) to foster change and learning. In university studies, the key idea is to guide students' responsibility for their own studies and to create learning processes where students can research phenomena they are interested in (Rautiainen, Mäensivu, and Nikkola 2018), as promoting discussion-based teaching, so the teacher's position changes from 'better knower' to counsellor in the learning process (Lipponen and Kumpulainen 2011).

Although students are often reluctant to use support services (Deasy et al. 2016), study programmes should offer students effective coping skills that can improve their sense of well-being, help them focus on their studies, and be useful in their professional development. If this is not done, the cycle of stress and avoidance coping may become a long-term problem for students in their professional and personal lives.

Limitations

This study has certain limitations. First, the group comprised mainly female university students from a single faculty, and the results cannot be generalized to other groups. Future lines of research should study male students and use broader samples to corroborate the results of this study and introduce other variables in the explanatory model, such as perception of control, engagement and dispositional optimism/

pessimism. Second, the measures in our study were based on self-reporting, so biased respondent reporting remains a possibility (students' answers may have exaggerated the facts or been determined by selective memory, and there may have been a desirability bias), as does the common method bias when the same method is used to measure multiple constructs. Finally, because of its cross-sectional design, this study was unable to infer causalities and the results may not be predictive of the longitudinal relationship between self-reported perceived stress and coping. Future research would benefit from a longitudinal study that followed students in their subsequent years, and explored the pattern of change during an entire study programme.

Practical implications

A substantial proportion of students experienced notable levels of stress during the academic year, especially in the first years of their degree. The students who performed best academically tended to use more approach coping strategies (such as problem-solving strategies) and fewer avoidance strategies (such as seeking alternative rewards or cognitive avoidance). The situation could be improved if the students were better trained to improve coping strategies and deal with the stressful aspects of teaching (note that there are specific programmes designed to enhance teachers' self-efficacy). Furthermore, an improvement in interactions with school authorities, colleagues and families could also prove useful. Training teachers in communication or interpersonal skills might help them improve such interactions.

Disclosure statement

Funding

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References

Aguilar-Vafaie, M. E., and M. Abiari. 2007. "Coping Response Inventory: Assessing Coping among Iranian College Students and Introductory Development of an Adapted Iranian Coping Response Inventory (CRI)." *Mental Health, Religion and Culture* 10 (5): 489–513. doi:10.1080/13674670600996639.

Belmont Report. 1978. National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. The Belmont Report, Ethical Principle and Guidelines for the protection of human research subjects. Accessed 10 November 2015. www.bioeticayderecho.ub.es

Bentea, C. C. 2015. "Relationships between Personality Characteristics and Attitude Towards Work in School Teachers." *Procedia—Social and Behavioral Sciences* 180: 1562–1568. doi:10.1016/j.sbspro.2015.02.307.

Bergmark, U., S. Lundström, L. Manderstedt, and A. Palo. 2018. "Why Become a Teacher? Student Teachers' Perceptions of the Teaching Profession and Motives for Career Choice." *European Journal of Teacher Education* 41 (3): 266–281. doi:10.1080/02619768.2018.1448784.

Bewick, B., G. Kotusopoulou, J. Miles, E. Slaa, and M. Barkham. 2010. "Changes in Undergraduate Students' Psychological Well-Being as the Progress through University." *Studies in Higher Education* 35 (6): 633–645. doi:10.1080/03075070903216643.

Blackmore, K., C. Howard, and A. Kington. 2018. "Trainee Teachers' Experience of Primary Science Teaching, and the Perceived Impact on Their Developing Professional Identity." *European Journal of Teacher Education* 41 (4): 529–548.

Bonneville-Roussy, A., P. Evans, J. Verner-Filion, R. J. Vallerand, and T. Bouffard. 2017. "Motivation and Coping with the Stress of Assessment: Gender Differences in Outcomes for University Students." *Contemporary Educational Psychology* 48: 28–42. doi:10.1016/j.cedpsych.2016.08.003.

Butler, A. B., K. D. Dodge, and E. J. Faurote. 2010. "College Student Employment and Drinking: A Daily Study of Work Stressors, Alcohol Expectancies, and Alcohol Consumption." *Journal of Occupational Health Psychology* 15: 291–303. doi:10.1037/a0019822.

Chao, R. C. L. 2012. "Managing Perceived Stress among College Students: The Roles of Social Support and Dysfunctional Coping." *Journal of College Counseling* 15: 5–21. doi:10.1002/j.2161-1882.2012.00002.x.

Cohen, S., and G. Williamson. 1988. Perceived Stress in a Probability Sample of the United States. In *The social psychology of health: Claremont Symposium on applied social psychology*, edited by, S. Spacapam and S. Oskamp, Newbury Park, CA: Sage. doi:10.3168/jds.S0022-0302(88)79586-7.

Deasy, C., B. Coughlan, J. Pironom, D. Jourdan, and P. Mannix-McNamara. 2014a. "Psychological Distress and Coping Amongst Higher Education Students: A Mixed Method Enquiry." *PloS One* 9 (12): e115193. doi:10.1371/journal.pone.0115193.

Deasy, C., B. Coughlan, J. Pironom, D. Jourdan, and P. Mannix-McNamara. 2014b. "Psychological Distress and Lifestyle of Students: Implications for Health Promotion." *Health Promotion International* 30 (1): 77–87. doi:10.1093/heapro/dau086.

Deasy, C., B. Coughlan, J. Pironom, D. Jourdan, and P. Mannix-McNamara. 2016. "Psychological Distress and Help Seeking Amongst Higher Education Students: Findings from a Mixed Method Study of Undergraduate Nursing/Midwifery and Teacher Education Students in Ireland." *Irish Educational Studies* 35 (2): 175–194. doi:10.1080/03323315.2016.1146157.

Doron, J., J. Boiché, Y. Stephan, and C. Le Scanff. 2009. "Coping with Examinations: Exploring Relationships between Students' Coping Strategies, Implicit Theories of Ability, and Perceived Control." *British Journal of Educational Psychology* 79: 515–528. doi:10.1348/978185409X402580.

Gavish, B. 2017. "Special Education Trainee Teachers' Perceptions of Their Professional World: Motives, Roles, and Expectations from Teacher Training." *Teachers and Teaching* 23 (2): 153–170. doi:10.1080/13540602.2016.1204285.

Gustems, J., and C. Calderon. 2013. "Coping Strategies and Psychological Well-Being among Education Students." *European Journal of Psychology of Education* 28 (4): 1127–1140. doi:10.1007/s10212-012-0158-x.

Hoglund, W. L. G., K. E. Klingle, and N. E. Hosan. 2015. "Classroom Risks and Resources: Teacher Burnout, Classroom Quality and Children's Adjustment in High Needs Elementary Schools." *Journal of School Psychology* 53 (5): 337–357. doi:10.1016/j.jsp.2015.06.002.

Hökka, P., and A. Eteläpelto. 2014. "Seeking New Perspectives on the Development of Teacher Education: A Study of the Finnish Context." *Journal of Teacher Education* 65 (1): 39–52. doi:10.1177/0022487113504220.

Hollingshead, A. B. 2011. "Four Factor Index of Social Status." *Yale Journal of Sociology* 8: 21–52.

Jennings, P. A., J. L. Brown, J. L. Frank, S. Doyle, Y. Oh, R. Davis, D. Rasheed, et al. 2017. "Impacts of the CARE for Teachers Program on Teachers' Social and Emotional Competence and Classroom Interactions." *Journal of Educational Psychology*. Advance online publication. doi:10.1037/edu0000187.

Jose, P. E. 2013. *ModGraph-I: A Programme to Compute Cell Means for the Graphical Display of Moderational Analyses: The Internet Version, Version 3.0*. Wellington, New Zealand: Victoria University of Wellington. Retrieved [2015]. http://pavlov.psyc.vuw.ac.nz/paul-jose/modgraph/

Kabat-Zinn, J. 2003. "Mindfulness-Based Interventions in Context: Past, Present, and Future." *Clinical Psychology: Science and Practice* 10 (2): 144–156.

Kirchner, T., M. Forns, D. Muñoz, and N. Pereda. 2008. "Psychometric Properties and Dimensional Structure of the Spanish Version of the Coping Responses Inventory-Adult Form." *Psicothema* 20 (4): 902–909.

Lazarus, R. S., and S. Folkman. 1984. *Stress, Appraisal and Coping*. New York: Springer Publishing Company.

Lindqvist, H., M. Weurlander, A. Wernerson, and R. Thornberg. 2017. "Resolving Feelings of Professional Inadequacy: Student Teachers' Coping with Distressful Situations." *Teaching and Teacher Education* 64: 270–279. doi:10.1016/j.tate.2017.02.019.

Lipponen, L., and K. Kumpulainen. 2011. "Acting as Accountable Authors: Creating Interactional Spaces for Agency Work in Teacher Education." *Teaching and Teacher Education* 27 (5): 812–819. doi:10.1016/j.tate.2011.01.001.

Mansfield, C., S. Beltman, T. Broadley, and N. Weatherby-Fell. 2016. "Building Resilience in Teacher Education: An Evidenced Informed Framework." *Teaching and Teacher Education* 54: 77–87. doi:10.1016/j.tate.2015.11.016.

Mapfumo, J. S., N. Chitsiko, and N. Chireshell. 2012. "Teaching Practice Generated Stressors and Coping Mechanisms among Student Teachers in Zimbabwe." *South African Journal of Education* 32: 155–166. doi:10.15700/saje.v32n2a601.

Montgomery, L., D. MacFarlane, and D. Trumpower. 2012. "Student Teacher Stress and Physical Exercise." ASBBS conference proceedings, vol. 19. 974–992. Accessed 4 October 2015. http://asbbs.org/files/ASBBS2012V1/PDF/M/MontgomeryC.pdf

Moos, R. H. 1993. *Coping Responses Inventory: CRI-Adult Form Professional Manual*. Odessa, FL: Psychological Assessment Resources.

Murray-Harvey, R., P. T. Slee, M. J. Lawson, H. Silins, G. Banfield, and A. Russell. 2000. "Under Stress: The Concerns and Strategies of Teaching Education Students." *European Journal of Teacher Education* 23 (1): 19–35. doi:10.1080/713667267.

Neveu, D., J. Doron, L. Visier, J. Boiché, R. Trouillet, P. Dujols, and G. Ninot. 2012. "Students Perceived Stress in Academic Programs: Consequence for Its Management." *Revue d'Épidémiologie et de Santé Publique* 60 (4): 255–264. doi:10.1016/j.respe.2012.01.008.

Nonterah, C. W., N. C. Hahn, S. O. Utsey, J. N. Hook, J. A. Abrams, R. R. Hubbard, and A. Opare-Henako. 2015. "Fear of Negative Evaluation as a Mediator of the Relation between Academic Stress, Anxiety and Depression in a Sample of Ghanaian College Students." *Psychology & Developing Societies* 27 (1): 125–142. doi:10.1177/0971333614564747.

Pas, E. T., C. P. Bradshaw, and P. A. Hershfeldt. 2012. "Teacher- and School-Level Predictors of Teacher Efficacy and Burnout: Identifying Potential Areas for Support." *Journal of School Psychology* 50: 129–145. doi:10.1016/j.jsp.2011.07.003.

Pietarinen, J., K. Pyhältö, T. Soini, and K. Salmela-Aro. 2013. "Reducing Teacher Burnout: a Socio-contextual Approach." *Teaching and Teacher Education* 35: 62–72. doi:10.1016/j.tate.2013.05.003.

Pitzer, J., and E. Skinner. 2016. "Predictors of Changes in Students' Motivational Resilience over the School Year: The Roles of Teacher Support, Self-Appraisals, and Emotional Reactivity." *International Journal of Behavioral Development* 1–5. doi:10.1177/0165025416642051.

Pluut, H., R. Ilies, and P. L. Curşeu. 2015. "Social and Study Related Stressors and Resources among University Entrants: Effects on Well-Being and Academic Performance." *Learning and Individual Differences* 37: 262–268. doi:10.1016/j.lindif.2014.11.018.

Poulin, P. A. 2009. *Mindfulness-Based Wellness Education: A Longitudinal Evaluation with Students in Initial Teacher Education*. Toronto: University of Toronto.

Ragoonaden, K. 2017. "SmartEducation: Developing Stress Management and Resiliency Techniques." *LEARNing Landscapes* 10 (2): 241–255.

Rautiainen, M., M. Mäensivu, and T. Nikkola. 2018. "Becoming Interested during Teacher Education." *European Journal of Teacher Education* 41 (4): 418–432. doi:10.1080/02619768.2018.1462329.

Reis, D., D. Lehr, E. Heber, and D. D. Ebert. 2017. "The German Version of the Perceived Stress Scale (PSS-10): Evaluation of Dimensionality, Validity, and Measurement Invariance with Exploratory and Confirmatory Bifactor Modeling." *Assessment*. 107319111771573. doi:10.1177/1073191117715731.

Respondek, L., T. Seufert, R. Stupnisky, and U. E. Nett. 2017. "Perceived Academic Control and Academic Emotions Predict Undergraduate University Student Success: Examining Effects on Dropout Intention and Progress." *Frontiers in Psychology* 8. doi:10.3389/fpsyg.2017.00243.

Rogaten, J., and G. B. Moneta. 2017. "Positive and Negative Structures and Processes Underlying Academic Performance: A Chained Mediation Model." *Journal of Happiness Studies* 18 (4): 1095–1119. doi:10.1007/s10902-016-9765-6.

Sancho-Gil, J. M., J. A. Sánchez-Valero, and M. Domingo-Coscollola. 2017. "Research-Based Insights on Initial Teacher Education in Spain." *European Journal of Teacher Education* 40 (3): 310–325. doi:10.1080/02619768.2017.1320388.

Seligman, M. E. P., T. A. Steen, N. Park, and C. Peterson. 2005. "Positive Psychology Progress: Empirical Validation of Interventions." *American Psychologist* 60: 410–421. doi:10.1037/0003-066X.60.5.410.

Shen, J., J. M. Leslie, J. K. Spybrook, and X. Ma. 2012. "Are Principal Background and School Processes Related to Teacher Job Satisfaction? A Multilevel Study Using Schools and Staffing Survey 2003-04." *American Educational Research Journal* 49 (2): 200–230. doi:10.3102/0002831211419949.

Stormont, M., and L. Young-Walker. 2017. "Supporting Professional Development Needs for Early Childhood Teachers: An Exploratory Analysis of Teacher Perceptions of Stress and Challenging Behavior." *International Journal on Disability and Human Development* 16 (1): 99–104. doi:10.1515/ijdhd-2016-0037.

Sun, J., N. Buys, D. Stewart, and D. Shum. 2011. "Mediating Effects of Coping, Personal Belief, and Social Support on the Relationship among Stress, Depression, and Smoking Behavior in University Students." *Health Education* 111: 133–146. doi:10.1108/09654281111108544.

Tang, F., F. Xue, and P. Qin. 2015. "The Interplay of Stressful Life Events and Coping Skills on Risk for Suicidal Behavior among Youth Students in Contemporary China: A Large Scale Cross-Sectional Study." *BMC Psychiatry* 15: 182. doi:10.1186/s12888-015-0575-x.

Tavolacci, M. P., J. Ladner, S. Grigioni, L. Richard, H. Villet, and P. Dechelotte. 2013. "Prevalence and Association of Perceived Stress, Substance Use and Behavioral Addictions: A Cross-Sectional Study among University Students in France, 2009–2011." *BMC Public Health* 13: 724. doi:10.1186/1471-2458-13-724.

Vaez, M., and L. Laflamme. 2008. "Experienced Stress, Psychological Symptoms, Self-Rated Health and Academic Achievement: A Longitudinal Study of Swedish University Students." *Journal of Social Behavior and Personality* 36: 183–196. doi:10.2224/sbp.2008.36.2.183.

Väisänen, S., J. Pietarinen, K. Pyhältö, A. Toom, and T. Soini. 2018. "Student Teachers' Proactive Strategies for Avoiding Study-Related Burnout during Teacher Education." *European Journal of Teacher Education* 41 (3): 301–317. doi:10.1080/02619768.2018.1448777.

Van Maele, D., and M. Van Houtte. 2015. "Trust in School: A Pathway to Inhibit Teacher Burnout?" *Journal of Educational Administration* 53 (1): 93–115. doi:10.1108/JEA-02-2014-0018.

van Rijswijk, M. M., L. H. Bronkhorst, S. F. Akkerman, and J. van Tartwijk. 2018. "Changes in Sensed Dis/Continuity in the Development of Student Teachers Throughout Teacher Education." *European Journal of Teacher Education* 41 (3): 282–300. doi:10.1080/02619768.2018.1448782.

Vesely, A. K., D. H. Saklofske, and D. W. Nordstokke. 2014. "EI Training and Pre-Service Teacher Wellbeing." *Personality and Individual Differences* 65: 81–85. doi:10.1016/j.paid.2014.01.052.

Watt, H. M., and P. W. Richardson. 2012. "An Introduction to Teaching Motivations in Different Countries: Comparisons Using the FIT-Choice Scale." *Asia-Pacific Journal of Teacher Education* 40 (3): 185–197. doi:10.1080/1359866X.2012.700049.

World Health Organization (WHO). 1986. *Ottawa Charter for Health Promotion*. Geneva: WHO.

Zhang, X., H. Wang, Y. Xia, X. Liu, and E. Jung. 2012. "Stress, Coping and Suicide Ideation in Chinese College Students." *Journal of Adolescence* 35 (3): 683–690. doi:10.1016/j.adolescence.2011.10.003.

Zhu, G. 2017. "Chinese Student Teachers' Perspectives on Becoming a Teacher in the Practicum: Emotional and Ethical Dimensions of Identity Shaping." *Journal of Education for Teaching* 1–5. doi:10.1080/02607476.2017.1341162.