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Perceived stress in university students studying in a further education college

Matthew Peter Shaw¹. Daniel. James Peart². Orrin James William Fairhead.¹

1. *Sport and Bioscience, North Lindsey College, Scunthorpe, United Kingdom*

University Centre

North Lindsey College

Kingsway

Scunthorpe

DN17 1AJ

matthew.shaw@northlindsey.ac.uk

2. *Department of Sport, Exercise and Rehabilitation, Northumbria University,
Newcastle upon Tyne*

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Abstract

Previous research investigating perceived stress and mental health in UK University students have used a sample population from Higher Education Institutes (HEIs), and to the authors' knowledge, there is no literature specifically examining stress in a student population within a higher education-in-further education environment (HE-in-FE). The aim of the current study was to address this gap in the literature by investigating the perceived stress of HE-in-FE students. 94 participants (age = 28.7 ± 9.6 years) completed the perceived stress scale (PSS-10) with a mean score of $17.9 (\pm 7.2)$. The unidimensional measure was correlated with various demographical characteristics including age, sex, employment, self-directed study time, and time spent caring for others (e.g. children). Findings are comparable to investigations that have previously used students at HEIs, it can be suggested that despite the different context in which HE-in-FE students complete their HE study, and the 'untraditional' demographic from which they come, levels of perceived stress appear to be comparable to the 'traditional' undergraduate. Further analysis revealed significantly greater perceived stress in female students and it is recommended that future work employs a mixed methods approach to further examine the implications and possible reasons for this.

Keywords

Stress, Student, HE-in-FE, Further Education, College

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Introduction

Perceived stress can be defined as the feelings and thoughts someone has about the level of stress they are currently experiencing or over a period of time (Phillips 2013). Whilst Whitman et al. (1985) suggest that stress is an integral element of student life, perceived stress in students can have physiological implications such as reduced immune system functioning (El Ansari et al. 2014a). Furthermore, Aggarwal et al. (2014) suggest reduced learning and memory function as psychological manifestations of exposure to stress. El Ansari et al. (2014b) have previously shown a relationship between increased stress levels and health complaints in UK higher education students, whereby the number of reported symptoms increased with the level of perceived stress.

Previous research investigating perceived stress and mental health in UK University students have used a sample population from Higher Education Institutes (HEIs) with an age range of 15 – 25 years old (Ahmed et al. 2013; Baghurst and Kelly 2013; El Ansari et al. 2014a, 2014b). To the authors' knowledge, there is no literature specifically examining stress in a student population within a higher-education-in-further-education environment (HE-in-FE); a provision that differs greatly from that at larger HEIs (Parry et al. 2012b). The courses offered range from sub-bachelor degrees of a vocational nature to programmes that compete and collaborate with larger HEIs (Parry 2009), more so now in light of the perceived cost-effectiveness of HE-in-FE (Parry 2012a). Furthermore the provision is designed to remove some of the barriers to learning faced by mature students (Burton et al. 2011). It has also been suggested that HE-in-FE offers a more personal learning environment than HEIs (Parry 2012a), and that the teaching is more interactive and student focused, needing to be

frequently adapted with each group accordingly (Burkill et al. 2008). These factors, alongside the widening participation agenda addressed by a number of HE-in-FE institutions (Parry et al. 2012a), contribute to this form of provision attracting and catering for a large and varied audience (Parry 2009). HE-in-FE student populations typically consist of 'non-traditional' students who can be categorised as students from under-represented groups within higher education i.e. part-time / commuters, minority ethnic, lower socio-economic groups, disabled, and / or mature (Roberts 2011). In 2012, 8% of the higher education population were taught in further education colleges and these students are typically older and from lower-participating groups when compared to students at HEIs (Parry et al. 2012b). Another consideration is that HE-in-FE students often do not follow the 'traditional' route into HE, and the subsequent lower previous academic level can have a negative impact upon retention and achievement (Schofield and Dismore 2010). This factor, coupled with the fact that employment status (Robotham, 2009) and age (Nordin and Nordin, 2013) may have an impact upon perceived stress, raises the need for more research on the student experience to help staff support their students and facilitate achievement.

King et al. (2015) suggest that whilst HE will always be minor constituent of an FE college, it is important for policy-makers and HE-in-FE tutors to develop a better understanding of the student experience. Existing HE-in-FE research (e.g. Jones 2006; Turner et al. 2009) focuses on policy and staff activity, rather than student experience. Therefore the purpose of this research was to provide insight into the student experience of those that study higher education in a further education college by describing levels of perceived stress. The findings of the study may have pedagogical implications for college higher education teaching staff and student services personnel, as Smith et al. (2014) suggest the assessment of perceived stress can be utilized as an initial screening tool for distressed students.

Method

Participants

94 students (male $n = 33$, age = 28 ± 9 years; female $n = 61$, age = 28.9 ± 10 years) from a University Centre situated in a Further Education College in the North of England voluntarily completed the survey instruments to participate in the study. All students were studying either a foundation degree or BSc level 6 top-up year full time (85/94) or part time (9/94), and 60/94 worked alongside their studies (12 full time). Further demographic information is outlined in Table 1. Written consent was obtained from all participants, and ethical approval was granted by the Institution's ethical approval panel for the study. Participants were provided with verbal explanation of the investigation including the aims and objectives and informed they had the right to withdraw from the study at any point prior to the final data analysis being conducted.

Perceived Stress

Perceived stress was measured using the Perceived Stress Scale (PSS) originally designed by Cohen et al. (1983). The PSS consisted of 10 items (PSS-10), that included a negative subscale (item 1, 2, 3, 6, 9, 10) and a positive subscale (4, 5, 7, 8). This study used the PSS-10 as a unidimensional measure whereby the higher the score, the higher the level of perceived stress (Smith et al. 2014). The 10 item version of the PSS has previously been widely shown to demonstrate validity and reliability (Andreou et al. 2011; Cohen and Williamson 1988; Leung et al 2010, Remor et al. 2006), including with similar populations i.e. students (Roberti et al. 2006; Smith et al. 2014), and has been recommended in comparison to the PSS-4 and PSS-14 (Leung et al. 2010). Moreover as the PSS-10 has been implemented in other student groups it would facilitate comparison with the existing literature.

Data Analysis

All statistical analyses were completed using IBM SPSS Statistics 18 (SPSS Inc., Chicago, IL). Descriptive statistics were used to analyse demographic data on the participants. Kolmogorov–Smirnov ($D(94) = 0.0120$, $p = .002$) and Shapiro-Wilk ($D(94) = 0.97$, $p = .036$) tests determined that the total scores from the PSS-10 were significantly not normal. Mann Whitney U tests were performed as preliminary analyses for differences in employment status, sex, and additional stressful events. For multiple comparisons (e.g. study time, job type), Kruskal-Wallis tests were performed. The relationship between age and perceived stress was assessed using a Pearson Correlation Coefficient.

To measure reliability, Cronbach's Alpha Correlation Coefficient was performed on the full scale ($\alpha = .89$) and both the negative ($\alpha = .87$) and positive ($\alpha = .82$) subscales. Kline (2000) determines internal consistency as a reliability coefficient of more than 0.7.

Results

Perceived Stress

The mean total score for perceived stress was 17.9 (± 7) for the sample. Table 1 displays perceived stress score broken down into each demographic category. There was a significant difference in perceived stress scores between male (Mdn = 17) and female (Mdn = 20) participants ($U=1281$, $z = 2.178$, $p = .029$, $r = .22$). However, there was no significant difference in perceived stress scores between employed (Mdn = 18) and unemployed (Mdn = 21) participants ($U=1212.5$, $z = 1.517$, $p = .129$, $r = .16$). Furthermore there were no significant differences when considering the potential influence of part time work ($H(2) = 2.16$, $p = .340$). There were also no significant differences when accounting for job type ($H(2) = 1.55$,

$p = 0.462$). Time spent studying did not significantly affect perceived stress ($H(3) = 6.53$, $p = .089$). There was also no correlation between age and perceived stress ($p = 0.88$, $r = 0.016$).

Table 1. Perceived stress scores for each demographic

	Number (% total)	Perceived Stress Score (mean \pm SD)
Sex⁺		
Male	33 (35.1)	15.52 (7.51)
Female	61 (64.9)	19.16 (6.48)
Employment		
Yes	60 (63.8)	17.15 (7.01)
No	34 (36.2)	19.18 (7.00)
Employment Type*		
Full Time	12 (12.8)	18.42 (7.00)
Part Time	17 (18.1)	17.59 (6.65)

Part Time (+16 hours per week)	27 (28.7)	16.67 (7.45)
Part Time Self Employed	2 (2.1)	18.00 (5.66)
Part Time Self Employed (+16 hours per week)	1 (1.1)	18.00 (0)

Job Activity*

Physically Active	20 (21.3)	19.25 (6.14)
Moderately Active	27 (28.7)	16.85 (6.75)
Inactive	12 (12.8)	15.33 (8.11)

Hours Sleep (per evening)

0-4	6 (6.4)	20.67 (8.56)
4-8	79 (77.7)	18.05 (7.02)
8-12	15 (16.0)	15.93 (6.48)

Study Mode		
Full Time	85 (90.4)	18.47 (6.75)
Part Time	9 (9.6)	12.33 (7.75)
Study Hours (outside contact time)		
0-4	11 (11.7)	15.09 (5.39)
4-8	43 (45.7)	19.67 (6.38)
8-12	21 (22.3)	17.62 (5.61)
12+	19 (20.2)	15.74 (9.61)
Care commitments*		
Children	32 (34)	18.34 (6.29)
Other family / care commitments	32 (34)	19.50 (6.41)

*denotes where total number does not = 100% as these questions had an N/A option (e.g. N/A for those who did not have additional care commitments).⁺denotes a significant difference between variables.

Discussion

The aim of this investigation was to examine the perceived stress of higher education students studying in a further education college. The PSS-10 was used as a unidimensional measure of perceived stress with a minimum score of 0 and a maximum score of 40, and there is no literature available that validates categories of score i.e. low/medium/high stress. Previous studies have attempted to provide normative PSS-10 data from samples of healthy individuals. Nordin and Nordin (2013) found a mean score of 13.96 from a sample of 3,406 Swedish adults and the original PSS-10 study by Cohen and Williamson (1988) showed a mean score of 13.02. However, other authors have reported slightly higher PSS-10 scores in the general population of 16-19 (Remor et al. 2006) and 15.19 (Andreou et al. 2011). As it is difficult to generalise a normative perceived stress score due to a number of confounding variables, it may be more appropriate to compare our findings to a student only population. In this context the average score reported in this paper is comparable to scores of ~17 (Roberti et al. 2006) and ~16 (Smith et al. 2014) from the USA, and ~19 from Turkey (Örücü and Demir 2009).

The similarities between the average PSS-10 observed in this paper and from students in other studies is in spite of the average age of our participants (28.9 years) being higher than previous research (average 18-23 years). Moreover the absence of a relationship between age and PSS-10 score in this study ($p = 0.88$, $r = 0.016$) suggests that the student age has no impact upon perceived stress. There is disagreement in the literature on the relationship between age and perceived (Osmanovic-Thunström, et al. 2015). Previous research has demonstrated a decrease in perceived stress as age increases (Nordin and Nordin 2013; Cohen and Janicki-Deverts 2012). The results of this study are consistent with previous

research that found no difference between younger and older adults (Scott, Jackson and Bergeman 2011; Diehl and Hay 2010). Unfortunately studies from the UK have presented correlation coefficients with other variables rather than average PSS-10 scores, making a comparison difficult (El Ansari et al 2014a, 2014b).

Several authors have found gender differences in perceived stress in different student samples, all reporting females to have a higher level of perceived stress when compared to males (Andreou et al. 2011; Leung et al. 2010; Örüci and Demir 2009; Remor et al. 2006; Roberti et al. 2006; Smith et al. 2014). Data from the current study supports this notion, concluding that female students were significantly more susceptible to stress compared to males (19.16 vs. 15.52 respectively). Misra et al. (2000) comment that female students do not have a greater number of academic stressors in comparison to male students, but rate negative events more often and of greater magnitude. Davidson-Katz (1991) suggests the socialization of male students leads to expression of emotion being perceived as weak and unmasculine. Studies into normative perceived stress scores (e.g. Nordin and Nordin 2013) as well as specific population samples such as smokers (Lawless et al. 2015) and psychiatric nurses (Yada et al. 2014) also reported higher perceived stress in female participants. Although sex differences are clearly demonstrated in the existing literature, further investigation into the potential mechanisms for this response is needed (Nordin and Nordin 2013). Research must now investigate the practical implications of this, and find out if this statistical significance is clinically significant (i.e. is there actually a physiological difference or is it simply perception, and does this impact upon the health and achievement of female students).

There were no significant differences in total stress score between students that had a job in addition to studying and those that did not work whilst studying. Robotham (2009) suggests that combining employment with study can increase stress whilst reducing ability to cope with stress, but in some individuals the combination of work and study increases the ability to cope with stress. Furthermore, Jogaratnam and Buchanan (2004) found no differences in self-reported stress response based on hours work or jobs held alongside study. By considering the mean score was approximately half of the maximum score, this response may be representing a 'meet-in-the-middle' response whereby unemployed students have a heightened level of perceived stress and employed students have an existing level of perceived stress resulting from balancing a work-study commitment i.e. no additive stress from studying. This may link to 'learned resourcefulness' (Akgun and Ciarrochi 2003) whereby all students experience stressful situations but some handle these situations more effectively. suggest working students may have developed increased resourceful and their life experience minimises the negative impact of multiple roles.

From a pedagogical perspective, it could be conceptualised that students who do not work concurrently to studying are more likely to become stressed by deadlines and other academic demands, whereas employed students have a greater ability to cope with stress due to their occupational and life experiences. However this requires further investigation through a mixed methods approach to validate this suggestion i.e. the combination of interview responses with self-reported scores.

This article adds to the body of research investigating perceived stress in undergraduate students and presents data for comparison with other demographics. Whilst there is scope for further descriptive work on this topic (e.g. changes in stress through levels 4-6 and onto postgraduate study) the authors suggest that future work should investigate the efficacy of strategies and interventions to manage perceived stress in students and investigate the

potential pedagogical implication of perceived stress. Ultimately this body of research will be enhanced with the inclusion of physiological markers of stress alongside the PSS-10 to answer some of the questions surrounding perceived stress such as whether female students are actually more stressed than their male counterparts, or if employment status can impact upon actual physical stress and it simply changes student's perception of stress. Previous research into student stress has typically focused on self-reporting mechanisms (Robotham and Julian 2006) such as the PSS and other inventories such as the Life Experience Survey. However acute stress has previously been assessed via 24-hour urinary glucocorticoid metabolite excretion (Remer et al., 2008) and cortisol stress reactivity via salivary samples (Kudielka et al., 2009; Kudielka and Kirschbaum, 2005). Chronic stress can be validly and reliably assessed by hair cortisol concentration (Stalder et al. 2017). A mixture of quantitative and qualitative data collection can give more insight into complex development phenomena such as perceived stress (Scott, Jackson and Bergeman 2011).

In conclusion despite the different context in which HE-in-FE students complete their HE study, and the 'untraditional' demographic from which they come, levels of perceived stress appear to be comparable to the 'traditional' undergraduate. This study also adds to the evidence base that female students typically have a higher level of perceived stress than males, and further research is warranted to investigate why this is the case and whether it is a clinically significant difference.

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Appendix 1 – PSS-10 Inventory

	Never	Almost Never	Sometimes	Fairly Often	Very Often
	0	1	2	3	4
1. In the last month, how often have you been upset because of something that happened unexpectedly?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. In the last month, how often have you felt that you were unable to control the important things in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. In the last month, how often have you felt nervous and “stressed”?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. In the last month, how often have you felt that things were going your way?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. In the last month, how often have you been able to control irritations in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. In the last month, how often have you felt that you were on top of things?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. In the last month, how often have you been angered because of things that were outside your control?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>