Examining perceptions of academic stress and its sources among university students: The Perception of Academic Stress Scale

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Abstract

The development of a scale to measure perceived sources of academic stress among university students. Based on empirical evidence and recent literature review, we developed an 18-item scale to measure perceptions of academic stress and its sources. Experts ($n = 12$) participated in the content validation process of the instrument before it was administered to ($n = 100$) students. The developed instrument has internal consistency reliability of 0.7 (Cronbach's alpha), there was evidence for content validity, and factor analysis resulted in four correlated and theoretically meaningful factors. We developed and tested a scale to measure academic stress and its sources. This scale takes 5 minutes to complete.

Keywords

academic stress, measurement scales, university students

Introduction

Stress among undergraduate and graduate students is multi-factorial, arising from both academic and non-academic factors, including socio-cultural, environmental, and psychological attributes (Brand and Schoonheim-Klein, 2009). Stress levels may escalate to significant proportions in some students, to present with symptoms of anxiety especially during tests and examination periods. In fact, previous research suggested a modest prevalence rate of 10 to 35 percent of college students experience functionally impairing levels of test anxiety (Chapell et al., 2005; Naveh-Benjamin et al., 1997). However, not all students experience anxiety with the same severity. In the Social Survey of the German Student Union, it was estimated that approximately 15–20 percent of student's functioning become impaired by exam nerves in a "modest" to "high" degree (Neuderth et al., 2009). Also, it was demonstrated that the delay and the drop-out in university students occur significantly more often in students with test anxiety and is associated with psychiatric morbidity including suicidal behavior and high economic costs (Schaefer et al., 2007).

Also, it was demonstrated that 10 percent of dental students suffered from severe emotional exhaustion, 17 percent complained about a severe lack of accomplishment, and 28 percent reported severe depersonalization symptoms (Pohlmann et al., 2005). Academic factors were the predominant cause of stress in most students, followed by physical, social, and emotional. Majority of students with stress reported high scores of poor self-esteem, and about half scored high on depression scales (Baste and Gadkari, 2014). Results from the literature suggest that higher level of stress to be associated with poor academic performance (Sohail, 2013).

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Perceived stress was reported in some research, to vary among different sociodemographic groups (Acharya, 2003; Pau et al., 2007; Polychronopoulou and Divaris, 2005). For example, it was found that females, younger students, those without a previous higher education qualification, and those not satisfied with their decision to study dentistry were significantly more likely to report perceived stress levels when compared to their counterparts (Morse and Dravo, 2007; Pau et al., 2007). However, in other studies, men showed more stress (62.9%) than women. However, females perceived more stress in the interpersonal domain score more significantly than males (Saxena et al., 2014; Tangade et al., 2011). In a recent study, it was demonstrated that the most common sources of stress among medical students ($n = 161$) were related to both academic and psychosocial pressures. These included high parental expectations, frequency of examinations, vastness of the academic curriculum, sleeping difficulties, worrying about the future, and about becoming a doctor. From reviewing the literature, stress among dental and medical students in different cultures is well documented and was associated with significant psychiatric morbidity in the literature (Al-Omari, 2005; Naidu et al., 2002; Pohlmann et al., 2005; Rajab, 2001; Shah et al., 2010; Tuisuva and Morse, 2003). For example, it was demonstrated recently that more than half of the respondents were affected by depression, and over two-thirds by anxiety and stress, and females consistently reported higher score of stress as compared to their male counterparts (Iqbal et al., 2015; Kumar et al., 2014).

Literature search summary

Workload and test difficulty and exam format

In a number of studies, authors found that the most frequently reported factors contributing to stress and anxiety around the examination periods were extensive course loads, lack of physical exercise, and long duration of exams, reported by the students (Harikiran et al., 2012; Hashmat et al., 2008; Sansgiry and Sail, 2006; Shah et al., 2010). The perception of extensive course load and long duration of examinations were found to be the most important sources of test anxiety in a number of research studies. For example, in a cross-sectional study, Hashmat et al. (2008) examined factors contributing to exam anxiety among the final medical students ($n = 120$), using structured self-administered questionnaire including questions about lifestyle, study style, psychological problems, and examination system. Authors found that the most frequently reported factors by the students, contributing to exam anxiety, were extensive course loads (90.8%), lack of physical exercise (90%), and long duration of exams (77.5%). Authors also reported that most students had poor knowledge of exam-taking and anxiety-reduction (Hashmat et al., 2008). Medical students' performance in periodic examinations was the most frequently and severely occurring sources of stress (Shah et al., 2010).

It was demonstrated in both laboratory and in self-report questionnaires that students report and experience higher levels of anxiety from the objective structured clinical examination (OSCE) than from the written examinations (Furlong et al., 2005). Also, Omigbodun et al. (2006) and Polychronopoulou and Divaris (2005) found that excessive school work, congested classrooms, strikes by faculty, and lack of laboratory equipment were identified as a source of stress. The fear of course failure, uncertainty about future, clinical training difficulties, and work overload were among the perceived sources of stress among dental students (Acharya, 2003; Polychronopoulou and Divaris, 2005). In a recent study, it was reported that 16.2 percent of the variance accounted for the excessive cognitive, somatic, and emotional responses on the Examination Anxiety Scale scores (Bedewy and Gabriel, 2013). Based on a self-administered survey, it was demonstrated that test anxiety among pharmacology students ($n = 198$) was positively correlated with students' perceptions of course load and negatively related to their ability to manage time with course work (Sansgiry and Sail, 2006).

Morse and Dravo (2007) utilized a modified version of the Dental Environment Stress questionnaire (41 items) to assess levels of stress among undergraduate students ($n = 115$). Authors reported that there was slight to moderate stress. However, sources of stress were more prominent among female students and with the following items: full loaded day, followed by criticism from clinical supervisors in front of patients, amount of assigned work, fear of failing a course or year, examination and grades, financial resources, fear of employment after graduation, and fear of facing parents after failure (Morse and Dravo, 2007).

Factors related to academic expectations and pressures to perform

It was demonstrated in a number of studies that parental pressures and teachers' expectations were associated with stress around the time of examinations or about choosing particular academic study or a future career. For example, students who joined dentistry due to parental pressure, with associated fear of facing parents after failure, described greater stress than those who joined of their accord (Acharya, 2003; Tangade et al., 2011). Authors recommended that parents need to be counseled against forcing their children to join an educational program, not of their choice (Tangade et al., 2011). Also, receiving criticism from supervisors about academic or clinical work was one of the sources associated with significant stress among dental students (Kumar et al., 2009). Other authors suggested that parental pressure predicted a higher degree of test anxiety, as the threat of negative evaluation from others is increased. Conversely, it was theorized that parental support would predict a lower degree of stress and test anxiety, as the threat of negative evaluation is reduced (Putwain

et al., 2010). Also, a higher than expected levels of emotional exhaustion were found in a large sample of first-year undergraduate students, and among entry-level students dental students in seven European dental schools (Polychronopoulou and Divaris, 2005), and recently, Tangade et al. (2011) found that final year students presented with higher stress scores. Using a descriptive cross-sectional design, Wang and Yeh (2005) examined the perceptions and sources of entrance exam stress among third-year nursing students ($n = 441$) and its effect on coping behavior. Authors concluded that the five main stressors of entrance exam stress, in descending order, included taking tests, the student's own aspirations, learning tasks, teacher's aspirations, and parent's aspirations (Wang and Yeh, 2005).

Factors related to students' academic self-perceptions

Other sources which are commonly related to students' academic self-perceptions involve such scores especially those related to their personality characteristics, intelligence, their past academic achievements, and other academic environmental and psychosocial sources.

Hancock (2001) and Hembree (1988) reported that negative cognitions related to examinations, when such students underestimate their own abilities, or overestimation of the consequences related to their failure, are often accompanied by higher anxiety levels and poor performance. It was demonstrated that in a number of studies, among dental and medical students, stress was high enough to present with psychiatric disorders in substantial proportions of students. The experience of severe stress and anxiety among dental school students is well documented. Students often report stress-related symptoms that may range from mild anxiety to sleep and eating disorders, as well as resulting in reduced performance, inability to concentrate, hostility, depression, and other debilitating effects (Stewart et al., 2006; Westerman et al., 1993). In a cross-sectional survey examining the level of perceived academic stress among medical, dental, psychology, and sports students, it was demonstrated that sports and psychology students had a lower perceived stress risk compared with medicine students (Neveu et al., 2012).

The relationship between personality traits and stress and anxiety related to taking examinations was also examined in a number of studies. For example, Liu et al. (2006) argued that test anxiety should be related to the personality and self-esteem, and that the prevalence of test anxiety should be higher in introversive, unstable emotional, apparent psychoticism or low self-esteem students. Xu et al. (2005) examined the effects of self-concept on the test anxiety among medical college students, using the test anxiety questionnaire and the English-learning self-concept scale. Authors found that all the dimensions of self-concept were significantly related to test anxiety, among which are the general self-concept and the academic self-concept. Others claimed that perceived academic competence was related to worry and tension (Putwain et al., 2010).

Objectives of the study

If we are to develop programs to assist students in their scholastic activities and to minimize their anxiety and decrease their distress, one should develop a reliable tool to measure the sources of their stress and its associated causes.

The objective of this study is to develop and psychometrically assess an instrument with demonstrated evidence of validity, to measure academic stress among university students, the Perception of Academic Stress Scale (PAS).

Method

Participants

Students. There were 100 students, both men and women, ranging from 19 to 26 years of age (mean = 20.5 years) who participated. The proportion of male to female participants was 30/10 (75%/25%). All the participating students were from the third-year, Educational Psychology class at Tanta University Egypt. Students were included if they were planning to sit their third-year final course examinations in Educational Psychology. All students who participated in this study did not have a history of diagnosed psychiatric disorders, and all provided their consent to be included in the study.

The examination process involved taking a 3-hour written essay paper and an oral examination on the same day, which followed the written examination almost immediately. The written examination carried 75 percent of the total mark, and the oral examination carried the rest (25%). Students did not receive any credits for any assignments, or any homework, which they did during the whole year. Students, therefore, have to memorize a large amount of knowledge, for the two main semesters that they attended throughout the year.

Education experts. Both male and female experts (defined as more than 15 years of experience as a faculty in the area of Education and or Educational Psychology) were invited to participate in this study. Participated in the formal validation process were 12 experts from the Faculties of Psychology and Educational Psychology at Tanta University. There were female/male = 3/9, mean age = 54 years, standard deviation (SD) = 8.7 years, and mean years of experience as independent Psychology Consultants = 24, SD = 6.8. Letters of invitations were delivered face to face inviting experts to participate in the validation process. There was also one-on-one discussion and feedback about each item of the scale with regard to its relevancy to sample sources of academic stress among

undergraduate students. Among experts, there were seven at the rank of professor, two at the associate professor, and three PhD lecturers. Initially, experts provided opinion about the overall content of the instrument. Each expert reviewed and provided comments on the relevance of the scale to be developed before testing the instruments with students.

Procedure. The design involved the development and the psychometric assessment of a scale to measure the perceived sources of academic stress among undergraduate university students. Following extensive literature review, a table of specification with the initial items was created to guide item construction for developing the scale. We were able to identify a list of specification with three main components to characterize sources of academic stress among university students: (1) the academic expectations subscale (four items), (2) workload and examinations subscale (eight items), and (3) students' academic self-perceptions subscale (six items). The items related to these academic stresses were converted into an 18-item, 5-point Likert-type questionnaire, resulting in the PAS.

Table 2 displays the PAS three main subscales: (1) the academic expectations subscale (four items), (2) workload and examinations subscale (eight items), and (3) students' academic self-perceptions subscale (six items).

The volunteer panel of experts discussed and reviewed the items to examine the appropriateness and clarity of each item and to ensure that each item assessed students' sources of academic stress as perceived by students in faculty sittings. Experts were invited to rate each item formally for its relevance in measuring academic stresses, on a five-point Likert-type scale (1 = extremely irrelevant, 2 = irrelevant, 3 = slightly relevant, 4 = relevant, and 5 = strongly relevant). The objective of the consultation with experts was to provide both face and content validity by providing their agreement about the relevance of each item separately as a measure of students' academic stress. For the purpose of developing the PAS, it was agreed to include only items receiving a mean score of 3.5 or above rating from experts, as relevant to develop the scale. This process resulted in selecting the PAS (18 items).

Format, layout, and language review of instruments

All items were reviewed for clarity and grammatical corrections. After the scale had been written, the Microsoft Word computer program was used to assess the grammar, in order to ensure that students could easily understand and interpret each item.

Administration to students

The scale was pilot tested with four students. Student's concerns and feedback were sought in the following aspects of the scale:

1. Clarity of items, identifying and reporting any ambiguous items, and items difficult to interpret.
2. Difficulties with language, technical jargon, or any offending language.
3. Reactions and responses to the format and layout of each item.
4. Time needed to complete the scale.

After a slight modification based on experts' and students' input, the Perception of Academic Stress Scale (PAS = 18 items), was distributed by e mail to a heterogeneous group of undergraduate and postgraduate students from educational psychology specialization, from all four classes of education (Class 1 to Class 4) class of Educational Psychology (n = 160). Hundred students (100/160, 62%) returned the completed PAS. Students were asked to rate on a 5-point Likert-type scale (from 1 = strongly disagree to 5 = strongly agree) their perceptions and experiences about each item in measuring sources of academic stress.

Appendix 1 displays the final version of the administered scale. Five items scoring were reversed to avoid response patterns (Appendix 1). Completed responses and consent were returned via e-mail or regular mail to the investigator at the Department of Educational Psychology, Faculty of Education, Tanta University. All students provided their consent to participate in this project.

At the same time, students were also asked to provide demographics including age, sex, academic year, their faculty, and university affiliation, and if they had a history of academic failure. All students were also asked to rate their satisfaction with their learning environment and their overall physical and psychiatric health.

Data collection and analysis

Responses from educational and psychology experts were used to provide evidence for content validity for the instrument, while students' responses and performances on the instrument were utilized to provide evidence for internal consistency reliability, and convergent validity as adduced in correlation analysis of the students' responses on the subscales of the instrument. Students needed on average 5 minutes to complete the PAS.

Results

Table 1 describes the demographics.

The results of students' responses are summarized in Table 2. The internal consistency reliability (Cronbach's alpha) was 0.7 for the 18 items of the PAS. Analyses of variance (ANOVAs) indicated that there were no significant differences in the mean PAS score, between sexes, and age groups in the severity scores of anxiety symptoms.

Table 1. Demographics of participating students (*n* = 100).

Non-continuous variables	Frequency	Percentage (%)
Male/female	06/94	06/94
Marital status		
Single	69	69
Married	30	30
Divorced	01	01
Academic year		
Undergraduate	18	18
Postgraduate	82	82
Faculty		
Education	95	95
History of academic class failure		
Never	72	72
Once or twice	24	24
Three or four	04	04
Satisfaction with the learning environment		
Very satisfying	3	3.0
Satisfying	31	31.0
Not very	39	39.0
Not at all	27	27.0
Satisfaction with home environment		
Yes	73	73.0
No	27	27.0
Continuous variables	Min/max	Mean ± SD
Age	19/43	23.34 ± 4.29

SD: standard deviation.

Experts' responses

There were no significant differences in ratings of experts based on their length of experience ($p < 0.08$). Expert's ratings for all items on the scale ranged from a minimum of 3.8 to a maximum of 4.8 and an average rating for all the instrument items of 4.4. Experts' responses yield an overall agreement of 89 percent among experts about the 18 items to measure academic stress (Table 2).

Students' responses

A close inspection of Table 2 will show that the level of academic sources of stress, as reported by students, was in the low range for most of the scales' items. Overall, students reported confidence in their academic performance and in their ability to succeed. In this study, moderate-to-severe stress items were "My teachers are critical to my academic performance" and "Competition with my peers for grades is quite intense." Also, the positively reported items were "Am confident that I will be a successful student, "Am confident that I will be a successful in my future career," and "I can make academic decisions easily."

Factor analysis

Several exploratory principal component analyses were conducted on the 18-item scale. Based on the Kaiser rule (eigenvalues > 1.0), the percentage of variance accounted for, and the cohesiveness of the factors (i.e. patterns of loadings), a four-factor solution appeared optimum. The four factors accounted for 43 percent of the variance in responses related to students' experiences of academic-related stresses, and the varimax rotation converged in four iterations. Table 3 contains the factor loadings, the internal consistency reliability analysis, and the proportion of the observed variance for each factor.

Factor 1: pressures to perform. This component consists of five items, has an internal consistency of 0.6, and explains 18 percent of the observed variance. It refers to the excessive stresses from the competitive peer pressures, parents' expectations, and teachers' critical comments on students' performance.

Factor 2: perceptions of workload and examinations. This component consists of four items, has an internal consistency of 0.6, and explains 10 percent of the observed variance. The factor refers to stresses relating excessive workload, lengthy assignments, and worried about failing examinations.

Factor 3: self-perceptions. This component consists of five items having an internal consistency of 0.5 and explains 9 percent of the observed variance. It refers to academic self-confidence and confidence for success as a student, in future career and confidence in making the right academic decisions.

Factor 4: time restraints. This component consists of six items having an internal consistency of 0.6 and explains 8 percent of the observed variance. It refers to stresses as a result of limited time allocated to classes, inability to finish homework, the difficulty to catch up if behind, and the limited time to wind up or relax.

There were significant positive correlations ($p > 0.001$) between factor scores and between the Pearson product moment correlations. A close inspection of Table 4 reveals the significant correlation between the three factors of the PAS. There were no significant differences between males and females, or across age groups, in the mean scores of the scale's factors.

Discussion

In this study, the perceptions of sources of stress among the psychology students were included in an 18-Likert-type item scale that had an overall internal consistency reliability of 0.7. There was 89 percent overall agreement among experts about the relevance of its contents to measure students' sources of academic stress. Students' experience of academic sources of stress was rated as mild to moderate, and most students reported confidence about

Table 2. Table of specification and students' and experts' ratings of the PAS scale.

Items of specifications and the subscale items	Experts ratings for relevancy of items, min–max (mean ± SD)[a]		Students responses, min–max (mean ± SD)[b]	
Stresses related to academic expectations				
Competition with my peers for grades is quite intense	3–5	4.5 (0.67)	1–5	2.9 (1.2)
My teachers are critical of my academic performance	4–5	4.1 (0.38)	1–5	3.3 (1.2)
Teachers have unrealistic expectations of me	3–5	4.1 (0.71)	1–5	2.6 (1.1)
The unrealistic expectations of my parents stresses me out	3–5	4.5 (0.67)	1–5	2.3 (1.3)
Stresses related to faculty work and examinations				
The time allocated to classes and academic work is enough	4–5	4.5 (0.51)	1–5	2.0 (1.0)
The size of the curriculum (workload) is excessive	3–5	4.7 (0.62)	1–5	1.2 (0.58)
I believe that the amount of work assignment is too much	3–5	4.7 (0.62)	1–5	1.3 (0.86)
Am unable to catch up if getting behind my work	4–5	4.5 (0.52)	1–5	2.5 (1.2)
I have enough time to relax after work	3–5	4.4 (0.66)	1–5	2.1 (1.2)
The examination questions are usually difficult	4–5	4.8 (0.38)	1–5	2.5 (0.90)
Examination time is short to complete the answers	3–5	4.8 (0.57)	1–5	2.2 (1.0)
Examination times are very stressful to me	4–5	4.8 (0.38)	1–5	1.7 (0.95)
Stresses related to students' academic self-perceptions				
Am confident that I will be a successful student	3–5	3.8 (0.57)	1–5	4.2 (0.76)
Am confident that I will be successful in my future career	3–5	3.8 (0.57)	1–5	3.9 (0.76)
I can make academic decisions easily	4–5	4.7 (0.45)	1–5	3.8 (0.98)
I fear failing courses this year	4–5	4.6 (0.49)	1–5	2.1 (1.4)
I think that my worry about examinations is weakness of character	3–5	4.2 (0.62)	1–5	2.6 (1.3)
Even if I pass my exams, am worried about getting a job	4–5	4.5 (0.51)	1–5	1.8 (1.1)
Mean scores (%)	4.4 (89%)		2.5 (50%)	

[a]Experts' responses: 1 = extremely irrelevant to 5 = very relevant.
[b]Students' responses: 1 = strongly agree to 5 = strongly disagree.

their academic skills and confidence in their ability to succeed.

There were no differences between male and female students in their perceptions of academic stress, and factor analysis revealed four factors that explained 43 percent of the variance for this scale. The results from this study demonstrated that the scale's items, related to academic stress clustered into four constructs (i.e. factors), which resulted in four components. The factors are theoretically meaningful and cohesive, as it was demonstrated by the significant correlations between their scores, supporting evidence for convergent validity. The four extracted factors—Factor 1, "*Pressures to perform,*" Factor 2, "*Perceptions of workload,*" Factor 3, "*Academic Self-Perception,*" and Factor 4, "*Time* restraints"—are in concordance with previous research, are theoretically meaningful, and cohesive within the framework of test anxiety.

In this study, Factor 1 "*Pressures to perform,*" which accounts for 18 percent of the variance, represents the experience of academic stress, related to teachers' and parents' high expectations and to peer pressures to perform and compete. In this study, however, students who completed the PAS reported mild level of stress for most items administered, despite the fact that the scale was administered around the time of taking a high stakes final

examination, which is considered a major source of stress. In this study, moderate-to-severe stress sources were associated with teachers' criticism of students' academic performance and associated with the intense competition with peers. Results from this study support the fact that there were positively reported scores reflecting that students were significantly confident about the success in their academic performance and their future career and were confident in making academic decisions. These findings replicate the findings from other studies, which were conducted among medical and dental undergraduate students (Morse and Dravo, 2007).

Evidence for content validity

The considerable effort to carefully develop a table of specifications with items for the present scale plus the systematic input from education experts enhanced the content and face validity of the scale. The follow-up by the experts further enhanced the content validity because of their high agreement on the relevance of the items.

Evidence for convergent validity

From the correlations between the four factors' scores, there is evidence to support convergent validity for this

Table 3. Rotated component matrix* for the Perception of Academic Stress (PAS) scale.

	Factor loading			
	1	2	3	4
The competition with my peers for grades is quite intense	0.75			
The unrealistic expectations of my parents stress me out	0.72			
Examination times are very stressful to me	0.50			
I think that my worry about examinations is weakness of character	0.44			0.42
My teachers are critical of my academic performance	0.41		0.42	
I believe that the amount of work assignment is too much		0.79		
The size of the curriculum (workload) is excessive		0.78		
Even if I pass my exams, am worried about getting a job		0.52		
The examination questions are usually difficult		0.47		
Am confident that I will be successful in my future career			0.71	
Am confident that I will be a successful student			0.67	
I fear failing courses this year			0.48	
I can make academic decisions easily			0.45	
I have enough time to relax after work				0.63
The time allocated to classes and academic work is enough				0.59
Teachers have unrealistic expectations of me				0.52
Examination time is short to complete the answers				0.47
Am unable to catch up if getting behind the work				0.46
Internal consistency (Cronbach's alpha) for each factor	*0.6*	*0.6*	*0.5*	*0.6*
Proportion of the observed variance for each factor (%)	*18%*	*10%*	*9%*	*8%*

*Principal components extraction, Varimax rotation with Kaiser normalization. Rotation converged in six iterations.
†Factor loadings < 0.40 have been excluded.
Factor 1: pressures to perform.
Factor 2: perceptions of workload.
Factor 3: academic self-perceptions.
Factor 4: time restraints.

Table 4. Pearson product moment correlations between PAS factors and subscale scores.

Subscale	Factor 1	Factor 2	Factor 3	Factor 4	Subscale 1	Subscale 2	Subscale 3
Factor 1: pressures to perform	1	0.27**	0.42**	0.40*	0.47**	0.70**	0.41**
Factor 2: perceptions of workload		1	0.20	0.27**	0.46**	0.13	0.64**
Factor 3: academic self-perceptions			1	0.20	0.77**	0.41**	0.34**
Factor 4: time restraints				1	0.45**	0.56**	0.81**
Subscale 1					1	0.29**	0.50**
Subscale 2						1	0.46**
Subscale 3							1

*Correlation is significant at the 0.05 level (two-tailed).
**Correlation is significant at the 0.01 level (two-tailed).

scale. Convergent validity was demonstrated by the positive significant correlations between the three factors, especially by the significant positive correlation between the scores of Factor 1, "*Pressures to perform*," and the scores of the other three factors.

Limitations of the study

The sample size was not large, and all patients were recruited from one class.

Conclusion

Notwithstanding the limitations of this study, a brief self-report scale to measure student's perceptions of academic stress sources was developed. There is acceptable internal consistency reliability, and there is evidence for face, content, and convergent validity of this instrument. In future research, the scale should be administered to a larger, heterogeneous sample of students, and in different educational and cultural settings. Also, future research should examine

the relationship between academic stresses and psychiatric disorders especially depression and anxiety disorders, which is lacking in the literature. Last but not least, prophylactic measures were suggested to manage stress among students, to include early identification of individuals who may be more prone to it, and implementation of stress management workshops can be effective. It is believed that implementing a positive student-centered environment is associated with full awareness of what is expected of them and can discuss perceived skills and weaknesses (Burk and Bender, 2005). Others suggested improving the academic environment (Neveu et al., 2012), problem-focused and emotion-focused strategies are the preferred choice to alleviate stress, the use of the student counseling services (Iqbal et al., 2015), and curricular and policy changes aiming at assisting students in coping with identified stressors (Harikiran et al., 2012).

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Appendix 1. The final version of the Perceptions of Academic Stress (PAS) scale.

Please rate your perception about the following statements in contributing to academic stresses	1	2	3	4	5
1 = Strongly disagree to 5 = Strongly agree					
Am confident that I will be a successful student					
Am confident that I will be a successful in my future career					
I can make academic decisions easily					
The time allocated to classes and academic work is enough					
I have enough time to relax after work					
Please rate your perception about the following statements contributing to Academic Stresses	1	2	3	4	5
1 = Strongly agree to 5 = Strongly disagree					
My teachers are critical of my academic performance					
I fear failing courses this year					
I think that my worry about examinations is weakness of character					
Teachers have unrealistic expectations of me					
The size of the curriculum (workload) is excessive					
I believe that the amount of work assignment is too much					
Am unable to catch up if getting behind the work					
The unrealistic expectations of my parents stresses me out					
competition with my peers for grades is quite intense					
The examination questions are usually difficult					
Examination time is short to complete the answers					
Examination times are very stressful to me out					
Even if I pass my exams, am worried about getting a job					