Original Article

Anxiety Levels and their Relation to Evaluation of the Courses among Greek Nursing Students

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Abstract

Background: Levels of stress (both trait and state) have been found to significantly increase during the exam period for students as this period has been considered to be really demanding for students.

Objective: This study was aimed to examine whether the exams' evaluation might be affected by the level of state/trait or total anxiety at the time of exams.

Methods: An observational pilot study was conducted among nursing students using the Greek version of the State-Trait Anxiety Inventory for adults (STAI). We enrolled 145 first-year students (mean age 19.2±2.5 years old, 81.4% female). Chi-square and Student's t- test were used to explore associations between students' demographics and other characteristics and exams' evaluation, whereas the associations between student's characteristics and courses' rating were controlled using linear r-Spearman and multiple linear regressions. P-values ≤0.05 was considered statistically significant using the SPSS version 19.0.

Results: The mean age of 145 students was 19.2±2.5 years old while the majority of students (81.4%) were females. According to our analysis, the total courses' grades of students was not affected by Total Anxiety (t=-1.26, p=0.209), but negatively affected by Trait Anxiety (t=-2.42, p=0.027). Also, both; lower levels of State Anxiety (r=-0.528, p<0.05) and Total Anxiety (r=-0.424, p<0.05) were significantly associated with higher grades in the course of Sociology.

Conclusion: Total academic evaluation is mainly affected by non-academic related factors including students' socio-economical background which has been substantially affected during a period of economic crisis.

Keywords: academic evaluation, state/trait anxiety, anxiety, nursing students

Introduction

All over the world mental health problems have been a growing concern among youth population. Anxiety disorders have been found to be one of the most common disorders reported among young people and especially among university students (Bayram & Bilgel, 2008; Anxiety and Depression Association of America, 2010-2016). Numerous of definitions have been proposed for anxiety, however, the most reliable was described by Spielberger reporting two dissimilar types of anxiety, the "State Anxiety" as a temporary emotional condition which characterized by apprehension, tension, and fear about a particular situation or activity and, the "Trait Anxiety" as an aspect of personality, a more permanent disposition to be anxious which is chronic and pervasive across situations and is not triggered by specific events (Spielberger & Sydeman, 1994). Anxiety among nursing students can be present for a variety of reasons including academic (the workload and the long hours of study) and non- academic (economic crisis, paternal financial status, family health issues, death of a patient etc). General anxiety in students has been linked to a number of effects such as physical exhaustion, absences from lessons, nervousness, depression, anguish, fear, frustration, anger, despair, loneliness. As students are moving forward to their studies, the intensity of these symptoms is increasing, especially of physical exhaustion, frustration and depression (Burnard et al., 2007; Chandavarkar et al., 2007).

It has been suggested that anxiety disorder is more common among first year students. This can be partially explained by the fact that university is a totally new environment for students which therefore delay their adjustment to the academic, social, personal and lifestyle challenges (Mudhovozi, 2012). Additionally, financial situation that deals with a student family was reported as a very prominent factor that could contribute to a student's level of anxiety with the university entry affecting academic success (Archuleta et al., 2013). Importantly, associations between decreased gardes awarded and anxiety have also been demonstrated reporting that a higher level of anxiety leads to lower courses' grades (Afolayan et al., 2013; Rana & Mahmood, 2010). Furthermore, increased levels of students' anxiety were associated not only with a decreased grade

in the specific exam period, but also with a poor annual evaluation (Rezazadeh & Tavakoli, 2009; Cassady & Johnson, 2002). To our knowledge, the effects of anxiety on academic evaluation within an exam period have been well documented worldwide (Papazisis et al., 2008a, 2008b, Papazisis et al., 2014) whereas the impact of anxiety levels on grades' awarded at the time of exam has not clearly found.

Aim

The aim of the present study was to examine the associations between the total courses grades awarded and the presence of State/Trait or Total Anxiety at the time of the exam among first-year nursing students.

Material and Methods

Study Design

This observational pilot study was conducted during the exam period of the winter semester of 2013 in the Nursing Department of the Technological Educational Institute of Crete. Sampling took place every Monday in order to decrease the likelihood that students might have been stressed by a prior examination. We enrolled first-year students who agreed to participate to our study after receiving adequate information regarding the aim and the purpose of this study. During this period of time students participated to the exams organized for four courses (Computing-Informatics, Biology-Biochemistry, Microbiology and Sociology). A validated questionnaire was distributed and completed by the students before the exam questions were distributed between students as we aimed to assess students' anxiety level at the time of the test. From a total of 192 students who provided an informed consent 145 were fully completed the distributed questionnaires and finally included in the statistical analysis (response rate of 75.5 %).

Instrument

The Greek version of the State-Trait Anxiety Inventory for adults (STAI) was used to assess the presence of the State and Trait anxiety in our sample as previously showed high reliability 0.96 for the state and 0.98 for the trait anxiety levels (Fountoulakis et al 2006; Liakos & Giannitsi, 1984). Originally, STAI is a self-administrative questionnaire which has been developed by Spielberger and colleagues (Spielberger et al.,

1964). Overall, STAI has a dimensional structure (State and Trait) including 40 questions based on participants' responses (Likert type; 1=not at all to 4=very much so) ranging from 20 to 80 for each structure. State Anxiety included 20 questions focusing on feeling at the time of a perceived threat and Trait Anxiety included 20 questions with respect to feeling across typical situations that everyone experiences during our daily life.

Total Anxiety was defined as a summary score of both, State and Trait Anxiety. Higher scores are indicative of higher anxiety. Specifically, score ranging 20 to 39 indicates low anxiety, score 40 to 59 indicates medium anxiety, while score more than 60 indicates the presence of high anxiety levels. The process of the courses evaluation was based on multiple choice test rating 0-10. Score less than 5 is indicative of "not pass" in accordance with the National Academic criteria. However, we used the mean (M) scores of courses in order to explore specific associations - especially for linear comparison. Demographic characteristics such as the gender and the age were also recorded in a separate sheet. The reported anxiety levels were assigned to each student's course grades through an online electronic database with the use of students' identification number which was provided by completing the questionnaire.

Ethics

An ethical approval was provided by the Ethical Committee of the Technological and Educational Institute of Crete. Participants' anonymity was secured at all times and an informed consent was provided before participation.

Statistical Analysis

The internal consistencies of Total Anxiety (Cronbach-a=0.895), State Anxiety (a=0.831) and Trait Anxiety (a=0.841) were found suitable for further statistical analysis. Descriptive statistics and univariate analysis was performed. Chi-square and Student t- test were used as appropriate. Variance analysis was used to determine the associations in the distributions between courses' grades awarded and anxiety levels. Non-parametric variables were explored using linear r-Spearman method for possible associations among Anxiety, student's characteristics and, courses' grades, while multiple linear regressions was used to control

for multiple correlations with student t-test criterion. The data were analyzed using the SPSS, version 19 and p-values ≤0.05 was considered statistically significant.

Results

Demographic characteristics

Table 1 presented the descriptive characteristics of the study participants. The majority of students were female (81.4% vs. 18.6%) with similar age distribution (males 19.3±1.8 vs. females 19.2±2.7). However, there were significant differences between grades awarded in different courses. Specifically, we found that students were awarded with higher grades for the course of Sociology 7.08, $p<0.001$), compared to the course of Microbiology (5.54), Computing – Informatics (4.49) and Biology - Biochemistry (3.09) (data not shown).

Associations between students' anxiety levels, demographic characteristics and courses' grades

No significant associations were found between the levels of state, trait and total anxiety and students' gender and age, although females and older students reported higher levels of anxiety. However, we found that total course evaluation of the four indicative courses was negatively associated with trait anxiety ($r=-0.168$, $p<0.05$). In addition, significant associations were observed between State Anxiety ($r=-0.528$, $p<0.05$), Total Anxiety ($r=-0.424$, $p<0.05$) and grades of the course of Sociology showing lower level of anxiety - (Table 2).

Associations among total courses' grades and types of anxiety

Multiple linear regression revealed that the mean grades awarded were significantly differ among courses. In particular, students were found to get higher grades in Sociology and Microbiology ($t=4.78$, $p<0.001$) compared to other courses. It has been also found that the total courses' grades were not affected by the levels of state anxiety, although negatively affected by the levels of trait anxiety ($t=-2.42$, $p=0.027$) suggesting that lower course grades were achieved with higher levels of trait anxiety (Table 3). Finally, total academic evaluation was not affected by the total anxiety level ($t=-1.26$, $p=0.209$) after adjusting for the age, the gender and the four courses (Table 4).

Table 1: Sample distribution according to the participants' demographic characteristics and course participation

Gender		Male	Female	Total
		n (%)	**n (%)**	**n (%)**
		27 (18.6)	**118 (81.4)**	**145 (100.0)**
Age*	**Mean age (±SD)**	**19.3±1.8** [†]	**19.2±2.7**	**19.2±2.5**
Courses	**Computing-Informatics**	**13 (50.0)** [‡]	**28 (23.7)**	**41 (28.5)**
	Biology-Biochemistry	**7 (26.9)**	**30 (25.4)**	**37 (25.7)**
	Microbiology	**4 (15.4)**	**32 (27.1)**	**36 (25.0)**
	Sociology	**2 (7.7)**	**28 (23.7)**	**30 (20.8)**

Table 2. Associations between students' levels of anxiety and their demographic characteristics and grades awarded per course

		Anxiety State	Trait Anxiety	
		r-Spearman		(P-value)
Gender		0.122	0.053	0.107
Age*		0.154	0.096	0.128
Courses	**Computing-Informatics**	0.042	-0.147	-0.071
	Biology-Biochemistry	0.108	-0.075	0.074
	Microbiology	-0.067	-0.175	-0.104
	Sociology	**-0.528****	-0.231	**-0.424****
	Total courses' evaluation	-0.079	**-0.168****	-0.132

Table 3: Associations between mean courses' grade with students' characteristics and types of anxiety

	Total courses'	evaluation	
	betas	t	p-values
Gender	0.055	0.69	0.491
Age+	0.074	0.93	0.353
Courses	0.381	**4.78**	**<0.001**
State Anxiety	0.112	1.20	0.265
Trait Anxiety	-0.217	**-2.42**	**0.027**
	R^2	0.20	
	R^2 *adjusted*	0.17	

Table 4: Associations between courses' grades, student's characteristics and anxiety

	Total courses'	evaluation	
	betas	t	p-values
Gender	0.073	0.93	0.357
Age+	0.091	1.13	0.259
Courses	0.365	**4.57**	**<0.001**
Total Anxiety	-0.101	**-1.26**	**0.209**
R²		0.18	
R² *adjusted*		0.15	

Discussion

Our study showed that the total courses grades were not affected by state and total anxiety but only by trait anxiety levels. Additionally, we found that courses' grades significantly differed among courses. Also, students achieved higher grades in a specific course (Sociology) with significantly lower anxiety levels compared to the other courses. Finally, we found no significant differences among courses' grades with respect to age and gender.

The main finding of the present study was that the total courses' evaluation was significantly affected by the trait anxiety suggesting that students achieved lower courses' grades when trait anxiety was present in these indicative courses. Our findings were confirmed with previous research conducted among Iranian first-year University students, which showed that Trait Anxiety was negatively associated with test evaluation in coincidence with poor preparation and test-taking strategies during exam period (Birjandi & Alemi, 2010). Conversely, data from undergraduates of Oxford in final examinations reported that the Trait Anxiety was not

necessarily deleterious to test evaluation. Particularly, higher levels of Trait Anxiety at students not only were not associated with the results of final examinations, but also it had a positive effect on final evaluation especially in females (Mellanby & Zimdars, 2011). In our study, State Anxiety was not associated with total courses' grades. Our finding is in line with findings reported by Burns (2004) in a study conducted in Ohio which showed that there was no negative relationship between test anxiety at the time of test and the final academic evaluation. Moreover, a previous survey among first year law students in America reported that the low grades on the final exams were independently associated with high rates of State Anxiety, taking into consideration the self-efficacy of students (Diaz et al., 2001).

Furthermore, our finding that the presence of Total Anxiety may negatively affect the total courses' evaluation has been previously reported by similar studies which have also demonstrated that anxiety and exam preparation might affect the academic evaluation and exam grades of Nigerian Nursing students. In specific, authors reported that Total Anxiety was a common

problem for students during examination, as a consequence to affect negatively the courses' evaluation (test grades) in exams and, generally students' final evaluation in their academic life (Derakshan & Eysenck, 2009; Afolayan et al., 2013). These results are similar with a previous study identifying that general anxiety levels might disrupt a person's ability to concentrate increasing errors and preventing efficient study (Trifoni & Shahini, 2011).

We also found that, students' achieved higher grades with less strait and total anxiety for sociology course. Interestingly, there are several and conflicted evidence supplying us possible explanation on this relation. In view of that, previous data have shown that grades were depended on subject field while Social Sciences were considered as softer studies than Nature Sciences (Centra, 2003). Further explanations regarding inferior grades were scored in courses was identified by a study in medical students on Biology reported that the grades of students was regarded with personality, motivation or even the general inability of students because the current academy was not their first preference (McManus & Richards, 1986). Overall, numerous studies have well documented that educational success might be achieved only when students are focused on a study task with good time management skills and the real desire for a high level of academic evaluation (Pehlivan, 2004; Britton & Tesser, 1991).

Another potential explanation could be that the young Greek adults living in an environment under economic and social strain might have already been suppressed by increased level of mental disorders (stress, anxiety, and depression) in comparison to Swedish young adults, as recently demonstrated by the Linköping University (Sweden) - (Faresjö et al., 2013). Most important, a recent study among Greek nursing students showed that at least 13% are often absent from classes, approximately 50% are working and at least 13% have sold their belongings due to the economic crisis (stereos, computers, furniture). As a result, 61.8% of students are thinking of migrating from Greece to seek for a job abroad (Anagnostopoulou et al., 2014) and therefore all these feeling and thoughts might have affected their level of state anxiety and academic evaluation amid financial recession in Greece.

To our knowledge, this is the first study focusing on the effect of the anxiety levels at the time of the exam test on academic evaluation during a period of economic crisis. A pilot study was designed and delivered in a convenience sample of nursing students, which mainly aimed to guide further research and interventions in this research area.

Study Limitations

It is worth mentioning that our results might have been affected by certain limitations. Specifically, we don't know whether already diagnosed types of anxiety disorders might be present in our sample, whereas matched-case control analysis was not performed and, therefore this study will be considered as pilot. Another potential limitation was that the information received was self- reported which might have biased the findings of this study. Finally, we enrolled only first-year students and thus, the results could not be considered representative of all nursing students.

Conclusion

This study confirmed that the total academic evaluation may be affected by students' trait anxiety levels as an outcome of the daily stressful life circumstances in a country of an economic crisis. Therefore, it is of crucial importance to develop the skills and services needed in order to be able to screen and support young adults that belong to the student community.

Acknowledgments

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