

Research article Ερευνητική εργασία

Predictors and characteristics of anxiety among adolescent students: A greek sample

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In the Greek society, there is a strong cultural tendency to overestimate the value of University studies. So students are under high emotional pressure during the long lasting period of the preparation for the university entrance exams. The aim of the present study was to evaluate the level of anxiety in a general adolescent population of senior high school students in Athens, Greece. Also to examine the association between the anxiety's severity with various demographic and socio-cultural factors, as well as with academic performance, extracurricular activities, sleep duration and presence of somatic problems. The sample consisted of 696 adolescent students of three Senior High Schools (SHS) (391 girls and 305 boys). Two of the schools were general education institutions (GE1 and GE2, N=450), while the third was a technical one (TE, N=246). The school sample was selected to reflect the proportion between the two different types of SHSs in Athens as well as other major urban areas in Greece. The State-Trait Anxiety Inventory was administered and personal data were also collected. Statistical significance was set at $p < 0.05$ and analyses were conducted using STATA 7.0. 567 adolescents lived with both parents and 121 with one or none of them. Father's educational level was low for 138, middle for 154, high for 195 and mother's was low for 135, middle for 417, high for 140. The average sleep duration was 7.5 hours per day ($SD=1.3$). The average time per week spent in school related activities was 7.94 hours ($SD=7.56$) and in extracurricular activities was 9.02 hours ($SD=12.44$). 107 adolescents reported somatic complaints in the last year.

The academic achievement was poor for 233, good for 264, excellent for 196 students. Adolescents with extracurricular activities for more than 11 hours per week had lower scores, both on State and Trait scales. More hours in school-related activities were associated with greater levels of Trait anxiety. Adolescents whose father had a high educational level had lower scores on State anxiety compared to those whose father had a low educational level. Adolescents who reported the presence of somatic problems had a higher score in Trait anxiety. A significant negative correlation was found between sleep duration and both State ($r=-0.14$, $p<0.001$) and Trait anxiety ($r=-0.10$, $p=0.008$) scores. Stepwise linear regression analyses confirmed the association of gender and of father's educational level with both State and Trait subscale scores. The association of somatic problems with Trait anxiety was greater for girls compared to boys. The hypothesis that there is exam-related anxiety in our sample was not confirmed. There were no differences between school years and GE and TE schools. Also there was not an association of anxiety level with academic achievement and the number of parents the adolescent was living with. This study shows that girls, especially those reporting somatic problems, and adolescents coming from families with low parental education, are particularly prone to higher level of anxiety and that extracurricular activities are linked to lower level of anxiety. These findings could contribute to the planning of preventive measures for student's anxiety.

Key words: Adolescent, anxiety, extracurricular activities, school performance, sleep, gender, greek sample

Introduction

Feelings of anxiety are very common during adolescence. A wide range in the prevalence of anxiety disorders, ranging from 5.7% to 17.7% is reported.¹ As it is shown in various studies, anxiety in adolescents is related to gender, academic requirements (in particular, pending exams), sports, family structure and socioeconomic status (SES), sleep duration and somatic problems.

Regarding gender, there is a preponderance of female adolescents among current and recovered anxiety disorder cases;^{2,3} female preponderance emerges early in life, and rates increase with age.⁴ Prior to taking exams, students may display higher levels of anxiety and perceived stress. Stress levels experienced during school exams are correlated to low test performance and to low self-rated evaluation of self-esteem;^{5,6} on the other hand, decreased anxiety is predictive of improved school performance and social functioning.⁷ Physical activity promotes well-being in adolescents and reduces levels of anxiety.⁸ Family status, especially divorce, impacts on symptoms of anxiety and depression dur-

ing adolescence.⁹ Adolescents with low family's SES are more prone to experience anxiety.¹⁰ Finally, somatic problems and sleep duration have been found to correlate with anxiety levels in adolescents.^{11,12}

In addition to the above, specifically for the Greek society, there is a strong cultural tendency to overestimate the value of University studies. So the Greek families put a considerable amount of emotional pressure on their children during the long lasting period of the preparation for the university entrance exams.¹³ The last three years of Senior High School, all students prepare for these exams. Students, in parallel to school classes, usually receive private tutoring, which is financed at great cost by their family.¹⁴ This additional economic burden contributes to an even higher pressure for achievement, which is reflected in the family's expectations.¹⁵

The aim of the present study was to evaluate the level of anxiety in a general adolescent population of senior high school students in Athens, Greece. We hypothesized that the anxiety level of our sample would be higher compared to those of other countries due to the Greek particularities. Another aim was to examine the association between the

anxiety's severity with various demographic and socio-cultural factors, as well as with academic performance, extracurricular activities, sleep duration and presence of somatic problems. We expected to identify which of those factors lead to increase or reduction of anxiety among adolescents. This is important for the development of therapeutic and preventive strategies.

Material and method

Participants

Our initial sample included the entire student population, consisted of 753 adolescent students (aged 15–18 years) attending Grades 1–3 of three state-run Senior High School (SHS) in the Greater Athens Metropolitan Area. 40 students did not agree to participate in the study and 17 did not complete the anxiety scales fully and thus were not included in the analysis.

Consequently, our final sample consisted of 696 adolescent students (391 girls and 305 boys, 160 in the first year, 290 in the second and 246 in the third). Two of the schools were general education institutions (GE₁ and GE₂, N=450), while the third was a technical one (TE, N=246). Students of general education schools take part in the national baccalaureate exams (National University Entrance Exams) at the end of their third year in order to apply for university entrance; students in technical education (TE) schools, also take part in national-level exams, but these are less demanding, with considerably less competition, and lead to a polytechnic-type technical higher education. The school sample was selected to reflect the proportion between the two different types of SHSs in Athens, as well as other major urban areas in Greece; at the time of the study, there were 129 general education (GE) and 85 technical education (TE) SHSs, with 28,045 and 22,450 students respectively (National Statistics of Greece, 2007).

Procedure

For the realisation of this study we obtained approval by the Ethics Committee of our Hospital. Self-administered questionnaires were distributed by a social worker or a psychologist with the mediation

and assistance of the teachers to all the students of all three grades of the participating schools around the end of the first trimester (November-December). The investigators informed the students about the nature of the questionnaires and consent was obtained from each student. Time taken to complete the whole questionnaire was approximately 35 minutes.

The questionnaire had an introductory section in which the following data were recorded: school, grade, gender, living with none, one or both parents, parental educational level (low=up to six years of formal education, middle=6–12 years of formal education, high=university studies), time spent per week in school-related (tutorials, courses, etc) and extracurricular (sports etc) activities, sleep duration, presence of somatic complaints, and academic performance during the previous year (1=poor, 2=good and 3=excellent achievement) based on existing school records.

The students were then asked to complete the State-Trait Anxiety Inventory (STAI)¹⁶ which has been validated in the Greek population^{17,18} and consists of two separate, 20-item self-report scales for measuring two distinct anxiety concepts. The STAI has been widely used to measure anxiety across the world¹⁹ and has been used in prior investigations to assess anxiety in adolescents.^{20–22} The State anxiety subscale is completed in relation to how the respondent feels at present, whereas the Trait anxiety subscale is completed with regard to how the respondent usually feels.

Statistical analysis

Variables were first tested for normality using the Kolmogorov-Smirnov criterion. For State and Trait scales the aforementioned criterion indicated a $p > 0.05$, so the normal assumption was satisfied. Hours in extracurricular and school-related activities were categorized into two categories using the 75th percentile of the distribution. The association of State and Trait scales with demographics and other variables of interest were explored using Student's t-tests and analysis of variance (ANOVA) with Bonferroni correction depending on the nature of data. Pearson correlation coefficients were com-

puted in order to explore the association of State and Trait scales with sleep duration. Consequently, all variables which were found to be associated with anxiety at a statistically significant level in the univariate analysis were entered in a multiple linear regression analysis using stepwise backward elimination, with p for removal equal to 0.1 and p for entry equal to 0.05, in order to find the best model fitting our data. Coefficients of determination (adjusted R_2) were reported as a measure of variation that is explained by the model. All reported p values are two-tailed. Statistical significance was set at $p < 0.05$ and analyses were conducted using STATA 7.0 (STATA, College Station, TX, USA).

Results

Of our respondents, 567 lived with both parents and 121 (17, 4%) with one or none of them; for 8 data was missing. The educational level of the father was low for 138, middle for 154 and high for 195; for 9 data was missing. The educational level of the mother was low for 135, middle for 417 and high for 140; for 4 data was missing. The average sleep duration of the participants was 7.5 hours per day ($SD=1.3$). The average time per week spent in school related activities was 7.94 hours ($SD=7.56$) and in extracurricular activities was 9.02 hours ($SD=12.44$). 107 participants reported somatic complaints or conditions in the last year for which they have consulted a physician. The academic achievement was poor for 233, good for 264 and excellent for 196 students; for 3 data was missing.

Average scores for the State and Trait subscales were 47.4 ($SD=12.8$) (item score $M=2.37$, $SD=0.64$) and 46.6 ($SD=10.1$) (item score $M=2.33$, $SD=0.51$), respectively. Univariate analyses revealed that females compared to males had greater scores for both scales (table 1).

Adolescents with extracurricular activities for more than 11 hours per week had lower scores, both on State and Trait scales. On the contrary, more hours in school-related activities were associated with greater levels of Trait anxiety. Additionally, adolescents whose father had a high educational level had lower scores on State anxiety compared

to those whose father had a low educational level, while adolescents who reported the presence of somatic problems had a higher score in Trait anxiety. A significant negative correlation was found between sleep duration and both State ($r=-0.14$, $p < 0.001$) and Trait anxiety ($r=-0.10$, $p=0.008$) scores. Stepwise linear regression analyses confirmed the association of gender and of father's educational level with both State and Trait subscale scores (table 2).

Multiple analyses also revealed a significant interaction of gender by somatic problems, indicating that the association of somatic problems with Trait anxiety is greater for girls compared to boys. Hours in school-related activities (more than 14 per week) were positively associated with Trait anxiety, while hours in extracurricular activities (more than 11 per week) were negatively associated with State anxiety. Longer sleep duration in multiple analyses was found to be associated with lower State anxiety scores.

According to R_2 coefficients, the variance of the model explained by the covariates was 8% for State anxiety and 9% for Trait anxiety. As defined from the standardized regression coefficients, gender had the greatest effect on both State and Trait anxiety.

Discussion

The scores for State and Trait anxiety derived from the STAI in our population are comparable to those found in a study of adolescents in Hawaii, [mean score per item for State anxiety was 1.98 ($SD=0.55$) and for Trait was 2.14 ($SD=0.54$) 21] and in another study of post-adolescents in Portugal [mean for Trait anxiety in the sub-sample younger than 30 years old was 43.8 ($SD=10.7$) 20]. Our findings show a higher score than in a study of American students [where mean State anxiety was 29.95 ($SD=6.19$) for girls and 29.68 ($SD=6.15$) for boys, and mean Trait anxiety was 34.15 ($SD=5.86$) for girls and 31.73 ($SD=7.20$) for boys]; in that study, however, the mean age of the sample was 3 years lower than of ours.²²

The hypothesis that there is exam-related anxiety in our sample was not supported by our findings. There were no differences between school classes,

Table 1. Univariate associations of State and Trait Anxiety scales with factors under investigation.

		State			Trait		
		Mean	SD	p	Mean	SD	p
Gender	Males	45.0	11.9	<0.001*	44.2	8.9	<0.001*
	Females	49.3	13.3		48.5	10.6	
Class	1st	46.1	12.7	0.075**	46.1	9.9	0.306**
	2nd	48.3	13.0		47.4	10.5	
	3rd	48.3	12.7		46.4	9.7	
School	TE	48.0	12.4	0.338*	46.1	10.5	0.322*
	GE1-GE2	47.0	13.1		46.9	9.9	
School record	0-13	48.0	12.2	0.334**	46.5	9.6	0.774**
	13.1-16	47.7	13.0		47.0	10.3	
	>16	46.3	13.4		46.3	10.6	
ECA(hours)	≤11	48.1	13.0	0.007*	47.1	10.1	0.026*
	>11	45.0	12.2		45.1	9.9	
SRA(hours)	≤14	46.9	12.7	0.083*	46.1	10.1	0.026*
	>14	48.9	13.2		48.1	9.9	
Number of parents living together	Both	46.9	12.7	0.070*	46.6	10.0	0.873*
	None-One	49.3	13.2		46.5	10.4	
Educational level of the father	Low A	49.3 C	14.1	0.029**	47.3	10.8	0.256**
	Middle B	47.7	12.4		46.9	9.8	
	High C	45.6 A	12.3		45.6	10.0	
Educational level of the mother	Low	47.8	13.5	0.676**	46.6	10.2	0.850**
	Middle	47.5	12.8		46.7	10.0	
	High	46.6	12.5		46.2	10.6	
Somatic problems	No	47.5	12.6	0.086*	46.6	9.7	0.014*
	Yes	49.9	13.8		49.2	10.2	
Drugs	No	47.7	12.9	0.851*	47.1	10.0	0.910*
	Yes	47.1	12.0		47.3	10.5	

*Student's t-test, **Analysis of variance (ANOVA); A, B, C indicates significant differences after Bonferroni correction

which would indicate that anxiety is worse in the last critical year before the university entrance exams. Also, there were no differences between GE and TE schools, a finding suggesting that increased anxiety is not associated with the degree of difficulty of upcoming examinations.

Our results indicate that female students had greater scores than male students in both Trait and

State anxiety subscales. Our findings are similar to those reported in other studies.^{2,3,12,20-24}

The results of the present study indicate that adolescents spending more time on extracurricular activities had lower scores, both on State and Trait scales compared to adolescents spending less time on extracurricular activities. In our study the majority of extracurricular activities related to physical

Table 2. Multiple linear regression models with dependent variable the State and Trait Anxiety scales.

	State				Trait			
	β	SE	β^*	p	β	SE	β^*	p
Gender								
Males, reference								
Females	3.43	1.02	0.13	0.001	3.37	0.93	0.17	<0.001
ECA(hours)								
≤11, reference								
>11	-2.42	1.17	-0.08	0.039				
SRA (hours)								
≤14, reference								
>14					1.98	0.94	0.09	0.036
Educational level of the father								
Low, reference								
Middle								
High	-0.95							
	-2.86	1.32						
	1.45	-0.04						
	-0.10	0.471						
	0.049							
Sleep duration	-1.29	0.39	-0.13	0.001				
Somatic problems								
No, reference								
Yes					0.26	1.56	0.01	0.865
Interaction of gender by somatic problems					4.47	2.07	0.15	0.031

Abbreviations: β =regression coefficient; SE=standard error; β^* =standardized regression coefficient

activity. The physical exercise is related to psychological well being; adolescents who engaged regularly in physical activity were characterized by lower anxiety and depression scores, as well as better sleep patterns.^{25,26} It has been also pointed out that there exists a strong negative relationship between the intensity of physical activity and psychological distress during adolescence.²⁷⁻²⁹

On the other hand, more hours of school-related activities (i.e. mainly assistive tutorials) were associated with greater levels of Trait anxiety. We have not identified any studies assessing the relationship be-

tween time spent in studying and anxiety. Our finding could be explained both ways: Students with a stronger propensity to develop anxiety (as indicated by higher Trait anxiety levels) feel more insecure about their knowledge and resort to more tutoring, or are more inclined to seek school assistance due to an orientation towards higher achievement. It is equally possible that excessive time spent studying increases anxiety.

In our study we did not observe an association of anxiety level with academic achievement. Several studies have shown that the presence of anxiety

symptoms is associated with low achievement in reading, mathematics and general measures of academic achievement.^{30,31} In one study, however,³² on a community sample of children and adolescents, the prevalence of abnormally high level of anxiety was negatively associated with school performance; nevertheless subjects with poor school performance did not display, as a group, a level of anxiety symptoms higher than subjects with better academic grades. This result, similar to our findings, might indicate that anxiety interferes with school functioning only when an abnormal anxiety level is reached, and whereas within the "normal" range, being more anxious does not automatically imply worse school functioning.

Concerning family status, we found that level of anxiety was not associated with the number of parents the adolescent was living with. This is in accordance with a recent study where family composition was not a significant risk indicator of high level of anxiety in adolescence.³ As it is already pointed out, it seems that poor parental relationship and not family status, is associated with high anxiety in adolescents of divorced and married households.³³

As shown by lower scores in the State anxiety subscale, the current level of anxiety experienced by adolescents was lower when the father's educational level was higher. This is in accordance with a study in which it was found that as the main wage-earner's educational level increased, the students' STAI scores tended to decrease.²¹ Furthermore, father's education can be considered a proxy of the socio-economic status (SES) of the family. It has been found that youths growing up in low-income families show greater levels of depression and anxiety during adolescence.^{10,34} In a systematic literature review has pointed out that the prevalence of depressed mood or anxiety was 2.49 times higher in youths from families with low SES in comparison to those with higher SES.³⁵

Trait anxiety was found to be associated with seeking medical advice for somatic problems. This association was found to be stronger for girls compared to boys. In other studies, it has also been found that somatic symptoms, physical illnesses and somatisation are highly prevalent among children and ado-

lescents with anxiety disorders and are associated with greater anxiety level.^{12,36-38} Especially for girls, stomach aches and musculoskeletal problems are associated with anxiety disorders.³⁹ Our results are in line with the above findings and support the contention that screening youngsters seeking medical care due to unexplained physical symptoms may enhance the recognition of anxiety disorders and facilitate access to appropriate services.^{40,41}

A significant negative correlation was found between sleep duration and both State and Trait Anxiety scales. Sleep-related problems of adolescents are positively associated with anxiety disorders, anxiety severity and interference in family functioning.^{42,43} In a previous study we have observed that sleep is less for students spending more time in various school-related and extracurricular activities,⁴⁴ while the authors of another study have suggested that the direction of causality is that activities and stress influence sleep.⁴⁵ Similarly, it has been observed that delayed sleep phase (common among adolescents) is associated with elevated level of anxiety⁴⁶ and it has been suggested that assessment and intervention efforts targeting sleep disturbance in adolescents will exert an overall effect on reducing anxiety level.⁴³

In conclusion, our findings confirm that females have more anxiety than males and that the effect of somatic problems on anxiety is greater for girls than for boys. It also supports that fathers' educational level plays a role in anxiety and that shorter sleep duration is associated with greater anxiety. Our results also provide novel evidence that time spent in extracurricular activities is negatively associated with anxiety level among adolescents students.

The limitations of our study were that the sample was restricted to an urban population of students attending state-run schools located in middle-class neighbourhoods. The self-reporting nature of the scales and the questionnaire used may have had an impact on the results. Our research did not include diagnostic clinical evaluation and therefore no diagnosis of anxiety disorders or other psychopathological conditions can be provided. Finally, in order to make the comparison of anxiety level during exam and non-exam periods, we compare students

across different years with the rationale that those in their last year would experience more stress because of university entrance exams, instead of comparing the last year students repeatedly during the year, as they approach the exams period.

One of the main contributions of our research is the identification of vulnerable adolescents. That is, our study shows that girls, especially those reporting somatic problems, and adolescents coming from families with low parental education are particularly prone to higher level of anxiety. Therefore, emphasis should be given in the identification of these adolescents in order to promote the treat-

ment of existing anxiety and the prevention of anxiety symptoms.

Other important findings are that extracurricular activities are linked to lower level of anxiety in the adolescent population and that there was a negative correlation between sleep duration and measures of anxiety. Although the direction of causality of these associations cannot be easily established, it could be proposed that the reinforcement of extracurricular activities could result in a reduction of anxiety among students and that adequate sleep may be a protective factor against anxiety.

Προγνωστικοί δείκτες και χαρακτηριστικά του άγχους μεταξύ των εφήβων μαθητών: Ένα ελληνικό δείγμα

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Στην ελληνική κοινωνία υπάρχει μια ισχυρή πολιτισμική τάση για ακαδημαϊκή επιτυχία των εφήβων. Οι μαθητές βρίσκονται κάτω από μια συνεχή και μεγάλη συναισθηματική πίεση να ανταποκριθούν στις προσδοκίες της οικογένειάς τους, ιδιαίτερα κατά τη μακρά διάρκεια της προετοιμασίας τους για τις εισαγωγικές εξετάσεις στην τριτοβάθμια εκπαίδευση. Ο σκοπός της παρούσας μελέτης ήταν να αξιολογηθεί το επίπεδο του άγχους σε έναν γενικό πληθυσμό των εφήβων μαθητών Λυκείου στην Αθήνα. Επίσης, η διερεύνηση της σχέσης μεταξύ της σοβαρότητας του άγχους με δημογραφικούς και κοινωνικο-πολιτιστικούς παράγοντες, καθώς και με τη σχολική επίδοση, τις εξωσχολικές δραστηριότητες, τη διάρκεια του ύπνου και την παρουσία σωματικών προβλημάτων. Το δείγμα αποτελούνταν από 696 έφηβους μαθητές από τρία Λύκεια (391 κορίτσια και 305 αγόρια). Δύο Λύκεια γενικής εκπαίδευσης (ΓΕ₁ και ΓΕ₂, N=450) κι ένα τεχνικό (ΤΕ, N=246). Τα συγκεκριμένα Λύκεια επιλέχθηκαν ώστε να αντανακλούν την αναλογία μαθητών μεταξύ των διαφορετικών κατευθύνσεων. Χορηγήθηκε το ερωτηματολόγιο άγχους του Spielberg (State-Trait Anxiety Inventory) και έγινε συλλογή και καταγραφή των δημογραφικών και προσωπικών στοιχείων. Η στατιστική σημαντικότητα ορίστηκε στο $p < 0,05$ και οι αναλύσεις έγιναν με τη χρήση STATA 7.0. Οι 567 έφηβοι ζούσαν με δύο γονείς και 121 με έναν ή κανέναν. Το μορφωτικό επίπεδο του πατέρα ήταν χαμηλό για 138, μεσαίο για 154, υψηλό για 195 ενώ της μητέρας ήταν αντίστοιχα 135, 417, 140. Η μέση διάρκεια ύπνου ήταν 7,5 ώρες την ημέρα (SD=1,3). Ο μέσος χρόνος που δαπανάται ανά εβδομάδα σε δραστηριότητες που σχετίζονται με το σχολείο ήταν 7,94 ώρες (SD=7,56) και σε εξωσχολικές δραστηριότητες ήταν 9,02 ώρες (SD=12,44). 107 έφηβοι ανέφεραν σωματι-

κές ενοχλήσεις κατά το τελευταίο έτος. Η επίδοση στα μαθήματα ήταν κακή για 233, καλή για 264, πολύ καλή έως άριστη για 196 μαθητές. Οι έφηβοι με εξωσχολικές δραστηριότητες για περισσότερο από 11 ώρες την εβδομάδα είχαν χαμηλότερα σκορ και στις δύο υποκλίμακες άγχους (State-Trait). Περισσότερες ώρες ενασχόλησης με ενδοσχολικές δραστηριότητες σχετίζονται με υψηλότερα επίπεδα άγχους στην υποκλίμακα Trait. Οι έφηβοι με πατέρα υψηλού μορφωτικού επιπέδου είχαν χαμηλότερο σκορ στην υποκλίμακα άγχους State σε σύγκριση με εκείνους των οποίων ο πατέρας είχε χαμηλό μορφωτικό επίπεδο. Οι έφηβοι που ανέφεραν την παρουσία σωματικών προβλημάτων είχαν υψηλότερο σκορ στην υποκλίμακα Trait. Σημαντική αρνητική συσχέτιση βρέθηκε μεταξύ της διάρκειας του ύπνου και στις δύο υποκλίμακες άγχους, State ($r=-0,14$, $p<0,001$) και Trait ($r=-0,10$, $p=0,008$). Η σύνδεση των σωματικών προβλημάτων με την υποκλίμακα Trait ήταν μεγαλύτερη για τα κορίτσια σε σχέση με τα αγόρια. Η υπόθεση ότι οι εξετάσεις σχετίζονται με περισσότερο άγχος δεν επιβεβαιώθηκε. Δεν υπήρχαν διαφορές μεταξύ της σχολικής τάξης και της διαφορετικής κατεύθυνσης. Επίσης, δεν υπήρχε συσχέτιση του επιπέδου του άγχους με την ακαδημαϊκή επίδοση και τον αριθμό των γονέων με τους οποίους ζούσε ο έφηβος. Τα ευρήματα αυτά θα μπορούσαν να συμβάλουν στον σχεδιασμό προληπτικών μέτρων για την αντιμετώπιση του μαθητικού άγχους. Ιδιαίτερη προληπτική αξία έχουν εκείνα που δείχνουν ότι τα κορίτσια με σωματικά προβλήματα, καθώς και οι έφηβοι που προέρχονται από οικογένειες με χαμηλό μορφωτικό επίπεδο των γονέων, είναι ιδιαίτερα επιρρεπείς σε υψηλότερα επίπεδα άγχους. Αξιοσημείωτο είναι και το γεγονός ότι οι εξωσχολικές δραστηριότητες συνδέονται με χαμηλότερο επίπεδο άγχους.

Λέξεις ευρητηρίου: Έφηβος, άγχος, εξωσχολικές δραστηριότητες, σχολική απόδοση, ύπνος, φύλο, ελληνικό δείγμα

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