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The effect of anxiety on thriving levels of university students during the COVID-19 pandemic

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ABSTRACT

Background: During the COVID-19 pandemic, university students struggle with unexpected changes in their lives, which have adverse effects on their levels of anxiety and thriving. Thriving with its two subdimensions, namely vitality and learning, is a prominent concept for university students due to contributing the academic achievement and wellbeing.

Aim: This study aimed to examine the effect of anxiety on thriving levels of university students during the COVID-19 pandemic.

Methods: An analytical and cross-sectional study was conducted between December 1, 2020 and January 6, 2021. Data were collected using online surveys with convenience sampling method. The sample consisted of 322 university students from a health sciences school of a public university in Turkey.

Findings: The students' anxiety and thriving levels were found to be moderate with 10.38 ± 5.24 and 3.41 ± 0.85 , respectively. The results also indicated that anxiety had negative and significant effect on thriving and its subdimensions of vitality and learning. In addition, anxiety level differed significantly according to gender, worried about getting COVID-19 virus and following the COVID-19 cases on a daily basis while thriving level only differed significantly according to the gender.

Discussion: Consistent with previous literature, university students experienced high level of anxiety during the COVID-19 pandemic according to the current study. The students with high level of anxiety had lower vitality and learning scores comparing to their peers with low level of anxiety. This result is crucial, because students with high levels of thriving can cope with stress and feel themselves better psychologically than others.

Conclusion: This study showed that the students exhibited higher anxiety symptoms and had lower levels of thriving. Therefore, interventions, psychological support, and instrumental support are recommended to improve psychological health of university students.

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Summary of relevance

Problem or issue

There has been a paucity of research about the relationship between anxiety and thriving in the context of university students during the COVID-19 pandemic.

What is already known

The COVID-19 pandemic has affected the educational lives of university students which leads to an increase in their anxiety level.

What this paper adds

This paper shows that the students with higher level of anxiety felt themselves less vital. In addition, high level of anxiety had negative effects on the university students' learning activities. Therefore, interventions aiming to decrease anxiety level are recommended for university students.

1. Introduction

University students are among a risk group in terms of exposure to stress and anxiety (Deng et al., 2021). In university life, factors causing stress may be examined in three groups, namely personal, social, and academic factors (Bernaras Iturrioz, Insúa Cerretani, & Bully Garay, 2018; Reddy Menon, & Thattil, 2018). Firstly, personal factors are personality and developmental problems, psychological problems, and economic problems causing stress in the personal area (Cleary, Horsfall, Baines, & Happell, 2012; Eisenberg, Gollust, Golberstein, & Hefner, 2007; Shaikh & Deschamps, 2006). Secondly, problems of family and friendship relations are social factors causing stress in the social area (Ozkul & Gunusen, 2020; Yubero et al., 2018). Lastly, learning problems, having examination anxiety, having communication problems with faculty members and the problems such as experiencing anxiety related to future professional career, are academic factors causing stress for university students (Lucas & Berkel, 2005; Yeo & Yap, 2020). The COVID-19 pandemic has worsened the situation for university students in terms of dealing with these problems (Deng et al., 2021).

Previous studies have revealed that university students suffer from problems related to distance learning which has been mandatory due to COVID-19 pandemic (Kapasias et al., 2021). Moreover, the Covid-19 pandemic has affected all life domains dramatically (Saladino, Algeri, & Auriemma, 2020). Therefore, university students have to struggle with problems, not only in their educational lives, but also in their private lives, for instance, fear of getting COVID-19 infection, social isolation, financial problems, and lack of self-motivation (e.g., Alvarez, 2020; Singal, Bansal, Chaudhary, Singh, & Patra, 2021). All these problems lead to increase in anxiety levels of students. According to the American Psychiatric Association (APA) (2016), there are several anxiety disorders. One of them is generalised anxiety disorder, which is defined as being “characterized by persistent, overwhelming worry and fear that interferes with normal functioning” (APA, 2016). In the current study, generalised anxiety disorder was measured by the Generalised Anxiety Disorder 7-item (GAD-7) scale, which is widely used in previous literature due to its usefulness and reliability (Toussaint, Spreitzer, Gibson, & Garnett, 2020).

Anxiety has several negative effects on university students' lives (Sanad, 2019). APA (2016) reported that anxiety disorders affected school performance negatively. In terms of school performance, thriving emerges as an important construct, which refers to “a psychological state composed of the joint experience of vitality and learning” (Porath et al., 2012, p. 250). Thriving includes the both a sense of vitality and a sense of learning, and the lack of any of these indicates that thriving does not exist (Porath et al., 2012).

In other words, thriving requires being both energetic and lively (vitality), as well as a constant desire to improve skills (learning). Thriving students flourish via a sense of energy (vitality) as well as the belief that they are growing and improving (learning) in their lives (Porath et al., 2012). When students thrive in academic work, they experience development and momentum to continue and succeed, feeling excited about their course of study and continuously improving at what they do.

Due to its nature, thriving is closely related to students' well-being and academic performance. According to Brown et al. (2017), individuals learn best when they are motivated, and this motivation is one part of thriving which plays an important role in the success of students. Students who are driven to learn have a distinct advantage, since their academic success is frequently seen as an indicator of their thriving (Brown et al., 2017). Supporting Brown et al. (2017), Arici-Ozcan, Sahin, and Cankir (2021) found the positive effect of thriving on students' academic performance.

When university students experience anxiety due to negative stressors, they are less likely to have a feeling of learning and liveliness, which may also lead to decrease in their level of thriving (Flinchbaugh, Luth, & Li, 2015). Since anxiety may reduce both desire to learn and learning performance, it may also reduce perceptions of learning and vitality necessary to thrive. Moreover, university students' lives have been severely disrupted by the anxiety experienced during the COVID-19 pandemic. The results of studies conducted before and during the pandemic also suggest effects of the pandemic on the anxiety levels of students. For example, Yuksel and Bahadir-Yilmaz (2019) reported that 25.2% of 330 nursing students experienced severe anxiety symptoms in the academic year of 2016-2017 in Turkey. In addition, Demirel, Yilmaz, and Simsek (2020) reported the percentage of severe anxiety and extreme severe anxiety were as 8.0% and 6.2%, respectively in a school of health sciences sample in 2018 in Turkey. However, during the COVID-19 pandemic, Senturk and Bakir (2021) found that 54.1% of 506 nursing students had extremely severe anxiety symptoms in Turkey. Studies in the other countries also reveal the anxiety levels of university students before and during COVID-19 pandemic. According to a study conducted before the pandemic, the prevalence of moderate anxiety was 14.2% and severe anxiety was 5.8% among university students in a Hong Kong sample (Lun et al., 2018). However, according to a study conducted during the pandemic, prevalence of moderate anxiety was 42.8% while severe anxiety was 13.1% among university students in an Israeli sample (Savitsky, Findling, Erel, & Hendel, 2020). Previous research has also suggested that the COVID-19 pandemic had a detrimental impact on mental health. According to cross-sectional research in the United States, the prevalence of depression was 8.5% before the COVID-19 pandemic while it increased approximately four times (27.8%) during the pandemic (Ettman et al., 2020).

Given the importance of anxiety and thriving in university students' academic success, it is urgent and prominent to investigate the link between them. However, to our best knowledge, there is a lack of studies examining the link between anxiety and thriving in setting of university students. To fill this gap, this study aimed to determine the effect of anxiety on thriving among university students during the COVID-19 pandemic.

2. Methods

2.1. Design and objectives of the study

This study was designed as cross-sectional and analytical with the aim of examining the effect of anxiety on thriving and its sub-dimensions of vitality and learning. This study also aimed to determine factors related to university students' anxiety and thriving

levels, such as gender, department, class, being COVID-19 positive, and worried about getting COVID-19.

2.2. Sample and procedure

This study was conducted between December 1, 2020 and January 6, 2021 at a health sciences school of a public university in XXXX after the necessary permissions were obtained. The study population included three departments of a health sciences school, which were healthcare management, nursing, and social work. Approximately 750 students consisted of the study population. The sample size was calculated by using the formula recommended under the circumstances that the number of population can be determined (Charan & Biswas, 2013). According to this formula, the ideal sample size was determined as 254, with 95% confidence interval and 5% sampling error. The data were collected by online surveys. Out of 750 university students, 322 university students responded to the online survey. Despite three reminder e-mails, the response rate did not increase. However, it can be inferred that the number of ideal sample size was reached with 322 participants.

2.3. Data collection tool

The first part of data collection tool included questions about the students' socio-demographics and COVID-19 pandemic. Questions about the pandemic included whether the participants were COVID-19 positive (at any time), had relatives who were COVID-19 positive (at any time), worried about getting COVID-19 virus, and followed COVID-19 cases on a daily basis.

The second part consisted of the items of the Generalized Anxiety Disorder 7-item (GAD-7) scale. This scale was developed by Spitzer, Kroenke, Williams, & Löwe (2006) and adapted into Turkish by Konkan et al. (2013). The American Psychiatric Association recommends the GAD-7 scale as an effective tool for assessing the severity of generalised anxiety disorder (GAD) using the revised DSM-5 criteria (Toussaint et al., 2020). It can be used to diagnose anxiety disorders like GAD, screen for them, and measure their severity (Toussaint et al., 2020). This scale is a 7-item and a four-point Likert-type scale (0 = not at all, 1 = several days, 2 = more than half the days, 3 = nearly every day) that evaluates experiences in the previous two weeks. The scores obtained from this scale are classified into four groups. According to these groups, 0-4 scores indicate minimal anxiety, 5-9 scores indicate mild anxiety, 10-14 scores indicate moderate anxiety, and 15-21 scores indicate severe anxiety (Spitzer et al., 2006). Konkan et al. (2013) reported that GAD-7 scale had good internal consistency with Cronbach's alpha value as 0.88.

The third part of the data collection tool included items of the thriving scale developed by Porath et al. (2012) and adapted into Turkish by Arici-Ozcan et al. (2021). This scale has two subdimensions, namely vitality and learning. Each subdimension has 5 items. Participants rate their response using a 6-point Likert-type scale (6 = strongly agree; 1 = strongly disagree). Arici-Ozcan et al. (2021) reported that Cronbach's alpha value for this scale was 0.877 for Time 1 and 0.917 for Time 2.

2.4. Data analysis

The data were analysed using the SPSS 23 statistical package program. First, the normal distribution of data was examined. Skewness and kurtosis values were used to test the normal distribution. According to Kline (2015), skewness values should not exceed ± 3 while kurtosis values should not exceed ± 10 . In the current study, skewness values for anxiety, thriving, and its subdimensions of vitality and learning ranged from 0.491 to -0.164 while kurtosis values ranged from 0.378 to -0.416. This result shows that

Table 1
Characteristics of participants (N = 322)

Characteristics	n	%
Gender		
Female	280	86.96
Male	42	13.04
Department		
Healthcare management	138	42.86
Nursing	68	21.12
Social work	116	36.02
Class		
First year	109	33.85
Second year	102	31.68
Third year	66	20.5
Fourth year	45	13.98
Being COVID-19 positive		
No	288	89.44
Yes	34	10.56
Having relatives with COVID-19 positive		
No	73	22.67
Yes	249	77.33
Worried about getting COVID-19 virus		
No	69	21.43
Yes	253	78.57
Following the COVID-19 case on a daily basis		
No	107	33.23
Yes	215	66.77

the data have normal distribution. Therefore, to analyse whether the scores of anxiety, thriving and its subdimensions differed significantly according to socio-demographics and other variables related to the COVID-19 pandemic, parametric tests were employed. One-way ANOVA and independent sample t-test were used. To determine the significant differences within groups, post hoc analyses were performed after One-way ANOVA. When the equal variances were assumed, Tukey HSD test and Scheffe test were performed. However, when the equal variances were not assumed, Tamhane test and Dunnett's T3 test were used as post hoc analyses (Weinberg & Abramowitz, 2016). For reporting the relationship between anxiety and thriving, Pearson correlation test was used. Pearson correlation analysis is appropriate when the data distributes normally and it is measured by interval scales (Carifio & Perla, 2008). Then, multiple linear regression analysis was used in order to test the effect of anxiety on thriving. Before performing regression analysis, multicollinearity was checked to analyse whether there was a strong linear dependence among the independent variables (Giacalone, Panarello, & Mattered, 2018). One criteria to check multicollinearity is to determine the Variance Inflation Factor (VIF) which should be under 10 (Giacalone et al., 2018). In the current study, VIF was found to be 1.021-1.056, which indicates that there no multicollinearity problem.

2.5. Compliance with ethical standards

Ethical approval for this study was obtained to Ethical Committee of Istanbul Medeniyet University (Date: 04 November 2020 and Number: 2020/42).

3. Results

3.1. Characteristics of participants

Table 1 shows the characteristics of participants. A total of 322 university students responded to the online survey. The majority were female. While nearly half of the participants were students of the health management department, one third were first year students. While only a minority of the participants reported that they were COVID-19 positive, a majority reported that their relatives were COVID-19 positive. The majority of participants were

Table 2
Descriptive statistics, Cronbach's alphas and correlation coefficients

	N	Min-Max	M	SD	α	Thriving	Vitality	Learning
Total score of GAD-7 scale	322	0-21	10.38	5.24	0.92	-0.28**	-0.34**	-0.16**
Thriving	322	1-6	3.41	0.85	0.86	1	0.83**	0.88**
Subdimension of vitality	322	1-6	3.09	0.92	0.81		1	0.47*
Subdimension of learning	322	1-6	3.73	1.06	0.87			1

Note: GAD-7 Scale: Generalized Anxiety Disorder 7-item scale, Min-Max shows the scores which can be obtained from scales at least and at most, ** $p < 0.01$, α : Cronbach's alpha.

Table 3
Comparison of thriving and its subdimensions according to level of anxiety severity GAD-7 scale score (N = 322)

Level of GAD-7 scale score	N	%	Subdimension of vitality		Subdimension of learning		Thriving	
			M	SD	M	SD	M	SD
Minimal (0-4) (a)	41	12.73	3.61	1.02	4.06	1	3.84	0.84
Mild (5-9) (b)	112	34.78	3.28	0.86	3.77	0.89	3.52	0.77
Moderate (10-14) (c)	106	32.92	2.96	0.83	3.63	1.04	3.3	0.79
Severe (15-21) (d)	63	19.57	2.65	0.83	3.6	1.34	3.13	0.95
F			12.84		1.98	7.51		
p			0.001		0.18	0.001		
Significant difference within group			a-c*, a-d*, b-c*, b-d*, c-d*		a-c*, a-d*, b-d*			

Note: F values were reported for One-way ANOVA, GAD-7 Scale: Generalized Anxiety Disorder 7-item scale, M: Mean, p: significance of test, SD: Standard deviation. * The mean difference is significant at the 0.05 level.

worried about getting the COVID-19 virus and were following the COVID-19 cases on a daily basis.

3.2. Anxiety and thriving levels of university students and correlations among study variables

Table 2 indicates the means, standard deviations, Cronbach's alphas (α), and correlation coefficients. The mean scores for the GAD-7 Scale and the thriving scale were in the moderate range. The mean score of learning subdimension was found to be higher than the mean score of vitality subdimension. When the Cronbach's alphas were evaluated, the GAD-7 Scale, thriving scale and its subdimensions had good internal consistency with $\alpha > 0.80$.

According to Table 2, anxiety level was negatively and significantly related to both vitality ($r = -0.34, p < 0.01$) and learning ($r = -0.16, p < 0.01$) subdimensions, as well as thriving ($r = -0.28, p < 0.01$).

3.3. Comparison of thriving and its subdimensions according to level of GAD-7 scale score

Table 3 displays the comparison of thriving and its subdimensions whether their scores differed significantly according to the four groups of GAD-7 Scale score. The subdimension of vitality score was found to differ significantly according to the four groups of GAD-7 Scale score ($p < 0.01$) while subdimension of learning score did not differ significantly ($p > 0.05$). The total mean score of thriving also differed significantly according to the four groups of GAD-7 Scale score ($p < 0.01$). It was seen that scores of vitality and thriving decreased when the scores obtained from GAD-7 Scale increased (Table 3).

3.4. Comparison of total score of GAD-7 Scale according to participants' characteristics

According to the Table 4, total score of GAD-7 Scale differed significantly according to the participants' gender, being worried about getting COVID-19 virus, and following the COVID-19 cases on a daily basis ($p < 0.05$). Female university students reported higher scores on GAD-7 Scale than male university students, which

was statistically significant ($p = 0.05$). Also, participants reporting being worried about getting COVID-19 virus had higher scores on GAD-7 Scale than other participants ($p < 0.01$). In addition, participants following the COVID-19 cases on a daily basis had higher anxiety scores than other participants ($p < 0.05$).

It was found that total score of GAD-7 scale did not differ significantly according to participants' department, year of class, being Covid-19 positive, and having relatives with COVID-19 positive ($p > 0.05$).

3.5. Comparison of thriving and its subdimensions' scores according to participants' characteristics

As shown in Table 4, thriving and its subdimension of vitality scores differed significantly in terms of gender. Compared with female university students, male university students had significantly higher scores on subdimension of vitality ($p < 0.05$). Similarly, male participants reported higher scores significantly than female participants on thriving scale ($p < 0.05$).

However, the results show that thriving and its subdimension of vitality and learning scores did not differ significantly according to the participants' department, year of class, being COVID-19 positive, having relatives who were COVID-19 positive, being worried about getting COVID-19 virus, and following COVID-19 cases on a daily basis ($p > 0.05$) (Table 4).

3.6. Results of multiple linear regression analysis

Table 5 indicates the results about the effect of anxiety on thriving and its two subdimensions, namely vitality and learning. Gender, worried about getting COVID-19 virus, and following the COVID-19 cases on a daily basis were included as control variables for all Models (Model 1, Model 2, and Model 3). The effect of anxiety on vitality, learning, and thriving were tested in Model 1, Model 2, and Model 3, respectively. According to the results of all models, all control variables did not predict dependent variables significantly ($p > 0.05$). However, GAD-7 Scale score predicted vitality negatively and significantly ($Std. \beta = -0.33, p < 0.01$), and explained the 4.0% of variance in vitality according to the Model 1. Similarly, in the Model 2, GAD-7 Scale score had a significant and

Table 4
Comparison of anxiety and thriving levels according to participants' characteristics

	(Min-Max) N	Total score of GAD-7 scale (0-21) M±SD	Subdimension of vitality (1-6) M±SD	Subdimension of learning (1-6) M±SD	Thriving (1-6) M±SD
Gender					
Female	280	10.59 ± 5.22	3.06 ± 0.90	3.68 ± 1.07	3.37 ± 0.84
Male	42	8.98 ± 5.21	3.32 ± 1.02	4.04 ± 0.95	3.68 ± 0.86
	<i>t</i>	1.86	-1.72	-2.04	-2.12
	<i>p</i>	0.05	0.08	0.04	0.03
Department					
Health Management	138	10.69 ± 5.18	3.07 ± 0.92	3.67 ± 1.16	3.37 ± 0.90
Nursing	68	9.69 ± 4.87	3.15 ± 0.97	3.79 ± 0.88	3.47 ± 0.81
Social Work	116	10.41 ± 5.51	3.09 ± 0.88	3.77 ± 1.03	3.43 ± 0.81
	<i>F</i>	0.83	0.16	0.42	0.35
	<i>p</i>	0.44	0.85	0.65	0.70
Grade					
First year	109	9.98 ± 5.40	3.19 ± 0.99	3.77 ± 1.11	3.48 ± 0.92
Second year	102	10.56 ± 5.15	3.13 ± 0.95	3.87 ± 1.07	3.50M ± 0.85
Third year	66	10.45 ± 4.9	2.98 ± 0.83	3.58 ± 0.98	3.28 ± 0.81
Fourth year	45	10.80 ± 5.59	2.94 ± 0.75	3.51 ± 0.98	3.22 ± 0.67
	<i>F</i>	0.35	1.21	1.79	1.90
	<i>p</i>	0.79	0.30	0.15	0.13
Being COVID-19 positive					
Yes	288	10.35 ± 5.67	3.04 ± 1.01	3.81 ± 1.11	3.42 ± 0.94
No	34	10.38 ± 5.19	3.10 ± 0.9	3.72 ± 1.05	3.41 ± 0.84
	<i>t</i>	-0.027	-0.385	0.45	0.073
	<i>p</i>	0.979	0.7	0.653	0.942
Having relatives with COVID-19 positive					
Yes	73	10.51 ± 5.29	3.11 ± 0.94	3.73 ± 1.06	3.42 ± 0.85
No	249	9.93 ± 5.07	3.04 ± 0.83	3.71 ± 1.04	3.37 ± 0.82
	<i>t</i>	0.824	0.575	0.199	0.435
	<i>p</i>	0.411	0.566	0.842	0.664
Worried about getting COVID-19 virus					
Yes	253	10.88 ± 4.99	3.05 ± 0.86	3.72 ± 1.02	3.38 ± 0.81
No	69	8.52 ± 5.71	3.23 ± 1.1	3.78 ± 1.19	3.51 ± 0.99
	<i>t</i>	3.37	-1.27	-0.43	-1.05
	<i>p</i>	0.001	0.21	0.67	0.29
Following the COVID-19 cases on a daily basis					
Yes	215	10.81 ± 5.33	3.09 ± 0.93	3.74 ± 1.09	3.42 ± 0.88
No	107	9.50 ± 4.95	3.09 ± 0.90	3.70 ± 1.00	3.4 ± 0.78
	<i>t</i>	2.118	0.013	0.33	0.213
	<i>p</i>	0.035	0.989	0.741	0.831

Note: GAD-7 Scale: Generalized Anxiety Disorder 7-item scale, M: Mean, Min-Max: Minimum-Maximum, p: significance of test, SD: Standard deviation, t values were reported for Independent Sample T-test and F values were reported for One-way ANOVA.

Table 5
Results of multiple linear regression analysis about the effect of anxiety on thriving

Models	R ²	B	SE	Std. β	t	p
Model 1: Dependent variable is vitality						
Gender	0.12	0.16	0.14	0.06	1.08	0.28
Worried about getting COVID-19 virus		0.05	0.12	0.02	0.42	0.67
Following the COVID-19 cases on a daily basis		-0.07	0.10	-0.04	-0.72	0.47
GAD-7 Scale Score		-0.06	0.01	-0.33	-6.12	< 0.01
Model 2: Dependent variable is learning						
Gender	0.04	0.30	0.17	0.10	1.71	0.09
Worried about getting COVID-19 virus		-0.01	0.15	0.00	-0.09	0.93
Following the COVID-19 cases on a daily basis		-0.06	0.13	-0.03	-0.51	0.61
GAD-7 Scale Score		-0.03	0.01	-0.15	-2.73	< 0.01
Model 3: Dependent variable is thriving						
Gender	0.09	0.23	0.14	0.09	1.68	0.09
Worried about getting COVID-19 virus		0.02	0.11	0.01	0.17	0.87
Following the COVID-19 cases on a daily basis		-0.07	0.10	-0.04	-0.71	0.48
GAD-7 Scale Score		-0.04	0.01	-0.28	-5.00	< 0.01

Note: B: Unstandardized beta, GAD-7 Scale: Generalized Anxiety Disorder 7-item scale, p: significance of test, R²: R-square, SE: Standard error, Std. β: Standardized beta, t: test value, <:smaller than.

negative effect on vitality ($Std. \beta = -0.15, p < 0.01$), and explained the 12.0% of variance in learning. Lastly, according to the Model 3, it was found that GAD-7 Scale score had a negative and significant effect on thriving ($Std. \beta = -0.28, p < 0.01$), and explained the 9.0% of variance in thriving.

4. Discussion

The current study was conducted to examine the effect of anxiety on thriving in a sample of university students. In addition, the current study also aimed to seek whether the students' levels of anxiety and thriving differed in terms of their socio-demographic features. Many significant findings emerged related to anxiety and thriving in university students.

First, anxiety level of students was examined and a majority of the sample (52.5%) reported moderate to severe anxiety scores on GAD-7 scale while 19.6% reported having severe anxiety symptoms. According to this result, it can be concluded that the university students experienced high level of anxiety during the COVID-19 pandemic. In line with the current study, Rudenstine et al. (2021) found the rate of severe anxiety scores on GAD-7 scale as 20.7% in university students during the COVID-19 pandemic in New York City. Similarly, Biber, Melton, & Czech (2020) reported that 49.0% of their sample was categorised as moderately anxious while 25.0% was categorised as severely anxious in a sample of 1,640 university students in the United States during this pandemic. Similarly, in a meta-analysis, prevalence of anxiety in medical students during the pandemic was found to be 28.0% (95% CI: 22%-34%) (Lasheras et al., 2020). These studies show that the results of the current study about level of anxiety disorder are consistent with previous literature. The current study also suggests the negative impact of the COVID-19 pandemic on the anxiety level of university students. In Turkey, during the years of 2009-2010, Kaya, Kaya, Pallos, and Kucu (2012) found that the percentages of mid-level and severe level of anxiety in university students was 45.0% and 4.5%, respectively. Demirel et al (2020) also conducted a study with a school of health sciences sample in 2018 in Turkey. They found that 8.0% of the sample experienced severe anxiety symptoms and 6.2% experienced extremely severe anxiety symptoms. In Bangladesh, Islam, Akter, Sikder, and Griffiths, (2020) reported that 47.3% of university students had moderate anxiety symptoms while 13.8% of the university students had severe anxiety symptoms. As a result, compared to the current study, these studies found lower prevalence of severe anxiety in university students before the COVID-19 pandemic.

Second, the effect of anxiety on university students was examined and it was found that higher levels of anxiety resulted in lower levels of vitality and learning. The students with high levels of anxiety had lower vitality and learning scores compared to their peers with low level of anxiety. Supporting this result, Arslan, Yildirim, and Aytac (2020) reported a significant and negative relationship between coronavirus anxiety and subjective vitality. This result is crucial, because individuals with high levels of vitality can cope with stress better than others and feel themselves better psychologically (Betrams, 2021). Therefore, they have sufficient energy and internal motivation to fulfil their task with subjective vitality (Arslan et al., 2020). Also, there are studies on perceptions of students about their learning experiences during this pandemic. For example, Fawaz and Samaha (2021) indicated a significant and negative association between anxiety and satisfaction of learning experience in university students. Likewise, in a qualitative study, students expressed that their learning concentration was decreased due to their concerns related to the COVID-19 cases (Alvarez, 2020).

Third, anxiety had a negative impact on thriving, as well as its subdimensions of vitality and learning. Furthermore, this effect was still significant when the variables of gender, worried about getting COVID-19 virus, and following the COVID-19 cases on a daily basis were controlled. In other words, anxiety predicted thriving and its subdimensions on its own significantly. Although, the negative effect of anxiety on thriving and its subdimensions was found to be small in the current study, it remains an important result given the link between thriving and university students' well-being and academic performance. (Arici-Ozcan et al., 2021; Brown et al., 2017). For example, (Mihăilescu, Diaconescu, Ciobanu, Donisan, & Mihailescu, 2016) examined the effect of depression and anxiety on medical students' academic performance using grade point average (GPA) scores. In the beginning of the term, they assessed the depression and anxiety levels of medical students. Then, at the end of semester, they obtained GPA scores of medical students. Medical students with high levels of anxiety were found to have lower GPA scores than the others with low levels of anxiety. These results may confirm the long-term impact of anxiety on university students.

Finally, it was found that female students had higher scores on the anxiety scale than male students. There are also other studies that confirm this result in other samples, such as a Chinese sample (Feng et al., 2021), an Israeli sample (Savitsky et al., 2020), a Romanian sample (Rogowska, Kuśniercz, & Bokszczanin, 2020), and a Turkish sample (Bahcecioglu-Turan et al., 2021). On the other hand, a few studies have found significant differences in anxiety scores according to gender (e.g., Akhtarul Islam et al., 2020; Cao et al. 2020). In the current study, female students had significantly lower scores in thriving and its subdimension of learning than males. However, while students' anxiety scores differed significantly in terms of being worried about getting the COVID-19 virus and following COVID-19 cases on a daily basis, thriving and its subdimensions of vitality and learning did not. This is because the majority of students reported that they were worried about getting the COVID-19 virus and followed the COVID-19 cases on a daily basis. Consistent with previous studies (e.g., Duong, 2021; Feng, Zhang, & Ho, 2021; Savitsky et al., 2020), the students worried about getting the COVID-19 virus and who followed the COVID-19 cases on a daily basis exhibited significantly more anxiety symptoms than the students who did not.

Based on the results of the current study, it is recommended that educators, managers and researchers should be aware of the negative effects of the COVID-19 pandemic and high levels of anxiety among university students. University students should be psychologically supported to protect themselves from the negative effects of anxiety during the pandemic. Universities can help their students by offering a variety of stress-reduction programs, such as mindfulness-based stress reduction programs that can also be performed online (Sun et al., 2021). Psychologist support will also be beneficial for the students who are at risk of having high levels of anxiety. However, university students should be encouraged to seek assistance from their university's counsellor or psychologist.

5. Limitations

This study is the first study investigating the effect of anxiety on thriving in university students. Despite its strengths, this study has several limitations. First, since the data were obtained from only health sciences faculty in a public university, this limits the generalisability of results. Second, the male sample size was small which is also considered another limitation. Third, the data were based on self-reported evaluations leading to a social desirability problem (Moorman & Podsakoff, 1992). Lastly, the cross-sectional design of this study is another limitation. In order to claim causality between independent and dependent variables, it is recom-

mended to undertake a longitudinal design (Antonakis, Bendahan, Jacquart, & Lalive, 2010). For this reason, researchers are recommended to conduct studies with longitudinal design to examine the effect of anxiety on thriving in different countries on university students.

6. Conclusions

Anxiety disorders are common in university students due to great amounts of stress factors in university life. Therefore, it is important to determine levels of anxiety disorder and its effect on university students' academic success, as well as their psychological health. Especially when students face unexpected events, such as epidemics, pandemics, and disasters, their mental health and well-being is affected negatively. The COVID-19 pandemic is one recent global challenge for students. The current study shows that the university students exhibiting higher anxiety symptoms had lower levels of thriving during the pandemic. Thriving has many positive outcomes, such as well-being, selfdevelopment, and academic success. Thus, it is important to support university students in order to decrease their anxiety levels and increase their thriving levels. To do this, interventions to reduce anxiety and its negative effect on thriving should be investigated. Additionally, due to the COVID-19 pandemic's adverse effect on university students, managers and scholars should take action to promote university students' well-being and mental health during such unexpected events.

Consent to participate

Participation in this survey was anonymous, consensual and voluntary with informed consent provided by all respondents.

Authorship contribution statement

Study design: SŞ, RT
 Data collection: SŞ, RT
 Data analysis: SŞ, RT
 Study supervision: SŞ, RT
 Manuscript writing: SŞ, RT
 Critical revisions for important intellectual content: SŞ, RT

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Ethical statement

Ethical approval for this study was obtained to Ethical Committee of Istanbul Medeniyet University (Date:04 November 2020 and Number:2020/42).

Conflict of interest

There is no conflict of interest.

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