

Does educational stress mediate the relationship between intolerance of uncertainty and academic life satisfaction in teenagers during the COVID-19 pandemic?

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Abstract

The present study aims to investigate the mediator role of educational stress in the relationship between intolerance to uncertainty and academic life satisfaction among teenagers. The sample consisted of 257 female and 202 male high school students with an average age of 16.03 (SD = 1.21) continuing their education in the spring semester of the 2020–2021 academic year in Turkey. The data were collected via an online survey. Analyses revealed that intolerance of uncertainty directly and indirectly via educational stress affects the academic life satisfaction of teenagers. Educational stress partially mediates the relationship. It was also found that the full mediation model has a good fit with the data. The academic life satisfaction of teenagers was harmed by their tendencies in tolerating the uncertainties they have been facing during the COVID-19 pandemic and elevated levels of educational stress.

KEYWORDS

academic life satisfaction, COVID-19, educational stress, intolerance to uncertainty, teenagers

1 | INTRODUCTION

The novel Coronavirus outbreak started in Wuhan, China in 2019 and affected many lives: causing many to die, get infected with the virus, lose significant others, get fired from jobs, and even commit suicide (Crayne, 2020; Mamun, 2020; Mayland et al., 2020; World Health Organization [WHO], January 2022). WHO reported that by

Practitioner points

1. The tendency to be intolerant of uncertainty had negative direct and indirect effects on the academic life satisfaction of high school students during the COVID-19 pandemic.
2. Educational stress had a negative direct effect on the academic life satisfaction of high school students during the COVID-19 pandemic.
3. The educational stress mediated the relationship between intolerance to uncertainty and academic life satisfaction in high school students during the COVID-19 pandemic.

January 16 2022, there are over 5 million deaths and nearly 319 million cases diagnosed with the disease. People of advanced ages, males, and individuals suffering from chronic diseases such as asthma, diabetes, obesity, hypertension, heart injury, cancer, endocrine system disease, cardiovascular disease, respiratory disease, and so forth were susceptible to developing a severe infection or dying from the COVID-19 (Ahrenfeldt et al., 2021; Albitar et al., 2020; Al Mutair et al., 2021; Hashim et al., 2020; Heras et al., 2021; J. Zhang & Wang, Jia, et al., 2020; Liu et al., 2020; X. Li et al., 2020; Y. Chen et al., 2021; Yates et al., 2021;). Along with its biological threat, the risk of infection also causes various detrimental effects on the psychological functioning of individuals, especially the ones with high mortality risk (Gonzalez-Diaz et al., 2021; Grolli et al., 2021; Louvardi et al., 2020). In general sample and vulnerable groups such as physicians and nurses, some of the psychological outcomes of the pandemic include elevated levels of depression, anxiety, stress, burnout, obsessive-compulsive symptoms, sleep disturbance, difficulty in concentrating, boredom, irritability, restlessness, nervousness, and feelings of loneliness (Cortés-Álvarez & Vuelvas-Olmos, 2020; Dozois & Mental Health Research Canada, 2021; Elbay et al., 2020; Ettman et al., 2020; Jelinek et al., 2021; Lebel et al., 2020; Lin et al., 2021; Orgilés et al., 2020; Shafran et al., 2020; Yıldırım & Solmaz, 2020). On the other hand, dispositional factors such as psychological flexibility, trait resilience, and optimism and psychosocial factors such as social support and coping self-efficacy may help people alleviate the effect of the pandemic (Dawson & Golijani-Moghaddam, 2020; McElroy-Heltzel et al., 2021; Shahrour & Dardas, 2020).

Various factors were contributing to the panic atmosphere that started immediately after the first news about the health crisis (Nicomedes & Avila, 2020). Some of them were (1) the high transmission efficacy of the virus via asymptomatic individuals (Aydin & Kaya, 2021; Zhang et al., 2021), (2) limited knowledge regarding the nature, severity, and effects of the virus (Koh, Shah, et al., 2020; W. Zhang & Qian, 2020), (3) absence of approved pharmacological and medical solutions for the coronavirus infection at the time of beginning phase (Alvi et al., 2020; Sanders et al., 2020), and (4) mistrust in the formal sources of information regarding the origin and severity of the virus (Breakwell & Jaspal, 2021; Simione et al., 2021). Therefore, most of the systems shattered due to the unpreparedness of society for a sudden emergence of such a global crisis engulfing the economy, healthcare, logistics, education, business, and everyday life (Altig et al., 2020; Donthu & Gustafsson, 2020; Kapasia et al., 2020; Leung et al., 2021; Singh et al., 2021). There is no doubt that the education systems and academic life of students have been affected the most. As in the rest of the world, a number of major challenges have obstructed the smooth functioning of the education system in Turkey as well (Akbulut et al., 2020; Aytaç, 2021; Çakin & Külekçi Akayavuz, 2021; Kaban & Aşçı, 2021; Karakaya et al., 2021).

In the face of this alarming health crisis, the Ministry of National Education (MoNE) ordered the schools to shut down immediately. The MoNE rapidly adopted the distance education approach and developed tools, online courses, TV streams (in collaboration with the Turkish Radio and Television Corporation), and the Educational Informatics Network (EBA)—a web portal for interactive learning (Mahmut, 2020). However, there were major concerns about the effectiveness of distance education and the problems associated with this implementation.

Qualitative data gathered from teachers, parents, and students indicate that with the integration of technological solutions some inequalities occurred; namely, not all the students had a computer or adequate internet connection (even though the operators provide free internet package with a quota), teachers could not support all the students and give feedback, students enrolled in private schools had an advantage because their institutions offered them better online environments purchased separately, and the EBA platform did not meet the needs of students with special education (Akbulut et al., 2020; Aytaç, 2021; Karakaya et al., 2021). The same evidence also points out several disadvantages of this approach: the content and the duration of the EBA TV programs were not sufficient, the EBA platform brought some technical complications, parents were not able to support their children and create a learning environment at home; students, parents, and teachers did not have required knowledge, skills, and experience to overcome certain technical problems, sudden transformation to distance education, and lack of orientation resulted in confusion and ambiguity, and distance education restrained the levels of interaction and communication between students and teachers. Therefore, all these factors endangered students' psychological well-being, causing a decreased level of motivation and satisfaction with life, boredom, feeling of ambiguity, displeasure, increased levels of stress, and anxiety (Akbulut et al., 2020; Aslan et al., 2020; Zaccoletti et al., 2020).

High school education falls into an important period in teenagers' life. They develop identity and sketch out a draft of future life and goals including a career aspiration which can be achieved with a relative degree of academic performance (Gutman & Schoon, 2012; Widlund et al., 2020). For this reason, students need to fulfill two major quests: finding out the most suitable career choice and making a sufficient amount of effort to achieve the desired program at a university. Unfortunately, they may struggle to focus on these quests in the time of the novel COVID-19 pandemic. In addition to the above-mentioned challenges, some drastic measures and changes created an environment of uncertainties that may affect the healthy academic development of young individuals. Therefore, just like the rest of the world, the Turkish Government applied quarantines, lockdowns, and restrictions depending on the course of the disease (Cakir, 2020). For that reason, there has been an ebb and flow between face-to-face education and distance education. High-stakes tests like university entrance exams were postponed and classes were closed due to COVID-19 positive students and teachers ("Schools Hold Out Against Coronavirus," 2021; Mahmut, 2020). All these circumstances created a period of uncertainties for school-aged individuals.

1.1 | Intolerance of uncertainty and academic life satisfaction

One of the constructs controlling the personal outcomes of uncertainties is how much tolerant the individuals are of such instances. Research indicates that people who are intolerant of uncertainty will experience heightened levels of anxiety, show more posttraumatic stress symptoms and hyperarousal, and have low levels of self-control appraisals and problem-focused coping (Bardeen et al., 2013; C. Y. Chen & Hong, 2010; Taha et al., 2014). One of the major impacts of individuals' inability to tolerate uncertainties is impaired satisfaction with life (Garrison et al., 2017; Kawamoto & Furutani, 2018). The term satisfaction with life refers to cognitive appraisals of individuals toward their lives, which are based on personal criteria (Pavot & Diener, 2009). Therefore, having a world that is full of unknowns, confusion, and ambiguity may not match the quality expectations of people looking for a decent life. People who do not have a cognitive mindset to successfully guide themselves through this unwanted situation may amplify the negative effects on their lives and underestimate their overall satisfaction. For example, in cognitive-behavioral perspective, individuals' perceptions of the event matter most in emotional and behavioral consequences, not the actual event itself (Karlín, 2011). Accordingly, people who perceive themselves as unable to tolerate an uncertain condition may interpret the scene as less satisfactory than people with a higher tendency to tolerate uncertainties. On the other hand, individuals may have to deal with uncertainties in a specific area of life, such as job, education, and romantic relationships, which may harm the domain-specific satisfaction with life. Hence, empirical evidence indicates that physicians who have greater intolerance of uncertainty were less likely to enjoy their jobs (Libert et al., 2016; Waddimba et al., 2016). This may also be valid for academic life satisfaction in

adolescents. During the period of COVID-19, students experienced an unstable course of education inducing their intolerance of uncertainty which may harm their satisfaction with early academic life. However, not much has been discovered on the subject yet: signifying a need for further investigation. The literature regarding academic life satisfaction is fairly new. It represents the evaluations of students regarding their satisfaction including their relationships with teachers and peers in the school, commitment and performance, and satisfaction with the environment of academic settings (Nogueira et al., 2019). A small number of studies indicate that effective self-regulation strategies, academic achievement, and rational beliefs about studying contribute to academic life satisfaction; however, procrastination may cause an impairment (Balkis, 2013; Balkis & Duru, 2016).

1.2 | Mediator role of educational stress

Individual tendencies to reframe the uncertainties effectively or ineffectively may serve as a cognitive lens through which people might have a closer look at the world. Aside from that, uncertainties may trigger other infrastructures which may interfere with the relationship between individuals' tendencies and satisfaction. Neural and psychophysiological explanations, theoretical models, and empirical findings assert that intolerance of uncertainty increases the levels of threat perceptions, boosts the individuals' tendency to see the situation as costly, and functions as anxiety and a distress provoking mechanism (Ladouceur et al., 2000; O'Neill et al., 2006; Tanovic et al., 2018). Consistent with the findings of Taha et al. (2014), it would seem that people with heightened intolerance of uncertainty experienced increased levels of risk perceptions during the pandemic. Similarly, evidence indicates that intolerance of uncertainty elevates perceived stress, anxiety, and depression (Butzer & Kuiper, 2006; Demirtas & Yildiz, 2019; Osmanağaoğlu et al., 2018). Especially during the period of the COVID-19 pandemic, it also affects the life of high school students and heightens test anxiety (G. Li et al., 2021). Furthermore, it may boost the educational stress of school-aged individuals. The pandemic has added new question marks to the educational life of high school students: whether the schools would open, the high stakes examinations would be delayed, the academic performance in the period would be taken into account, and so on. All these uncertainties may be magnified by students' intolerance of uncertainty and reflected as educational stress.

In an adolescent sample, factors such as pressure to study, excessive workload, worry about grades, self-expectancies, despondency, low school connectedness, teacher's emotional punishment, peer emotional bullying, psychological maladjustment, and teacher nonacceptance may generate greater educational stress (Kuyumcu, 2020; Kuyumcu & Kirazcı, 2020; Sun et al., 2013). On the other hand, being cognitively flexible, being metacognitively aware, and undergoing mental health promotion groups may ease the effects of educational stress (Kuyumcu & Kirazcı, 2020; Rentala et al., 2019; Saricam et al., 2017). Educational stress may result in undesirable consequences such as academic procrastination and school burnout (Çikrikci, 2016; Saricam et al., 2017). Arousal of these negative outcomes may be accompanied by low levels of academic life satisfaction. In various settings and samples, it has been concluded that stress has a destructive effect on overall and domain-specific satisfaction with life (Karaman et al., 2018; Lee & Jang, 2015; Samaha & Hawi, 2016). Hence, research reported that, with the outbreak of the COVID-19 pandemic, students attending institutions from different educational levels had experienced elevated levels of educational stress, which may harm their well-being (Chandra, 2020; Clabaugh et al., 2021; Mahapatra & Sharma, 2021; Mosanya, 2020). In a nutshell, educational stress seems to be a product of cognitive processes, in this instance: intolerance of uncertainty, and a cause for impaired academic life satisfaction.

1.3 | The present study

The novel COVID-19 pandemic has brought new challenges to the lives of students building their career plans and struggling to achieve a successful academic performance. Therefore, the present study aims to investigate

associations between intolerance of uncertainty, educational stress, and academic life satisfaction in a sample of high school students. More specifically, the mediator role of educational stress in the relationship between intolerance of uncertainty and academic life satisfaction was examined. Based on the research objectives, the following hypotheses were tested:

1. Intolerance of uncertainty has a direct negative effect on academic life satisfaction.
2. Intolerance of uncertainty has a direct positive effect on educational stress.
3. Educational stress has a direct negative effect on academic life satisfaction.
4. There is an indirect effect of intolerance of uncertainty on academic life satisfaction through educational stress.

2 | METHODS

2.1 | Sample

The sample of the present study consisted of a total of 459 volunteer high school students, including 257 females (56.0%) and 202 males (44.0%), attending school in the spring semester of the 2020–2021 academic year. The ages of the participants ranged from 13 to 19, with a mean age of 16.03 (Mean = 16.03, SD = 1.21). In terms of demographics, 40 participants (8.7%) had a chronic disease, 62 (13.5%) perceived their socioeconomic level as low, 223 (48.6%) as middle, and 174 (37.9%) as good. The majority of the students were studying at Vocational high schools ($n = 177$, 38.6%), following Science high schools ($n = 151$, 32.9%), and Anatolian high schools ($n = 131$, 28.5%). It was determined that 102 of the participants (22.2%) were ninth-graders, 119 (25.9%) tenth-graders, 167 (36.4%) eleventh-graders, and 71 (15.5%) twelfth graders. The demographic characteristics of the sample are presented in Table 1.

The data were collected online by the researchers by using the convenience sampling method. This method enables researchers to select participants from groups more accessible in terms of time, money, and availability (Creswell, 2014). It has been also noted that convenience sampling may limit the representativeness of the sample to the population and create bias, which may impact the generalizability of the results (Ary et al., 2014). However, some strategies have been suggested by researchers to minimize the potential drawbacks, including recruiting the sample considering the characteristics of the population and reporting the characteristic of the population to ensure repeatability of the study (Gravetter & Forzano, 2018). Therefore, the present study was carefully designed to include individuals from different schools and grades, and the demographics were presented. At first, an online survey was delivered to the parents via social media apps, and they were requested informed consent. Later, the parents shared the survey on the device/connection they used with the students. Before starting to fill out the survey, the students were also required to read a specific informed consent text and approve to continue, indicating they wanted to participate voluntarily. In the information section, a detailed explanation of the purpose of the research and the declaration that the personal data of the individuals participating in the research would be kept confidential was stated.

2.2 | Data collection tools

The data collection tools included the personal information form, the Intolerance of uncertainty scale, the academic life satisfaction scale, and the educational stress scale.

TABLE 1 Demographic characteristics of the participants

Variable	n	%
Gender		
Female	257	56.0
Male	202	44.0
School type		
Science high schools	151	32.9
Anatolian high schools	131	28.5
Vocational high schools	177	38.6
Grade		
9	102	22.2
10	119	25.9
11	167	36.4
12	71	15.4
Socioeconomic level		
Low	62	13.5
Middle	223	46.8
Good	174	37.9
Presence of a chronic disease		
No	419	91.3
Yes	40	8.7

2.2.1 | The personal information form

The form was developed by the researchers to collect personal information about high school students. Accordingly, the form consisted of questions regarding students' age, gender, grade level, socioeconomic level, and whether they had a chronic disease.

2.2.2 | The academic life satisfaction scale-adolescent form

This 8-item scale was developed by Nogueira et al. (2019) to evaluate the satisfaction of young adults with their academic life. The items are answered on a 5-point Likert-type scale with options ranging between "1" strongly disagree and "5" strongly agree. As a result of the reliability analysis of the scale, the internal consistency coefficients are calculated as (α) 0.72 for the personal satisfaction subscale, (α) 0.74 for the satisfaction with the academic environment, and (α) 0.80 for the overall scale (Nogueira et al., 2019). High scores on the scale reveal that the level of satisfaction with academic life is high. The adaptation of the scale into Turkish was first conducted on university students by Odacı, Kaya, Kınık et al. (2021). The validity and reliability of the scale were tested on 423 high school students with a mean age of 15.97 (Mean = 15.97, SD = 1.16), including 272 females (64.3%) and 151 males (35.7%), by Odacı, Kaya, Kınık, Aydın et al. (2021). As a result of the confirmatory factor analysis, the fit

indices of the model were found acceptable ($\chi^2 = 41.61$, $df = 18$, $\chi^2/df = 2.31$, normed fit index [NFI] = 0.96, comparative fit indices [CFI] = 0.98, root mean square error of approximation [RMSEA] = 0.056, standardized root mean square residual [SRMR] = 0.030), and construct validity of the scale was concluded to be satisfactory. As a result of the reliability analysis, the internal consistency coefficient was calculated as $\alpha = 0.81$ for the satisfaction with academic environment subscale, $\alpha = 0.79$ for the personal satisfaction subscale, and $\alpha = 0.86$ for the overall scale (Odacı, Kaya, Kınık, Aydın et al., 2021). The internal consistency coefficient for the overall scale was found as $\alpha = 0.75$.

2.2.3 | The intolerance of uncertainty scale

This scale was developed by M. H. Freeston et al. (1994) to measure individuals' intolerance of uncertainty. The scale consists of 27 items and has a four-factor structure. The items are scored with a 5-point Likert-type scoring system with options ranging between "1" strongly disagree and "5" strongly agree. A high score on the scale indicates a high level of intolerance of uncertainty. The internal consistency of the scale was 0.91, and the test-retest reliability was 0.78 (M. H. Freeston et al., 1994). The psychometric properties of the intolerance of uncertainty scale were examined (Buhr & Dugas, 2002), and it was seen that the internal consistency of the scale was 0.94 and that the test-retest reliability was 0.74. The adaptation of the scale into Turkish was carried out by Sari and Dağ (2009). As a result of the exploratory factor analysis, the tenth item was excluded from the scale due to the low item-total correlation value, and it was stated that the scale consisting of four factors was valid in the Turkish sample. As a result of the reliability analysis, it was determined that the internal consistency coefficient of the scale was $\alpha = 0.93$ (Sari & Dağ, 2009). In the present study, confirmatory factor analysis was utilized to test the construct validity of the scale on a high school sample. The fit indices of the model were found to be acceptable ($\chi^2 = 802.75$, $df = 266$, $\chi^2/df = 3.01$, CFI = 0.90, RMSEA = 0.066, SRMR = 0.048), and construct validity was achieved in the high school sample. Besides, the internal consistency coefficient was calculated as $\alpha = 0.94$.

2.2.4 | The educational stress scale

The educational stress scale was developed by Sun et al. (2011) to measure individuals' educational stress. The scale consists of 16-items and has a five-factor structure. The items are scored with a 5-point Likert-type scoring system with options ranging between "1" strongly disagree and "5" strongly agree. The high scores indicate high levels of educational stress. The internal consistency of the scale was found as 0.81 (Sun et al., 2011). The adaptation of the scale into Turkish was carried out by Çelik et al. (2014). As a result of confirmatory factor analysis, it was seen that the five-factor structure was confirmed on the high school sample ($\chi^2 = 123.49$, $df = 88$ ($\chi^2/df = 1.40$), RMSEA = 0.03, NFI = 0.97, CFI = 0.99, SRMR = 0.041). The reliability analysis revealed that the internal consistency coefficient of the scale was $\alpha = 0.86$ (Çelik et al., 2014). In the present study, the internal consistency coefficient was calculated as $\alpha = 0.84$.

3 | DATA ANALYSIS

In the present study, a structural model was developed to test the mediation effect. In the analysis of the structural model, the two-stage process proposed by Anderson and Gerbing (1988) was adopted. First, the measurement model was tested to examine whether the latent variables were adequately represented by their indicators. After confirming that the measurement model provided enough evidence in terms of goodness of fit criteria, the testing phase of the structural model based on latent variables was initiated. Before performing statistical operations on

the data, the data set was screened and prepared. Accordingly, the data set was examined in terms of outliers, normal distribution, and collinearity (Field, 2013). The total scores of the variables were converted into standardized z scores, and the outliers were investigated. It was observed that the z statistics were between -3 and $+3$, so the data set was found to be free from extreme values (Tabachnick & Fidell, 2014). Descriptive statistics of the variables were calculated, and skewness and kurtosis values were found to be between -2 and $+2$. In this regard, it was determined that the data were normally distributed (George & Mallery, 2019). The collinearity between the variables in the study was evaluated via VIF values. These values were found as 1.81 for both the intolerance of uncertainty and educational stress scales. The values are expected to be less than 10 (Tabachnick & Fidell, 2014). After the data set was prepared, the phase of testing the structural model was initiated. To do this, IBM AMOS Graphics software was employed, and operations were carried out by using the maximum likelihood estimation model. Some of the goodness of fit indices were assessed to evaluate the fit of the model with the data. These indices included χ^2/df , RMSEA, SRMR, CFI, and Bentler–Bonett NFI (Byrne, 2010; Kline, 2016; Schumacker & Lomax, 2010; Tabachnick & Fidell, 2014).

4 | BOOTSTRAPPING PROCEDURE

The bootstrapping procedure was utilized to test whether the indirect effect in the structural model was significant. In bootstrapping, the representativeness power of the sample is generally increased, and the confidence intervals are evaluated to find out whether the indirect effect is significant (MacKinnon, 2008; Preacher & Hayes, 2008). In this process, bootstrapping value and confidence intervals are calculated. The absence of zero between the lower and upper limits of the confidence interval indicates that the indirect effect is significant. In this study, 10,000 bootstraps were used to analyze the indirect effect (Preacher & Hayes, 2008; Preacher & Kelley, 2011).

5 | POWER ANALYSIS

The sample size was calculated by using the power analysis method. The total sample size was calculated as at least 107 individuals by utilizing the “a priori analysis” of the G*Power 3.1 software for the multiple regression analysis (Faul et al., 2009), and setting the parameters to two predictor variables, an alpha level of 0.5, a power ratio (1- β) of 0.95, and a medium effect size (Balkin & Sheperis, 2011). It can be concluded that the sample size of the study, which included 459 individuals, is quite powerful to perform the analysis. According to the results of the power analysis, the effect size was found to be high ($F^2 = 0.36$) (Cohen, 1992; Faul et al., 2009).

6 | FINDINGS

6.1 | Preliminary analysis

To examine the relationships between intolerance of uncertainty, educational stress, and academic life satisfaction scale, a correlation analysis was performed by utilizing Pearson's product moment correlation. Table 2 shows the relationships between the variables, mean scores, standard deviations, skewness, and kurtosis values. As a result of the correlation analysis, a positive and significant relationship was found between intolerance of uncertainty and educational stress ($r = 0.67$, $p < .01$; 95% CI: [0.61–0.72]). Contrary to this result, there were significant negative correlations between academic life satisfaction and educational stress ($r = -0.51$, $p < .01$; 95% CI: [-0.58 to -0.45]), and intolerance of uncertainty ($r = -0.40$, $p < .01$; 95% CI: [-0.48 to -0.31]).

TABLE 2 Descriptive values and relationships for measurement tools

Variable	1	2	3
Intolerance of uncertainty	1		
Educational stress	0.67***	1	
Academic life satisfaction	-0.40***	-0.51***	1
Minimum	27.00	17.00	10.00
Maximum	125.00	77.00	40.00
Mean	85.99	53.54	25.37
SD	17.70	9.90	5.17
Skewness	-0.34	-0.26	-0.30
Kurtosis	-0.02	0.10	-0.03

*** $p < .001$

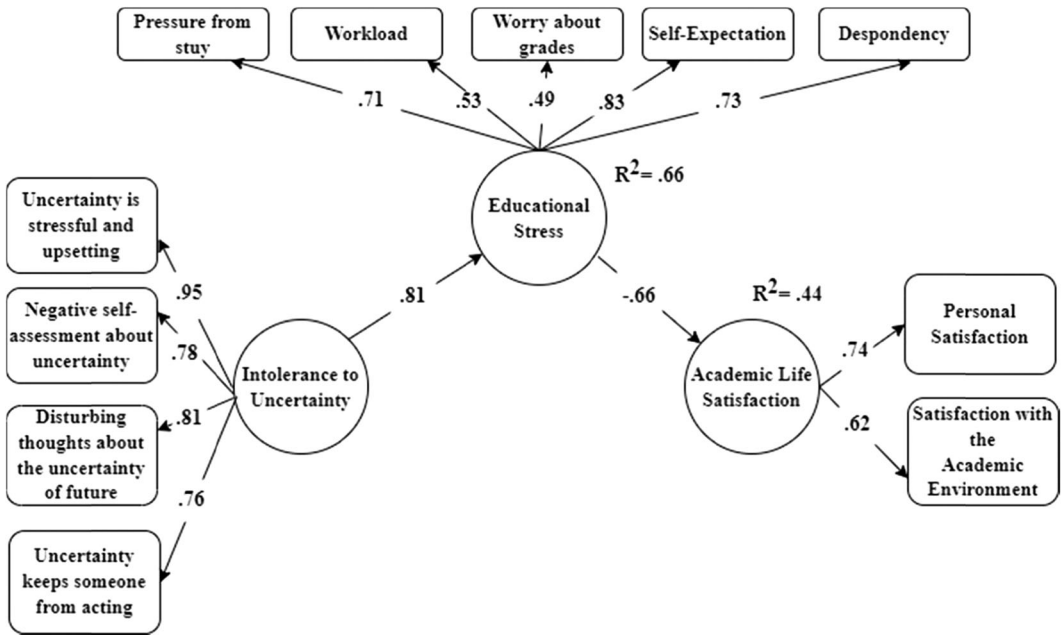


FIGURE 1 The mediation model

7 | MEASUREMENT MODEL

The measurement model consisted of three latent (intolerance of uncertainty, educational stress, and satisfaction with academic life) and 11 observed variables (subscales). As a result of the analysis, it was found that the measurement model fit the data well ($\chi^2_{(df=37, n=459)} = 147.25, p < .001; \chi^2/df = 3.98, CFI = 0.96, NFI = 0.94, RMSEA = 0.08, SRMR = 0.05$).

8 | STRUCTURAL MODEL

The structural model regarding the mediating role was tested. At this stage, first of all, all the paths in the model were drawn. According to the results, it was observed that the direct path from intolerance of uncertainty to satisfaction with academic life was insignificant ($\lambda = 0.25, p > .05$). The insignificant path was removed, and the model was retested. The model estimates were all found to be significant, the fit of the model with the data was examined. It was determined that the model fit the data well ($\chi^2_{(df=38, n=459)} = 149.49, p < .001; \chi^2/df = 3.93, CFI = 0.96, NFI = 0.94, RMSEA = 0.080, SRMR = 0.046$). The results of the structural equation model analysis are given in Figure 1.

As a result of the structural equation model analysis, it was observed that intolerance of uncertainty had a direct positive effect on educational stress ($\lambda = 0.81, p < .001$). On the other hand, the direct effect of educational stress on satisfaction with academic life was negative ($\beta = -0.66, p < .001$). In addition to these findings, it was revealed that educational stress fully mediated the relationship between intolerance of uncertainty and satisfaction with academic life ($b = -0.54, 95\% BC: [-0.60 \text{ to } -0.46]$). As a result, it was seen that intolerance of uncertainty explained 66% of the variance in educational stress, and that intolerance of uncertainty and educational stress together explained 44% of the variance in satisfaction with academic life. The results are presented in Table 3.

9 | DISCUSSION

With the outbreak of the novel COVID-19 pandemic, nearly all human societies have once again experienced the devastating impacts of a health crisis in all domains of life. The academic life of millions of students from primary schools to university has been altered at unprecedented levels. To cope with the unstoppable spread of the virus, governments around the world adopted new measures such as quarantines, lockdowns, restrictions, and rules (Cakir, 2020; Koh, 2020). Face-to-face education was canceled and the distance education approach was rapidly implemented at all academic levels (Alan, 2021; Süğümlü, 2021). The sudden emergence of such a crisis blindsided educational systems and all the parties including administrators, teachers, students, and parents alike: school life as we all know is over. Hence, due to the nature of distance education, problems derived from this urgently adopted approach, and pandemic conditions made students suffer. Specifically, high school students were affected by this process and experienced elevated levels of stress and anxiety (Aslan et al., 2020). Special attention is needed to investigate the possible drawbacks that occurred in the educational development of high school students as they build their identity, set up academic and vocational goals, and strive for displaying an adequate level of performance

TABLE 3 Direct and indirect effects of latent variables

Model paths	Effect	95% BC		SE	CR
		Lower	Upper		
Direct effects					
IU → ES	0.81	0.76	0.84	0.03	10.04***
ES → ALS	-0.66	-0.73	-0.57	0.16	-7.95***
Indirect effect					
IU → ES → ALS	-0.54	-0.60	-0.46		

Note: Bootstrapping process was performed with 10,000 bootstrap samples.

*** $p < .001$.

Abbreviation: ALS, satisfaction with academic life; BC, bias-corrected; CR, critical ratio; ES, educational stress; IU, intolerance of uncertainty; SE, standard error.

to get into the desired university program. Research indicates that students experienced technical difficulties, inequalities, confusion, ambiguity, decreased levels of motivation, boredom, displeasure, and dissatisfaction with life (Akbulut et al., 2020; Aslan et al., 2020; Aytaç, 2021; Karakaya et al., 2021; Zaccoletti et al., 2020). The environment of uncertainty might have contributed to the burden and tension caused by the COVID-19 pandemic. The high-stake exams were postponed, classes were closed in the case of COVID-19 positive students and teachers after switching back to face-to-face education, and rules were changed by the government according to the developments in the pandemic (Mahmut, 2020; "Schools Hold Out Against Coronavirus," 2021).

The present study provides useful information and insight to understand and interpret the educational life of high school students in the period of the COVID-19 pandemic. The findings of the present study point out that the intolerance of uncertainty negatively affects the academic life satisfaction of high school students both directly and indirectly via educational stress under pandemic conditions. During the COVID-19 pandemic, students who are intolerant of uncertainties may evaluate academic life as less satisfactory and this is partly because they have boosted educational stress by their tendency not to tolerate the uncertainty. It is evident that intolerance of uncertainty serves as a cognitive mechanism that magnifies the errors and overestimates the possible costly outcomes (Ladouceur et al., 2000; O'Neill et al., 2006; Tanovic et al., 2018). Research indicates that being intolerant of uncertainty increases risk perceptions and causes excessive stress, distress, and anxiety reactions (Bavolar et al., 2021; M. Freeston et al., 2020; Taha et al., 2014). Therefore, high school students with high levels of intolerance of uncertainty may have a distorted view that the setbacks they have been facing in the pandemic period will end up badly. Such thoughts may contribute to the educational stress they have been experiencing. Hence, these unpleasant incidents may harm their satisfaction with academic life during the period. Evidence supports that stressful experiences lower the satisfaction people get from life in general (Moksnes et al., 2016; Schoeps et al., 2019; Suldo & Huebner, 2004). For instance, in the sample where the majority of the adolescents had low socioeconomic status and parented in a fragmented family, McKnight et al. (2002) emphasized that stressful life experiences may harm adolescents' satisfaction with life, which may cause them to demonstrate maladaptive behaviors. A similar picture has also been shown by adults facing repeated life events, where the reoccurrence of unemployment severely damages the life satisfaction of individuals (Luhmann & Eid, 2009).

The direct effect of intolerance of uncertainty might indicate that the cognitive process of reframing the uncertain condition might interfere with individuals' assessments of satisfaction. Life always contains relative degrees of uncertainty. How we interpret those missing information might be the key to reacting and seeing the world. From cognitive-behavioral perspective, it is the individuals' beliefs of what is happening which determine the emotional and behavioral consequences (Ellis, 2014; Karlin, 2011). In this instance, intolerance of uncertainty might function as a filter, like the ones in camera apps, showing a distorted and scarier picture of reality.

10 | LIMITATIONS AND FUTURE DIRECTIONS

The present study has some limitations that the readers should consider when interpreting the findings. First of all, the sample of the study includes high school students and does not allow us to compare the effects on students at different educational stages. Hence, it would be useful for future research to include students at primary schools, middle schools, and college.

Secondly, the study provides the causal relationships between the variables, however, does not enrich our knowledge with qualitative data. To better understand the nature of the relationship, researchers might plan research projects to acquire high school students' views on the uncertainties and their effects on satisfaction with academic life during educational life under pandemic conditions.

Another limitation of the study is that the sample only comprises students living in Turkey. All around the world, the educational life of adolescents has been affected. To reach a more comprehensive conclusion, it is recommended that researchers recruit school-aged individuals from different countries and regions of the world.

The sample of the present study was recruited by the convenience sampling method. To minimize the drawbacks of the sampling method and to increase the repeatability of the study, it was designed to include adolescents from different schools and grades. Hence, the demographics of the sample were carefully reported. It was recommended for researchers to use strategies to increase the generability of their results while designing a research project based on convenience sampling where certain shortcomings make it hard to recruit a sample by probability-based sampling methods.

Due to restrictions and school closures during the COVID-19 pandemic, the data were collected via an online survey. However, it can be thought that the study does not encapsulate the experiences of those who have no or limited internet connection. In times, when it was essential for students to continue their educational life, being unable to reach or afford an internet connection could be a real challenge that creates extensive educational stress and dissatisfaction.

Some might also infer that the partial mediator role of educational stress leaves the door open: some other factors might play a role in the relationship between intolerance of uncertainty and academic life satisfaction. For instance, the life of school-aged individuals is boring: decreased social contacts, a limited amount of leisure activities, low motivation to study. Underlying factors might also differ between students from different educational stages. For example, the life of college students might have unique challenges in itself.

Based on the evidence of the present study, we recommend that teachers, school counselors, psychologists, and parents help their children make sense of the uncertainties they face in life. Professionals may design and administer psychoeducational programs to increase the tolerance of the students during the outbreak of crises. They can also deliver some guidance to parents to promote better well-being at home. Professionals may also support students experiencing high educational stress, encourage them to disclose their concerns, and try to reason with them.

Furthermore, considering the societal impact of a sudden health crisis, it can be suggested for governments and policymakers prepare crisis plans for various scenarios. The COVID-19 pandemic was not the first health crisis the world had faced. However, there are still inefficiencies to manage the resources to overcome the situation. By benefiting from the empirical evidence, governments might be able to identify who are psychologically vulnerable and develop programs aiming to provide help to them during such instances, *including students*. One of the reasons why the COVID-19 pandemic had such an impact on the systems is that the world was not well-prepared. Hence, governments can build crisis management bases, working and assessing the risks continuously. Also, inconsistent policies and governmental announcements may inflate the psychological problems faced by society. The authorities must adopt persistent approaches to assure the community and give hope that the challenges will be overcome by logic and science.

11 | CONCLUSION

The present study adds some fruitful information to the literature that high school students' disposition to tolerate uncertainties may play an important role in the academic life satisfaction they derive from their education during a catastrophic situation where inconsistencies, confusion, and uncertainties may take place. More specifically, the present research provides a more in-depth insight into the relationship and reveals that educational stress may partly mediate the association between intolerance of uncertainty and academic life satisfaction. Adolescents may experience high levels of stress inflated by their tendency not to tolerate the environment of uncertainties and therefore suffer from low levels of satisfaction with academic life throughout the crisis period, as in our case COVID-19.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients recruited in the study.

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