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COVID-19 Related Stress and Life Satisfaction in Turkish Undergraduates: A Serial-Parallel Mediation Model

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Abstract: One of the life areas under the impact of the COVID-19 pandemic is university education. As it becomes more prevalent with its various versions, it shapes undergraduates' psychological well-being profoundly. It is necessary to understand how COVID-19-related stress impacts their mental life. The purpose of the study was to examine whether COVID-19 burnout and cognitive emotion regulation had mediating roles in the relationship between COVID-19-related stress and life satisfaction. Three hundred sixty-four Turkish undergraduates participated in the study. Mediation analyses showed that both adaptive and maladaptive cognitive emotion regulation had interplaying roles in the link between COVID-19-related stress and life satisfaction, unlike COVID-19 burnout. Yet, COVID-19-related stress indirectly affected life satisfaction since COVID-19 burnout increased maladaptive cognitive emotion regulation strategies while decreasing adaptive ones concurrently. The findings are crucial for mental health professionals whose aim is to develop necessary psychological interventions for undergraduates to increase their life satisfaction levels during the COVID-19 pandemic.

Keywords: COVID-19-related stress, COVID-19 burnout, cognitive emotion regulation, life satisfaction, undergraduates.

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Introduction

Since the new Coronavirus disease (COVID-19) was recognized as a pandemic by the World Health Organization (WHO), it has become a vital stress factor for individuals. It has been affecting people's mental health and psychological well-being detrimentally (Brooks et al., 2020). As the pandemic increases its speed, it produces continuous lockdowns and social distancing systems in many nations. Individuals are more likely to use diverse media resources to obtain new information about the pandemic. They spend more time learning about current issues related to the pandemic on those platforms. Hence, they experience intense anxious and depressive feelings (Saladino et al., 2020).

Providing adequate psychological treatments to every layer of the public (e.g., health care professionals, young children, university students, etc.) during the pandemic becomes essential (Wang et al., 2020). A recent meta-analytic study manifested the predominance of more anxious and depressive symptoms and less psychological well-being in comparison to before the pandemic appeared (Vindegaard & Benros, 2020). Despite many studies investigating the psychological influences of COVID-19 on medical professionals (e.g., Chen et al., 2020), children (e.g., Li et al., 2020), and so on, there is scarce research focusing on how undergraduates are mentally influenced by COVID-19 pandemic.

One study showed that college students had high levels of worry about their future careers, anxiety, disappointment, and monotony because of the pandemic (Aristovnik et al., 2020). Another study indicated that after the COVID-19 pandemic occurred, the most prevalent alterations in the lives of university students were seen in their academic, emotional, and social areas (Browning et al., 2021). Specifically, they had higher levels of stress, anxiety, and social isolation, and less academic interest than before the pandemic. Their behavioral changes also comprised more social distance from other people, less participation in outdoor events, and more educational transformations such as online learning, and so on. Son et al. (2020) revealed that the common causes behind the high rise in stress and anxiety of undergraduates were

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extreme concerns about the well-being and well-being of their loved ones, concentration problems, changes in sleeping habits, low social interplay, and academic functioning.

Starting from March 23rd, 2020, to September 13th, 2021, higher education in Turkey turned into a distance learning system (Council of Higher Education [CHE], 2020, 2021). Since the educational system changed, undergraduates were facing both academic and psychological burdens (Örgeç et al., 2020). Especially, they were studying at home, dealing with lots of homework and online courses. Because they could not be on campus, the only way of communicating with friends was online social media tools. It made them feel anxious, depressed, lonely, and socially isolated (Akat & Karataş, 2020). Therefore, they must access psychological interventions whose aim is to decrease their COVID-19-related stress and increase their life satisfaction.

Literature Review

COVID-19 Related Stress and Life Satisfaction

For Diener (2000), one's subjective well-being includes the appreciation of his/her life cognitively and emotionally. Upon assessing the subjective well-being of individuals, life satisfaction is considered as its main indicator. According to Pavot and Diener (2008), individuals compare their life conditions based on either self-prescribed criteria or other groups of criteria. If they find congruence between them, they have high levels of life satisfaction. However, if there is disharmony between their life situations and the required criteria, low levels of life satisfaction occur.

Flinchbaugh et al. (2015) proposed a theoretical model of life satisfaction. They stated that different kinds of stressors affect one's life satisfaction differently. Particularly, the challenge stressors are comprehended as an opportunity to learn something in life to enhance the life satisfaction. On the other hand, the hindrance stressors considered as an obstacle to personal development lead to low levels of life satisfaction. While thinking about the psychological distress of the COVID-19 pandemic, it can be a hindrance stressor for individuals. Hence, it is important to know how to facilitate life satisfaction mechanisms during the pandemic.

Oh and Neal's (2021) study indicated that COVID-19-related stress had a negative relationship with life satisfaction. Another research (Dymecka et al., 2022) found that individuals having high levels of COVID-19-related stress had low levels of life satisfaction. Moreover, Kim and Kang (2021) demonstrated that the relationship between COVID-19-related stress and life satisfaction was mediated by rumination. Rogowska et al.'s (2020) study also showed that the ones having high degrees of COVID-19-related stress and low degrees of life satisfaction preferred to use more emotion-focused and task-focused coping styles than problem-focused coping styles. Therefore, the potential resources of life satisfaction become significant supportive mechanisms in the face of COVID-19-related stress.

COVID-19 Related Stress, COVID-19 Burnout, and Life Satisfaction

Burnout is a psychological reaction to long-lasting stressors primarily at work (Maslach & Leiter, 2016). It is a stressful condition including high degrees of emotional exhaustion, cynicism (depersonalization), and low degrees of efficacy. Emotionally exhausted individuals tend to show low levels of vitality, and high levels of weariness in their lives. On the other hand, depersonalized ones demonstrate unfavorable behaviors toward other individuals, social isolation, and emotional instability. Moreover, the ones experiencing feelings of inadequacy and failure reveal low degrees of creativity, weak self-confidence, and maladaptive coping mechanisms. Thus, burnout points out how stressful experiences are vital to one's psychological well-being.

In the educational area, learners faced academic burnout (Wang et al., 2021) and student burnout (Sunawan et al., 2021) during the pandemic. The general population also had COVID-19 stress and burnout symptoms. The more stressed they were, the less resilient they were, leading to more burnout (Yıldırım & Solmaz, 2020). What's more, COVID-19-related burnout can be thought of as an important factor in one's life satisfaction. Olcay's (2021) study demonstrated that COVID-19 burnout decreased undergraduates' life satisfaction levels. Another study displayed that the link between COVID-19-related stress and life satisfaction was mediated by burnout (Xu et al., 2021).

COVID-19 Related Stress, Cognitive Emotion Regulation, and Life Satisfaction

Based on the Transactional Theory of Stress and Coping (Lazarus & Folkman, 1984), subjective comprehension of the stressful event shapes one's emotional attitude toward that event, leading to individual differences in stress responses. The model includes two kinds of coping methods: emotion-focused and problem-focused coping. The former refers to the efforts of directing one's attention away from stressful conditions. The latter is pertinent to one's attempts to solve the stress reasons. Despite the limitations of emotion-focused coping, it is beneficial in stressful circumstances where the individuals have no control such as a pandemic, death, etc.

For Folkman and Moskowitz (2004), emotion regulation can be deemed as emotion-focused coping. Emotion regulation is one's ability to be aware of his/her emotions, apprehend those emotions and reshape them in terms of their intensity, duration, and expression. There are different emotional regulation strategies used in those times, such as cognitive, social, physiological, and behavioral (Garnefski et al., 2001). For Troy and Mauss (2011), one's cognitive emotion

regulation strategies play a pivotal role in his/her emotional reaction to uncontrollable stressful contexts since they include a cognitive re-evaluation of these conditions. In the model of Garnefski et al. (2001), there are nine kinds of cognitive emotion regulation strategies: self-blame, other-blame, rumination, catastrophizing, acceptance, positive re-focusing, re-focus on planning, positive reappraisal, and putting into perspective. The first four methods are maladaptive approaches. The last five methods are adaptive approaches in stressful contexts.

Cognitive emotion regulation is an important emotional system advocating individuals' mental health (Garnefski & Kraaji, 2006). Riaz et al. (2021) found that cognitive emotion regulation significantly played a role in depression, anxiety, and stress. Another study examining the moderating and mediating effect of cognitive emotion regulation on the relationship between worry about the COVID-19 pandemic and common anxiety (Munoz-Navarro et al., 2021) embodied that adaptive cognitive emotion regulation methods diminished general anxiety levels compared to maladaptive ones. Furthermore, a study indicated that positive/adaptive cognitive emotion regulation strategies enhanced undergraduates' life satisfaction levels as opposed to negative/maladaptive ones (Esmaeilinasab et al., 2016). The other study even showed that the cognitive reappraisal strategy raised the life satisfaction levels of emerging adults while the suppression strategy declined only men's life satisfaction levels when exposed to high stress (Jiang et al., 2021). Moreover, Gröndal et al. (2021) figured out that undergraduates utilizing low levels of cognitive reappraisal strategy in the face of the COVID-19 pandemic had low life satisfaction degrees.

The Present Study

Considering the factors shaping Turkish undergraduates' life satisfaction levels during the COVID-19 pandemic, the present study aimed to analyze the mediating roles of their COVID-19 burnout levels and cognitive emotion regulation skills in the relation between their COVID-19-related stress and life satisfaction levels. Based on the theoretical framework of Flinchbaugh et al. (2015), COVID-19-related stress was thought as a hindrance stressor on life satisfaction. Specifically, the models of Troy and Mauss (2011), and Maslach and Leiter (2016) were considered to investigate the positive impact of cognitive emotion regulation skills and the negative influence of COVID-19 burnout on life satisfaction respectively. Consequently, the study based on the proposed model in Figure 1 has the following hypothesis:

- (1) COVID-19-related stress will promote high levels of COVID-19 burnout.
- (2) The indirect effect of COVID-19-related stress on life satisfaction will be serially mediated by COVID-19 burnout (H2a), and by maladaptive cognitive emotion regulation (CER) skills (H2b) and adaptive cognitive emotion regulation (CER) skills (H2c).

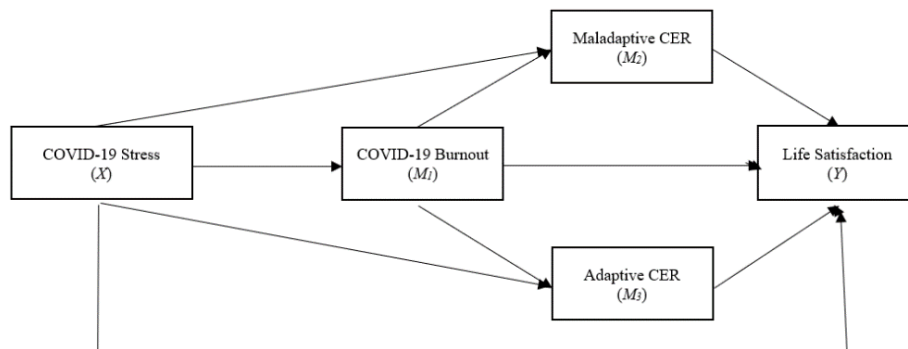


Figure 1. Hypothesized Serial-Parallel Mediation Model

Methodology

Research Design

The study was designed as the serial-parallel mediational model (Model 81, Hayes, 2018). It included one predictive variable (COVID-19 stress), three mediators (COVID-19 burnout, adaptive and maladaptive cognitive emotion regulation strategies) and one outcome variable (life satisfaction). All variables in the model were continuous.

Sample and Data Collection

To form the study sample, a convenient sampling method was utilized. 364 Turkish undergraduates (301 [82.7%] females and 63 [17.3%] males) in İstanbul, aged 17-28 participated in the research. Participants were called up on the internet by being provided an anonymous research link. They were asked to complete the online survey utilizing the Google form platform. In the beginning, the purpose of the study was clarified, and they were told that the information obtained would only be used for the research aims by giving them informed consent electronically. To decrease the possibility of common method bias (Podsakoff et al., 2003, 2012), in the informed consent, the participants were said

that there were no right or wrong responses for the scales, the data gathered from them would be recorded anonymously, and shared with nobody. Moreover, they were asked to reply to the questions of the scales candidly. In this way, participants took part in the study voluntarily.

There were 10 (2.7%) prep, 171 (47%) freshmen, 104 (28.6%) sophomores, 33 (9.1%) junior, 34 (9.3%) senior undergraduates, and 12 (3.3%) graduate students. Besides, 47 (12.9%) undergraduates were diagnosed with COVID-19 disease as opposed to 317 undergraduates (87.1%) in the sample. 113 (31%) of the sample had family members diagnosed with COVID-19 disease while 251 (69%) of them had no family members diagnosed with COVID-19 disease.

Measures

Demographic Information Form

To understand the descriptive characteristics of the sample, a demographic information form was created by the researcher. Participants were asked to answer the demographic questions including age, gender, and class level. Moreover, they were required to report whether their relatives or they were diagnosed with COVID-19 or not.

The COVID-19 Related Psychological Distress Scale

The adapted version of the scale was utilized to examine the degree of COVID-19-related psychological distress of undergraduates in the study (Ay et al., 2021). The scale consisted of 12 items with a two-factor structure, namely, suspicion, and fear and anxiety on a 5-point scale. The total score can be obtained from the scale. In the present study, Cronbach's α of the total scale was .86.

Cognitive Emotion Regulation Questionnaire

The adapted scale was applied to identify undergraduates' cognitive emotion regulation skills in the research (Onat & Otrar, 2010). The scale consisted of 36 items with a nine-factor structure (self-blame, other-blame, rumination, catastrophizing, acceptance, positive re-focusing, re-focus on planning, positive reappraisal, and putting into perspective) on a 5-point scale. The first four methods can be grouped as maladaptive cognitive emotion regulation skills while the last five methods can be stated as adaptive ones. In the present study, Cronbach's α of the total scale was .85. Besides, Cronbach's α of the sub-scales including the maladaptive cognitive emotion regulation skills was .83, and that of the subscales including the adaptive cognitive emotion regulation skills was .89.

COVID-19 Burnout Scale

The scale was generated by Yildırım and Solmaz (2020) who altered the authentic items, and response structures of the Burnout Measure-Short Version (Malach-Pines, 2005), and adapted the scale to Turkish. They changed the scale language by reinstating 'your work' with the 'COVID-19' word. The scale comprised 10 items with a one-factor structure on a 5-point scale. For this study, Cronbach's alpha coefficient value of the total scale was .91.

The Satisfaction with Life Scale

The adapted scale was used to investigate undergraduates' life satisfaction levels (Yetim, 1993). The scale includes 5 items with a one-factor structure on a 5-point scale. Cronbach's α of the total scale was .86, and the test re-test reliability coefficient was .73. For this study, the internal consistency coefficient of the total scale was .86.

Analyzing of Data

Bivariate correlations among the study variables were analyzed via Pearson correlation analysis. To uncover the mediation effects of COVID-19 burnout, and cognitive emotion regulation strategies in the relation between COVID-19-related stress and life satisfaction, the PROCESS macro for SPSS (Model 81, Hayes, 2018) was utilized. The statistical significance of the model was examined using 5000 bootstrap samples. Bootstrapping method allows the researchers to determine if the indirect mediating effects are statistically significant depending on the fact that the 95% confidence intervals (CIs) of the indirect effects include the value of zero (Hayes, 2018). Based on this method, the indirect effects were investigated.

Findings / Results

Preliminary Analyses

Based on the data obtained from 369 undergraduates, the missing and outlier values were examined. It was found that there were no participants providing incomplete information in the survey. However, five participants were identified as outliers through Mahalanobis distance calculation and excluded from the data. Therefore, the main analyses were conducted with 364 participants.

To analyze multivariate normality, skewness and kurtosis indexes were identified. Besides, the data was also tested whether it included multicollinearity and singularity or not. Descriptive statistics, skewness and kurtosis indexes, Cronbach's α values and correlations among the study variables are demonstrated in Table 1.

Table 1. Descriptive Statistics, Skewness and Kurtosis Indexes, Cronbach's α Values, and Correlations Among Study Variables

Variables	M	SD	Skewness	Kurtosis	α	1	2	3	4	5
1. COVID-19 Stress	42.81	9.19	-0.407	-0.139	.86	-				
2. COVID-19 Burnout	36.26	9.07	-0.535	-0.468	.91	.22**	-			
3. Maladaptive CER	48.30	9.04	-0.480	0.630	.83	.22**	.36**	-		
4. Adaptive CER	68.87	15.11	-0.850	0.867	.89	-.17**	-.15**	-.03	-	
5. Life Satisfaction	19.60	5.24	-0.443	-0.241	.86	-.14**	-.16**	-.19**	.22**	-

Note. CER = Cognitive emotion regulation, ** $p < .01$

As it is seen in Table 1, the mean scores of the study variables ranged from 19.60 to 68.87 while their standard deviation values varied from 5.24 to 15.11. The skewness and kurtosis indexes were in acceptable degrees (± 1.5) for the normal distribution (Tabachnick & Fidell, 2019). They varied from -0.850 to 0.867. Cronbach's α values altered from .83 to .91. The correlation coefficients were between -.19 and .36 ($p < .01$).

Moreover, the VIF scores for COVID-19 Stress, COVID-19 Burnout, Maladaptive CER, and Adaptive CER were 1.102, 1.194, 1.180, and 1.048 respectively. The Durbin Watson value was 1.783. Because the correlation coefficients were lower than .90 (Tabachnick & Fidell, 2019) and the VIF scores were below 10 (Hair et al., 1995), multicollinearity and singularity were not present in the data.

Mediational Analyses

To examine the proposed hypotheses, the PROCESS macro for SPSS (Hayes, 2018, Model 81, with 5,000 bootstrapping samples) was used. As it is seen in Figure 2, COVID-19-related stress increased COVID-19 burnout ($\beta = .22, SE = .05, t(363) = 4.257, p < .001$). This in turn was linked with high levels of maladaptive cognitive emotion regulation ($\beta = .33, SE = .05, t(363) = 6.512, p < .001$) and low levels of adaptive cognitive emotion regulation ($\beta = -.20, SE = .09, t(363) = -2.318, p < .001$). High levels of maladaptive cognitive emotion regulation were associated with low levels of life satisfaction ($\beta = -.10, SE = .03, t(363) = -3.244, p < .001$). Furthermore, adaptive cognitive emotion regulation demonstrated positive and statistically significant relation with life satisfaction ($\beta = .07, SE = .02, t(363) = 4.209, p < .001$). However, COVID-19 burnout was not statistically linked with life satisfaction ($\beta = -.04, SE = .03, t(363) = -1.362, p = .17$). In addition, COVID-19-related stress increased maladaptive cognitive emotion regulation ($\beta = .15, SE = .05, t(363) = 3.072, p < .001$) and decreased adaptive cognitive emotion regulation ($\beta = -.24, SE = .09, t(363) = -2.718, p < .001$). The total direct effect of COVID-19-related stress on life satisfaction was not at a significant level ($c = -.01, SE = .03, t(363) = -.4573, p = .65$).

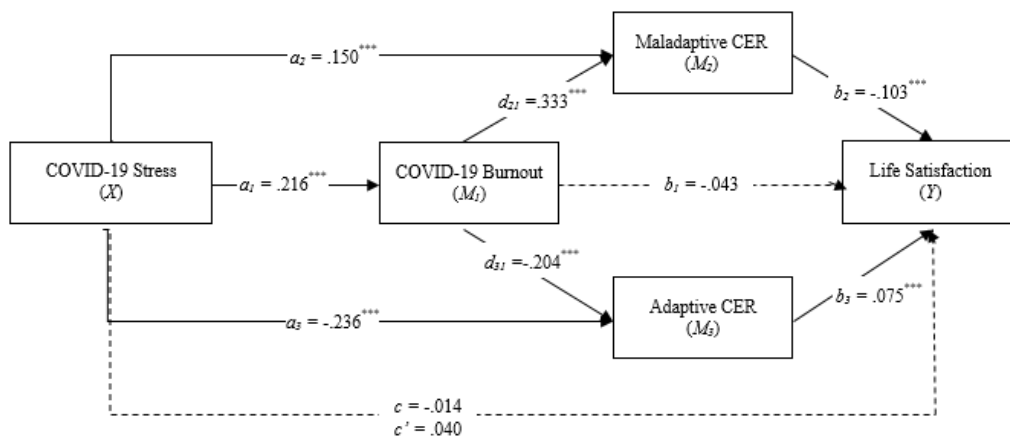


Figure 2. The Results of the Hypothesized Model

Table 2. Indirect Effects of COVID-19 Related Stress on Life Satisfaction

	Effect	Boost SE	Boost 95% CI	
			Lower limit	Upper limit
COVID-19 Stress → COVID-19 Burnout → Life Satisfaction	-.0093	.0076	-.0261	.0042
COVID-19 Stress → Maladaptive CER → Life Satisfaction	-.0154	.0070	-.0311	-.0038
COVID-19 Stress → Adaptive CER → Life Satisfaction	-.0177	.0079	-.0349	-.0040
COVID-19 Stress → COVID-19 Burnout → Maladaptive CER → Life Satisfaction	-.0071	.0031	-.0142	-.0021
COVID-19 Stress → COVID-19 Burnout → Adaptive CER → Life Satisfaction	-.0033	.0019	-.0079	-.0003
Total indirect effect	-.0529	.0126	-.0793	-.0298

Note. CER = Cognitive emotion regulation

The indirect effects of COVID-19-related stress on life satisfaction through COVID-19 burnout, maladaptive, and adaptive cognitive emotion regulation are shown in Table 2.

As it is shown in Table 2, the total indirect effect of COVID-19-related stress on life satisfaction was statistically significant ($b = -.0529$, $SE = .01$, 95% BCa CI [-.0793, -.0298]). Nevertheless, no significant specific indirect effect was seen through COVID-19 burnout on life satisfaction ($b = -.0093$, $SE = .01$, 95% BCa CI [-.0261, .0042]). The indirect effects of COVID-19 related stress on life satisfaction through maladaptive ($b = -.0154$, $SE = .01$, 95% BCa CI [-.0311, -.0038]) and adaptive cognitive emotion regulation ($b = -.0177$, $SE = .01$, 95% BCa CI [-.0349, -.0040]) were statistically important.

What's more, a specific indirect effect was also obtained, through the serial mediation of COVID-19 burnout and maladaptive cognitive emotion regulation, on life satisfaction ($b = -.0071$, $SE = .00$, 95% BCa CI [-.0142, -.0021]). Besides, a particular indirect effect was observed, through the serial mediation of COVID-19 burnout and adaptive cognitive emotion regulation, on life satisfaction ($b = -.0033$, $SE = .00$, 95% BCa CI [-.0079, -.0003]).

Discussion

The present study aimed to analyze if the relationship between COVID-19-related stress and life satisfaction was mediated by COVID-19 burnout and cognitive emotion regulation in Turkish undergraduates. The findings revealed that high levels of COVID-19-related stress led to high levels of COVID-19 burnout. The other finding was that the relation between COVID-19-related stress and life satisfaction was serially mediated by both adaptive and maladaptive cognitive emotion regulation, but not by COVID-19 burnout. Nonetheless, the ones having high levels of COVID-19-related stress had low levels of life satisfaction because they had high levels of COVID-19 burnout, which contributed to high levels of maladaptive cognitive emotion regulation strategies and low levels of adaptive ones concurrently.

Firstly, high degrees of COVID-19-related stress generated high degrees of COVID-19 burnout in the current research. Such a result was consistent with the theoretical framework of Maslach and Leiter (2016). As the stressful factors increase in one's life, s/he is more likely to have high degrees of burnout. There are also studies revealing that undergraduates experiencing COVID-19-related stress very much had lots of psychological challenges and tended to demonstrate high levels of burnout symptoms (Sunawan et al., 2021; Yıldırım & Solmaz, 2020). Since they encountered social and educational changes, they were under intense mental stress (Browning et al., 2020; Örgenç et al., 2020; Son et al., 2020). This led to an increase in emotionally exhausted and unstable feelings and dull behaviors. It can be stated that Turkish undergraduates go through the same adjustment problems as all over the world because of the COVID-19 pandemic. They may feel lonely, emotionally deprived, and lose academic motivation due to the life transformations of the COVID-19 pandemic (Akat & Karataş, 2020). Since they feel worried about their own and others' well-being, and cannot cope with uncertainties in their lives, they may have high levels of COVID-19 burnout.

Secondly, both adaptive and maladaptive cognitive emotion regulation strategies serially mediated the link between COVID-19-related stress and life satisfaction as opposed to COVID-19 burnout in the present study. Yet, high degrees of COVID-19-related stress led to low levels of life satisfaction because it generated high degrees of COVID-19 burnout, promoting high degrees of maladaptive cognitive emotion regulation strategies while resulting in low degrees of adaptive ones simultaneously. It was in line with the theoretical basis of Flinchbaugh et al. (2015), and Troy and Mauss (2011). Although there are studies reflecting how important cognitive emotion regulation strategies were in dealing with COVID-19-related stress (Munoz-Navarro et al., 2021; Riaz et al., 2021), and in the life satisfaction concept (Esmaeilinasab et al., 2016; Jiang et al., 2021), there is no research studying their interplaying roles in the relation between COVID-19 related stress and life satisfaction with the undergraduates in the literature. The only study was the one by Gröndal et al. (2021). It revealed that the undergraduates using cognitive appraisal strategy at low degrees during the COVID-19 pandemic had low levels of life satisfaction. Besides, the finding that there was no indirect effect of COVID-19-related stress on life satisfaction via COVID-19 burnout was not in line with the theoretical basis of Maslach and Leiter (2016), and the studies of Olcay (2021) and Xu et al. (2021). It may be mentioned that under unpredictable stressful conditions of the COVID-19

pandemic, Turkish undergraduates preferring to use adaptive cognitive emotion regulation strategies can be better at dealing with COVID-19 burnout and can feel more pleased with their life circumstances than the ones using maladaptive cognitive emotion regulation strategies. To resolve COVID-19-related stress effectively and feel fulfilled with life in all its parts, low levels of COVID-19 burnout and high levels of adaptive cognitive emotion regulation strategies may be necessary enduring mechanisms for undergraduates.

Conclusion

The present study plays a contributing role to the mental health literature by pondering the indirect influences of COVID-19 burnout and cognitive emotion regulation strategies on the relationship between COVID-19-related stress and the life satisfaction of Turkish undergraduates. Based on the findings, there are some significant implications for the applied area. Because COVID-19-related stress is a universal stress resource at every edge of life, both mental health and educational professionals need to consider the basic stress factors as well as the necessary handling systems for every individual in the world. When looking at the educational context specifically, the dynamic changes in university education due to the COVID-19 pandemic bring lots of challenges for the undergraduates trying to carry out both their academic and psychological problems. Considering their COVID-19 burnout levels and cognitive emotion regulation strategies might be useful for them to increase their life satisfaction levels despite the COVID-19 pandemic. Psychological interventions based on promoting their life satisfaction levels can enhance their adaptability systems during the pandemic. They might be beneficial for the undergraduates to endure potential problems throughout the pandemic.

Recommendations

Future researchers may scrutinize different sampling techniques to make the findings more representative of the population. They may formulate a cross-cultural research design to figure out the cultural differences among the study variables. The other suggestion can be related to the research methods. The subsequent researchers may use qualitative research methods in addition to quantitative ones, forming a mixed research design. Furthermore, longitudinal research design can be considered by pondering the time of the COVID-19 pandemic, and the time after the COVID-19 pandemic.

Limitations

In the present study, there are some drawbacks. One of them is related to the sample reflecting a group of Turkish undergraduates at a university, which leads to the generalizability problem of the study findings. The other drawback is that quantitative research methods were the only tools examining the undergraduates' COVID-19-related stress, burnout, cognitive emotion regulation, and life satisfaction levels. Another limitation is that the study was conducted in an online survey platform, leaving no room for the participants to ask any questions to the researcher.

References

- Akat, M., & Karataş, K. (2020). Psychological effects of COVID-19 pandemic on society and its reflections on education. *Electronic Turkish Studies*, 15(4), 1-13. <https://doi.org/10.7827/TurkishStudies.44336>
- Aristovnik, A., Kerzic, D., Ravselj, D., Tomazevic, N., & Umek, L. (2020). Impacts of the COVID-19 pandemic on life of higher education students: A global perspective. *Sustainability*, 12(20), Article 8438. <https://doi.org/10.3390/su12208438>
- Ay, T., Oruç, D., & Özdoğru, A. A. (2021). Adaptation and evaluation of COVID-19 related Psychological Distress Scale Turkish form. *Death Studies*, 46(3), 560-568. <https://doi.org/10.1080/07481187.2021.1873459>
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *Lancet*, 395(10227), 912-920. [https://doi.org/10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8)
- Browning, M. H. E. M., Larson, L. R., Sharaievska, I., Rigolon, A., McAnirlin, O., Mullenbach, L., Cloutier, S., Vu, T. M., Thomsen, J., Reigner, N., Metcalf, E. C., D'Antonio, A., Helbich, M., Bratman, G. N., & Alvarez, H. O. (2021). Psychological impacts from COVID-19 among university students: Risk factors across seven states in the United States. *PLoS ONE*, 17(8), Article e0245327. <https://doi.org/10.1371/journal.pone.0245327>
- Chen, Q., Liang, M., Li, Y., Guo, J., Fei, D., Wang, L., He, L., Sheng, C., Cai, Y., Li, X., Wang, J., & Zhang, Z. (2020). Mental health care for medical staff in China during the COVID-19 outbreak. *The Lancet Psychiatry*, 7(4), E15-E16. [https://doi.org/10.1016/S2215-0366\(20\)30078-X](https://doi.org/10.1016/S2215-0366(20)30078-X)
- Council of Higher Education. (2020, March 18). *Basın açıklaması* [Press statement]. <https://bit.ly/3DIYg7T>
- Council of Higher Education. (2021, September 8). *YÖK Başkanı Erol Özvar, üniversitelerde yüz yüze eğitimin detaylarını açıkladı* [Erol Özvar, the Chair of CHE, explained the details about face-to-face education at universities]. <http://bit.ly/3HzBpgd>

- Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist*, 55(1), 34-43. <https://doi.org/10.1037/0003-066X.55.1.34>
- Dymecka, J., Gerymski, R., & Machnik-Czerwik, A. (2022). How does stress affect life satisfaction during the COVID-19 pandemic? Moderated mediation analysis of sense of coherence and fear of coronavirus. *Psychology, Health, & Medicine*, 27(1), 280-288. <https://doi.org/10.1080/13548506.2021.1906436>
- Esmailinasab, M., Khoshk, A. A., & Makhmali, A. (2016). Emotion regulation and life satisfaction in university students: Gender differences. In Z. Bekirogullari, M. Y. Minas, & R. X. Thambusamy (Eds.), *ICEEPSY 2016: Education and Educational Psychology, Vol. 16. European Proceedings of Social and Behavioral Sciences* (pp. 798-809). Future Academy. <https://doi.org/10.15405/epsbs.2016.11.82>
- Flinchbaugh, C., Luth, M. T., & Li, P. (2015). A challenge or a hindrance? Understanding the effects of stressors and thriving on life satisfaction. *International Journal of Stress Management*, 22(4), 323-345. <https://doi.org/10.1037/a0039136>
- Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and promise. *The Annual Review of Psychology*, 55, 745-774. <https://doi.org/10.1146/annurev.psych.55.090902.141456>
- Garnefski, N., & Kraaij, V. (2006). Relationships between cognitive emotion regulation strategies and depressive symptoms: A comparative study of five specific samples. *Personality and Individual Differences*, 40(8), 1659-1669. <https://doi.org/10.1016/j.paid.2005.12.009>
- Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personality and Individual Differences*, 30(8), 1311-1327. [https://doi.org/10.1016/S0191-8869\(00\)00113-6](https://doi.org/10.1016/S0191-8869(00)00113-6)
- Gröndal, M., Ask, K., Luke, T. J., & Winblad, S. (2021). Self-reported impact of the COVID-19 pandemic, affective responding, and subjective well-being: A Swedish survey. *PLoS ONE*, 16(10), Article e0258778. <https://doi.org/10.1371/journal.pone.0258778>
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1995). *Multivariate data analysis*. Prentice-Hall.
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.
- Jiang, X., Ji, L., Chen, Y., Zhou, C., Ge, C., & Zhang, X. (2021). How to improve the well-being of youths: An exploratory study of the relationships among coping style, emotion regulation, and subjective well-being using the random forest classification and structural equation modeling. *Frontiers in Psychology*, 12, Article 637712. <https://doi.org/10.3389/fpsyg.2021.637712>
- Kim, B.-N., & Kang, H. S. (2021). Differential roles of reflection and brooding on the relationship between perceived stress and life satisfaction during the COVID-19 pandemic: A serial mediation study. *Personality and Individual Differences*, 184, Article 111169. <https://doi.org/10.1016/j.paid.2021.111169>
- Lazarus, R., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer.
- Li, B., Zhang, S., Zhang, R., Chen, X., Wang, Y., & Zhu, C. (2020). Epidemiological and clinical characteristics of COVID-19 in children: A systematic review and meta-analysis. *Frontiers in Pediatrics*, 8, Article 591132. <https://doi.org/10.3389/fped.2020.591132>
- Malach-Pines, A. (2005). The burnout measure, short version. *International Journal of Stress Management*, 12(1), 78-88. <https://doi.org/10.1037/1072-5245.12.1.78>
- Maslach, C., & Leiter, M. P. (2016). Understanding the burnout experience: recent research and its implications for psychiatry. *World Psychiatry*, 15(2), 103-111. <https://doi.org/10.1002/wps.20311>
- Munoz-Navarro, R., Malonda, E., Llorca-Mestre, A., Cano-Vindel, A., & Fernandez-Berrocal, P. (2021). Worry about COVID-19 contagion and general anxiety: Moderation and mediation effects of cognitive emotion regulation. *Journal of Psychiatric Research*, 137, 311-318. <https://doi.org/10.1016/j.jpsychires.2021.03.004>
- Oh, J., & Neal, Z. P. (2021). Two's company, but four's a crowd: The relationship among COVID-19 stress, household size, and life satisfaction. *Collabra: Psychology*, 7(1), Article 24923. <https://doi.org/10.1525/collabra.24923>
- Olcay, Z. F. (2021). The relationship between academic burnout levels and life satisfaction of university students during the COVID-19 period. *Review of International Geographical Education*, 11(8), 1601-1610. <https://rigeo.org/menu-script/index.php/rigeo/article/view/2275>
- Onat, O., & Otrar, M. (2010). Bilişsel duygusal düzenleme ölçeğinin Türkçeye uyarlanması: Geçerlik ve güvenilirlik çalışmaları [Adaptation of cognitive emotion regulation questionnaire to Turkish: Validity and reliability studies]. *Marmara University Atatürk Education Faculty Journal of Educational Sciences/ Marmara Üniversitesi Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi*, 31(31), 123-143. <https://dergipark.org.tr/tr/pub/maruabd/issue/354/1917>

- Örgev, C., Biçer, İ., Demir, H., Aydın, O. A., Şen, E., & Özyaral, O. (2020). The psychological impact of the COVID-19 pandemic on university students in Turkey: A foundation university case. *Journal of International Health Sciences and Management*, 6(12), 25-33. <http://bit.ly/3Y3iod8>
- Pavot, W., & Diener, E. (2008). The satisfaction with life scale and the emerging construct of life satisfaction. *The Journal of Positive Psychology*, 3(2), 137-152. <https://doi.org/10.1080/17439760701756946>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, 63, 539-569. <https://doi.org/10.1146/annurev-psych-120710-100452>
- Riaz, M., Abid, M., & Bano, Z. (2021). Psychological problems in general population during COVID-19 pandemic in Pakistan: Role of cognitive emotion regulation. *Annals of Medicine*, 53(1), 189-196. <https://doi.org/10.1080/07853890.2020.1853216>
- Rogowska, A. M., Kuśnierz, C., & Bokszczanin, A. (2020). Examining anxiety, life satisfaction, general health, stress and coping styles during COVID-19 pandemic in polish sample of university students. *Psychology, Research, and Behavior Management*, 13, 797-811. <https://doi.org/10.2147/PRBM.S266511>
- Saladino, V., Algeri, D., & Auriemma, V. (2020). The psychological and social impact of COVID-19: New perspectives of well-being. *Frontiers in Psychology*, 11, Article 577684. <https://doi.org/10.3389/fpsyg.2020.577684>
- Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, 22(9), Article e21279. <https://doi.org/10.2196/21279>
- Sunawan, S., Amin, Z. N., Sumintono, B., Hafina, A., & Kholili, M. I. (2021). The differences of students' burnout from level of education and duration daily online learning during COVID-19 pandemics. In *Proceedings of the 11th Annual International Conference on Industrial Engineering Operations Management* (pp. 3723-3729). IEOM Society. <https://bit.ly/40u3LRM>
- Tabachnick, B. G., & Fidell, L. S. (2019). *Using multivariate statistics* (7th ed.). Pearson Education.
- Troy, A. S., & Mauss, I. B. (2011). Resilience in the face of stress: Emotion regulation as a protective factor. In S. M. Southwick, B. T. Litz, D. Charney, & M. J. Friedman (Eds.), *Resilience and mental health: Challenges across the lifespan* (pp. 30-44). Cambridge University Press.
- Vindegard, N., & Benros, M. E. (2020). COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity*, 89, 531-542. <https://doi.org/10.1016/j.bbi.2020.05.048>
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health*, 17(5), Article 1729. <https://doi.org/10.3390/ijerph17051729>
- Wang, J., Bu, L., Li, Y., & Song, J. (2021). The mediating effect of academic engagement between psychological capital and academic burnout among nursing students during the COVID-19 pandemic: A cross-sectional study. *Nurse Education Today*, 102, Article 104938. <https://doi.org/10.1016/j.nedt.2021.104938>
- Xu, X., Chen, L., Yuan, Y., Xu, M., Tian, X., Lu, F., & Wang, Z. (2021). Perceived stress and life satisfaction among Chinese clinical nursing teachers: A moderated mediation model of burnout and emotion regulation. *Frontiers in Psychiatry*, 12, Article 548339. <https://doi.org/10.3389/fpsyg.2021.548339>
- Yetim, Ü. (1993). Life satisfaction: A study on the organization of personal projects. *Social Indicators Research*, 29(3), 277-289. <https://doi.org/10.1007/BF01079516>
- Yıldırım, M., & Solmaz, F. (2020). COVID-19 burnout, COVID-19 stress and resilience: Initial psychometric properties of COVID-19 burnout scale. *Death Studies*, 46(3), 524-532. <https://doi.org/10.1080/07481187.2020.1818885>